SW 8TH STREET CORRIDOR STUDY
FINAL REPORT

MIAMI-DADE
METROPOLITAN
PLANNING
ORGANIZATION

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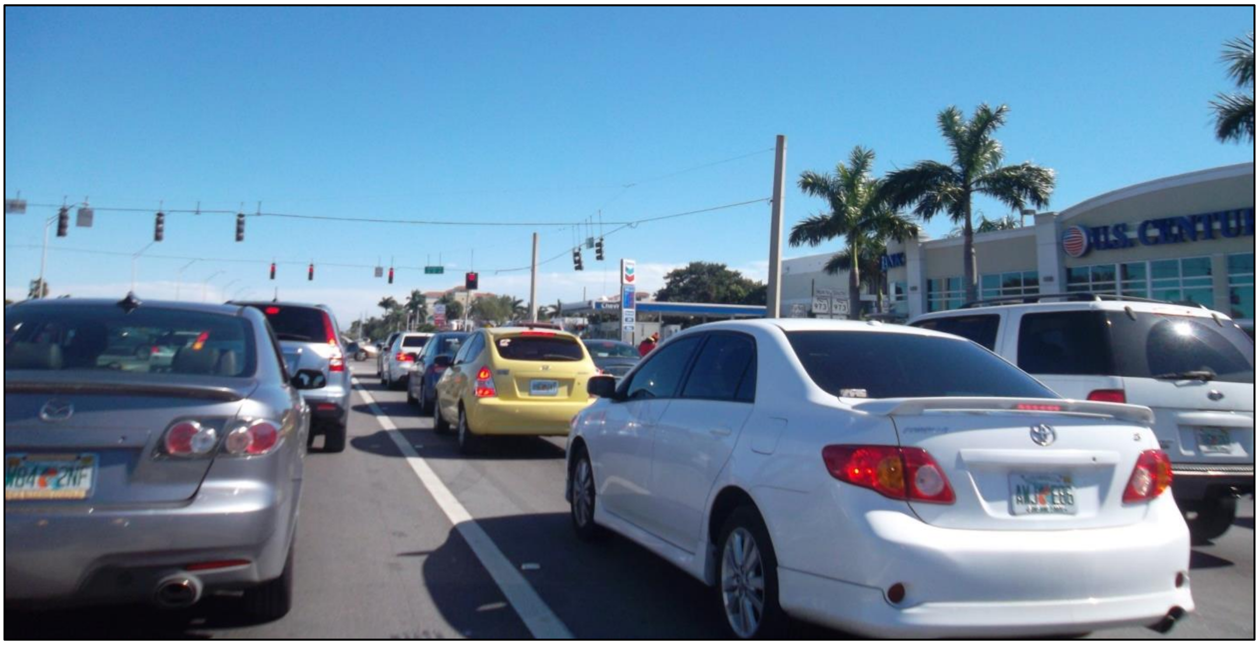
1.0 INTRODUCTION AND PROJECT NEED

SW 8th Street (**Figure 1**) is one of the most traveled transportation corridors in Miami-Dade County. SW 8th Street is a segment of State Road 90 within Miami-Dade County that connects west Miami-Dade County to Downtown Miami at Brickell Avenue, and also serves as an evacuation route to Western Florida. SW 8th Street provides direct system-level connections to I-95, SR 821/The Florida Turnpike, and SR 826/Palmetto Expressway.

Figure 1 – SW 8th Street at SW 87th Avenue



This study was commissioned to focus on developing transportation improvements with the potential to enhance mobility and safety, including transit and roadway, and to serve existing and future anticipated demand along the corridor. This study was developed to document evidence supporting the transportation problem(s) existing along the corridor and those anticipated in the future. Potential improvements developed focused on strategies that would alleviate congestion and support increased transit use planned for the corridor, as well as provide additional travel options throughout the corridor. The improvements included grade separations at congested intersections, additional safety and pedestrian improvements, Intelligent Transportation Systems (ITS), and potential enhancements for Bus Rapid Transit (BRT) and Enhanced Bus Service (EBS).

As part of this study:

- Extensive data collection was conducted
- Prior studies were reviewed
- Existing traffic conditions were analyzed
- Future traffic forecasts were developed including design traffic
- Conceptual alternative strategies were developed and evaluated using traffic simulation software

- Study coordination meetings were held to allow communication among governmental agencies impacted or with an interest in the study

This final report provides a summary of the study process, and includes appendices which are the previously reviewed detailed technical memoranda completed as part of the project. Both the Miami-Dade MPO and steering committee were provided the documentation for review and comment.

Figure 2 – SW 8th Street Project Location Map

The study corridor (**Figure 2**) is bounded by SW 122nd Avenue on the west and SW 74th Avenue on the east. The four mile project traverses two municipalities: the City of Miami and the City of Sweetwater, as well as parts of Unincorporated Miami-Dade County. The project area is located in the western portion of Miami-Dade County, which includes dynamic neighborhoods, land uses, and employment opportunities. Florida International University (FIU), a major public institution with over 40,000 current faculty and students, is located along the corridor and is projected to grow by 65% in 2035 to over 65,000 faculty and students. The focus of this corridor study was on improvements that may be needed in order to relieve congestion along various segments between SW 74th Avenue and SW 122nd Avenue.

Project Need

Within the project study limits, SW 8th Street varies from an eight-lane divided arterial to a four-lane undivided arterial. SW 8th Street provides direct connections to I-95, SR 826/Palmetto Expressway and SR 821/Florida Turnpike. SW 8th Street is a major east west travel corridor that parallels SR 836 and is used as a major alternative for east west travel in the County.

Future development, mobility, and accessibility are limited due to the Tamiami Canal on the northern side of SW 8th Street. Congestion levels are higher along north-south streets that cross the Tamiami Canal such as SW 107th Avenue, SW 97th Avenue, and SW 87th Avenue. Eastbound traffic along the corridor tends to become more congested especially near the SR 826/Palmetto Expressway on and off ramps. It is here where lanes are reduced from four lanes in each direction to only two lanes in each direction. This creates a bottleneck situation for eastbound traffic flow.

The MPO Governing Board expressed concerns regarding traffic conditions along SW 8th Street around the vicinity of FIU, as well as at the intersections with SW 107th Avenue, SW 97th Avenue and SW 87th Avenue. SW 8th Street has been the subject of several studies in the past. Various individual grade separation improvements had been identified at SW 87th Avenue and SW 107th Avenue, and pedestrian and bicycle improvements and transit enhancements were identified and evaluated as well. The main objective of this corridor study was to determine the system wide impacts of individual improvement projects on the subarea transportation network.

Preliminary corridor issues were identified through traffic data collection, research of below items, and field review:

- Land Use
- Roadway Data
- Traffic Data
- Safety Data
- Transit Data
- Bicycle Pedestrian Facility Collection
- Access Management Data
- Major Utilities
- Right-of-Way (ROW)

Planned improvements to roadways and transit service in the project area are limited and are not anticipated to provide for the future demands. Since this study was started prior to the 2040 Miami-Dade MPO Long Range Transportation Plan (LRTP) adoption, all information and analysis was prepared using the 2035 LRTP. The 2035 LRTP indicated that levels of service (LOS) along the majority of SW 8th Street within the study corridor and surrounding arterials will continue to be congested and operate at LOS D-F in 2035.

As part of Technical Memorandum #1 **-** Project Need Statement (**Appendix A**), previous studies and projects were identified and reviewed. An FDOT resurfacing, restoration, and rehabilitation (RRR) project was completed in 2013 that extended from SR 821/Florida Turnpike to SR 826/Palmetto Expressway and included bicycle lanes in both directions and turbo lanes west of SW 97th Avenue. According to the LRTP, the planning and construction of pedestrian facility improvements along SW 8th Street between SW 102nd and SW 107th Avenues, SW 112th and SW 122nd Avenues, and between SW 76th Court and SW 82nd Avenue have been scheduled for 2015-2020.

These improvements, although necessary to enhance safety, do not provide significant capacity enhancements to the roadway, and therefore were considered not likely to improve the overall level of service. Also, according to the 2035 South East Regional Planning Model (SERPM), even with implementation of the MPO's 2035 LRTP planned improvements along several adjacent arterials such as SW 107th Avenue, SR 836/Dolphin Expressway, and SR 826/Palmetto Expressway, congestion levels will remain high throughout the roadway network within the SW 8th Street study area.

2.0 TRAFFIC METHODOLOGY

As part of Technical Memorandum #2 **-** Traffic Methodology (**Appendix B**), future forecasts were developed as the basis for development of strategies and conceptual improvement alternatives using the SERPM model. The methodology was divided into two parts, each consistent with the level of detail expected during each phase of the study process; namely, Corridor Evaluation and Alternatives Analysis.

The first phase (i.e., Corridor Evaluation) would serve the purpose of validation of the travel demand model, creation of a Base Year model and Design Year No Build model.

The second phase (i.e., Alternatives Analysis) included development of the Opening Year No Build and Build, and Design Year Build travel demand models. The Build alternative included roadway improvements as well as any enhancements to transit. The recommended Build alternative was evaluated in a more detailed fashion in terms of traffic operations. **Table 1** includes Analysis years used for development.

Table 1: Analysis Years

BASE YEARS	**2005 SERPM Model Base Year**	The current version of the Southeast Florida Regional Planning Model (SERPM) 6.5.4 has been calibrated and validated using 2005 data. This model will be used only as a basis for additional model developments.
BASE YEARS	**2014 SERPM Model Data and Validation Check** **And** **2014 Synchro Model Operations**	The 2035 SERPM model will be updated with the existing roadway network (2014) by deleting future projects after the year 2014 from the model. The model will be utilized for Corridor Evaluation and subsequent alternative evaluation. For the operational analysis, the existing conditions (2014) will be modeled using Synchro and 2014 traffic counts.
FORECAST YEARS	**2025 Project Opening Year Volumes**	For the 2025 volumes projections, a traffic volume interpolation between the 2005 SERPM model and the 2035 SERPM Base Model will be used. For the operational analysis a 2025 Opening Year model will be developed using Synchro and the appropriate scaled projections for 2025.
FORECAST YEARS	**2035 SERPM Model Horizon Year**	The 2035 SERPM Model (v. 6.5.4) current forecast horizon, consistent with the current Miami-Dade County Long Range Transportation Plan (2035 LRTP) will be run. This model will be used to develop the 2025 and 2045 Design Year volumes.
FORECAST YEARS	**2045 Project Design Year Volumes**	A growth rate will be used to forecast the 2045 volumes from the 2035 SERPM model. The future forecast year for the Corridor Analysis will be consistent with the projections from Existing, Opening Year and Horizon Year. Synchro will be used to operationally analyze 2045 forecasted traffic volumes in the corridor.

Design Traffic

Traffic projections were developed to establish basic design requirements for roadway typical sections, intersections, and potential interchange design. Average Daily Traffic (ADT) and Design Hour Volume (DHV) were developed for the present year, the opening year, interim year and design years. Traffic data was analyzed as appropriate and growth rate methods were identified; historical versus model or both were compared.

SERPM 6.5 was used for traffic demand modeling. Planned projects were added from the TIP or LRTP for modeling analysis. Sub-area model enhancements were performed for the 2005 base year using traditional procedures or Cube Analyst. Six future SERPM models were developed for opening, interim and design years under the Build and No Build alternatives.

3.0 EXISTING CONDITIONS ANALYSIS

As part of Technical Memorandum #3 **-** Design Traffic (**Appendix C**), existing traffic conditions were evaluated and detailed traffic operational analyses was conducted. A safety analysis was also conducted including detailed crash analysis.

Traffic Operational Analysis

Existing operational conditions were evaluated for the study area using Simtraffic. Results are presented for the AM and PM peak conditions in **Tables 2 and 3**. The Measures of Effectiveness (MOEs) included in the existing conditions analysis were later compared to the Build condition analysis.

Table 2: Existing Conditions MOE's - AM

Intersection	Approach	Existing Weekday AM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
SW 8 Street and SW 122 Avenue	EB	3032	3158	73.6	E
	WB	1535	1599	54.5	D
	NB	1612	682	133	F
	SB	812	845	171.3	F
	Overall	**6991**	**6284**	**88.3**	**F**
SW 8 Street and HEFT SB to EB Off-Ramp and SB On-Ramp[1]	EB	4132	3408	5.3	A
	WB	1361	1403	13.8	B
	NB	784	808	385	F
	SB	800	825	1.2	A
	Overall	**6293**	**5636**	**48.5**	**D**
SW 8 Street and HEFT NB Off-Ramp to EB/WB and NB On-Ramp	EB	4109	2776	54.6	D
	WB	1540	1604	35.5	D
	NB	708	174	164.8	F
	Overall	**6357**	**4554**	**52.1**	**D**
SW 8 Street and SW 117 Avenue[2]	EB	3207	3289	23.1	C
	WB	1636	1704	16.1	B
	NB	601	154	86.5	F
	Overall	**5444**	**5147**	**22.6**	**C**
SW 8 Street and SW 112 Avenue	EB	3238	2761	0.1	A
	WB	1729	1820	3.1	A
	NB	124	58	99	F
	Overall	**5091**	**4639**	**2.5**	**A**
SW 8 Street and SW 109 Avenue[3]	EB	2692	2864	14.3	B
	WB	1491	1586	12.2	B
	NB	134	154	90.5	F
	SB	690	457	254.4	F
	Overall	**5007**	**5061**	**48.5**	**D**
SW 8 Street and SW 107 Avenue[4]	EB	2021	2173	52.2	D
	WB	1612	1734	44.9	D
	NB	1650	1774	96.5	F
	SB	1029	1107	97.7	F
	Overall	**6312**	**6788**	**62.7**	**E**

Table 2: Existing Conditions MOE's – AM (continued)

Intersection	Approach	Existing Weekday AM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
SW 8 Street and SW 102 Avenue	EB	2187	2486	19.8	B
	WB	390	443	26.2	C
	WB (Free-flow)	1495	NA	0	A
	NB	565	642	192.6	F
	Overall	**3142**	**3571**	**51.7**	**D**
SW 8 Street and SW 99 Place (Unsignalized)[5]	EB	2525	2805	**0**	
	WB	415	415	**1.3**	
	WB (Free-flow)	1495	NA	**0**	
	NB	127	141	**10.1**	**B**
	Overall	**3067**	**3361**		
SW 8 Street and SW 97 Avenue	EB	2370	2495	49.7	D
	WB	1633	1719	14.2	B
	NB	830	874	90.6	F
	SB	1035	1089	79.2	E
	Overall	**5868**	**6177**	**50.8**	**D**
SW 8 Street and SW 94 Avenue	EB	2827	3008	0.9	A
	WB	1812	1927	0.4	A
	NB	127	134	71.1	E
	SB	197	209	70.5	E
	Overall	**4963**	**5278**	**5.3**	**A**
SW 8 Street and SW 92 Avenue	EB	2493	2625	13.8	B
	WB	1600	1685	30.8	C
	NB	741	780	115.8	F
	SB	525	553	80.9	F
	Overall	**5359**	**5643**	**39.5**	**D**
SW 8 Street and SW 87 Avenue	EB	2940	2848	29.2	C
	WB	1352	1211	53.2	D
	NB	1282	1288	102.8	F
	SB	770	811	58.3	E
	Overall	**6344**	**6158**	**53.2**	**D**
***SW 8 Street and SW 82 Avenue[6]**	EB	2691	2890	22.2	C
	WB	1960	2108	11.9	B
	NB	605	647	240.2	F
	Overall	**5256**	**5645**	**43.4**	**D**

Table 2: Existing Conditions MOE's – AM (continued)

Intersection	Approach	Existing Weekday AM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
*SW 8 Street (EB/WB) and SB On-Ramp to SR 826[7]	EB	2529	2607	1.3	A
	WB	2647	2729	11.2	B
	Overall	**5176**	**5336**	**6.4**	**A**
*SW 8 Street and SR 826 NB Off-Ramp	EB	2538	1951	0.3	A
	WB	1291	1373	0.5	A
	NB	274	0	0	0
	Overall	**4103**	**3324**	**0.4**	**A**
SW 8 Street and SW 75 Avenue/Tamiami Canal Road (Unsignalized)	EB	2550	2771	0	NA
	WB	1784	1939	0.7	NA
	NB	29	32	31.3	D
	SB	92	99	32.10	F
	Overall	**4455**	**NA**		
SW 8 Street and SW 74 Court[8] (Ped-Signal Only)	EB	2273	2368	5	A
	WB	1663	1733	3.9	A
	NB	20	21	0	A
	SB	138	144	0.1	A
	Overall	**4094**	**4266**	**4.3**	**A**
SW 8 Street and SW 74 Avenue	EB	2270	2317	4.5	A
	WB	1361	1377	16.8	B
	NB	492	502	151.5	F
	SB	262	268	70.5	E
	Overall	**4385**	**4464**	**28.8**	**C**

Table 3: Existing Conditions MOE's - PM

Intersection	Approach	Existing Weekday PM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
*SW 8 Street and SW 122 Avenue	EB	1760	1777	101.9	F
	WB	3782	3820	113.4	F
	NB	1048	616	63.6	E
	SB	1214	1226	253	F
	Overall	**7804**	**7439**	**129.5**	**F**
SW 8 Street and HEFT SB to EB Off-Ramp and SB On-Ramp[1]	EB	2029	1727	2	A
	WB	2383	2508	11.9	B
	NB	912	960	267	F
	SB	1389	1462	9.8	A
	Overall	**5801**	**5697**	**43.1**	**D**
SW 8 Street and HEFT NB Off-Ramp to EB/WB and NB On-Ramp	EB	2553	2084	30.7	C
	WB	2987	3048	19.4	B
	NB	456	211	63.8	E
	Overall	**5996**	**5343**	**25.6**	**C**
SW 8 Street and SW 117 Avenue[2]	EB	2292	2363	13.5	B
	WB	2939	3061	5.4	A
	NB	542	280	84.8	F
	Overall	**5773**	**5704**	**12.7**	**B**
SW 8 Street and SW 112 Avenue	EB	2175	2034	1	A
	WB	2713	2917	1.7	A
	NB	622	413	74.4	E
	Overall	**5510**	**5364**	**7**	**A**
SW 8 Street and SW 109 Avenue[3]	EB	2130	2196	45.2	D
	WB	1996	2058	6	A
	NB	1000	1015	247.6	F
	SB	616	345	265.2	F
	Overall	**5742**	**5614**	**89.6**	**F**
SW 8 Street and SW 107 Avenue	EB	1957	1393	46.3	D
	WB	2201	2269	130.6	F
	NB	1757	1303	94.9	F
	SB	1942	2002	184	F
	Overall	**7857**	**6967**	**122.4**	**F**

Table 3: Existing Conditions MOE's – PM (continued)

Intersection	Approach	Existing Weekday PM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
SW 8 Street and SW 102 Avenue	EB	2199	2314	28.2	C
	WB	753	792	47.9	D
	WB (Free-flow)	2194	NA	0	A
	NB	352	371	104.2	F
	Overall	**5498**	**3477**	**40.8**	**D**
SW 8 Street and SW 99 Place (Unsignalized)[4]	EB	2286	2332	**0**	
	WB	863	863	**1.9**	
	WB (Free-flow)	2194	NA	**0**	
	NB	35	36	**9.6**	**A**
	Overall	**5378**	**3231**		
SW 8 Street and SW 97 Avenue	EB	2360	2432	51.7	D
	WB	2915	3006	19.1	B
	NB	780	805	149.3	F
	SB	1554	1602	166.6	F
	Overall	**7609**	**7845**	**72.7**	**E**
SW 8 Street and SW 94 Avenue	EB	2482	2669	2.5	A
	WB	3357	3610	0.4	A
	NB	43	46	66.9	E
	SB	225	242	76.8	E
	Overall	**6107**	**6567**	**4.5**	**A**
SW 8 Street and SW 92 Avenue	EB	1884	2070	18.5	B
	WB	2853	3136	10.8	B
	NB	482	531	200.8	F
	SB	1033	1135	286.1	F
	Overall	**6252**	**6872**	**73.2**	**E**
SW 8 Street and SW 87 Avenue	EB	2344	2295	50.3	D
	WB	2733	2660	57.1	E
	NB	1270	1223	110.2	F
	SB	1078	1135	97.5	F
	Overall	**7425**	**7313**	**70.1**	**E**
***SW 8 Street and SW 82 Avenue[5]**	EB	2209	2253	18.9	B
	WB	3319	3494	15.4	B
	NB	348	367	92.6	F
	Overall	**5876**	**6114**	**21.3**	**C**

Table 3: Existing Conditions MOE's – PM (continued)

Intersection	Approach	Existing Weekday PM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
SW 8 Street (EB/WB) and SB On-Ramp to SR 826[6]	EB	2254	2324	7.5	A
	WB	4467	4605	7.9	A
	Overall	**6721**	**6929**	**7.8**	**A**
SW 8 Street and SR 826 NB Off-Ramp	EB	2098	1670	0.3	A
	WB	2344	2520	1.8	A
	NB	875	0	0	0
	Overall	**5317**	**4190**	**1.2**	**A**
SW 8 Street and SW 75 Avenue/Tamiami Canal Road (Unsignalized)	EB	1931	2077	0	NA
	WB	2303	2477	0.2	NA
	NB	20	22	20.7	C
	SB	392	415	$737.40	F
	Overall	**4646**	**NA**		
SW 8 Street and SW 74 Court (Ped-Signal Only)[7]	EB	1797	1815	7.6	A
	WB	2071	2092	16.5	B
	NB	13	13	0	A
	SB	236	238	0.2	A
	Overall	**4117**	**4158**	**11.6**	**B**
SW 8 Street and SW 74 Avenue	EB	1487	1599	4.5	A
	WB	1569	1684	26.1	C
	NB	263	282	96.5	F
	SB	660	710	344.4	F
	Overall	**3979**	**4275**	**75.5**	**E**

4.0 CONCEPTUAL ALTERNATIVES

As part of Technical Memorandum #4 - Conceptual Alternatives (**Appendix D**), a No-Build alternative was identified as were conceptual alternative strategies to address existing roadway and transit issues identified in the existing conditions analysis. These strategies included roadway, transportation demand management, and transit related improvements as follows:

- Managed / Reversible Lanes
- Street Widening
- SW 87th Avenue Grade Separation
- SW 107th Avenue Grade Separation
- At-Grade Improvements at SW 87th Avenue
- FIU Rideshare Program
- Adaptive Signal Control Technology Pilot Project
- Rapid Bus Implementation – Flagler BRT and SW 8th Street EBS
- Eastbound to Northbound Flyover at SW 107th Avenue

These various alternatives were assessed as part of a Tier I evaluation using criteria jointly established with the MPO.

The criteria used for the Tier 1 Evaluation included:

- Impact on Corridor Mobility
- Mode Split
- Impact on Cross-Street Mobility
- Safety
- Impact on Local Business
- Capital Costs
- Operating and Maintenance Costs
- Constructability
- Consistency with Local Plans

The conceptual alternatives with the highest cumulative ordinal scores were considered to best meet the objectives of this study and were carried forward into a Tier II evaluation (detailed operational analysis), while the alternatives with the lowest cumulative ordinal scores were dropped from further consideration. Note that the managed/reversible lanes conceptual alternative was dropped prior to the Tier I evaluation because of the high construction costs, conflicts with other planned improvements, and the major impacts to corridor businesses and residents during construction.

As illustrated in **Table 4**, all of the conceptual alternatives fall into one of three categories:

- Included in the Build Alternative
- Not modeled as a part of the Build Alternative
- Not included in the Build Alternative

Table 4: Tier I Evaluation

	Street Widening	87th Avenue Grade Separation	107th Avenue Grade Separation	At-Grade Improvements at SW 87th Avenue	FIU Ridesharing	Adaptive Signal Project	Flagler BRT	SW 8th Street EBS	EB to NB Flyover at SW 107th Avenue
Corridor Mobility	0	1	1	1	0	2	0	0	1
Mode Split	0	0	0	0	1	0	2	2	1
Cross-Street Mobility	0	2	2	2	0	2	0	0	1
Safety	0	2	2	2	0	0	0	0	0
Local Business	0	-1	-1	-1	0	0	0	0	0
Capital Costs	0	-1	-1	0	1	1	-1	0	-1
O&M Costs	1	0	0	0	1	0	-1	-1	0
Constructablity	0	-1	-1	-1	1	1	0	0	-1
Right of way	-1	0	0	-1	1	1	0	0	-1
VMT	0	-1	-1	-1	1	-1	1	1	-1
VHT	1	1	1	1	1	1	1	1	1
Local Plans	-1	1	1	0	1	1	1	0	0
Total Score	**0**	**3**	**3**	**2**	**8**	**8**	**3**	**3**	**0**

** Note that At-Grade Improvements at SW 87th Avenue will not be included in the Build Alternative because of proposed grade separation

(green)	Included in the Build Alternative
(light green)	Will not be modeled as a part of the Build Alternative
(pink)	Not included in the Build Alternative

Alternatives that were carried through to the Tier II evaluation were modeled from an operations perspective and were included in the composite Build alternative for analyzing future year conditions. Comparison to the No-Build Analysis was also conducted. The Build alternative analysis was documented in Technical Memorandum #5 **-** Conceptual Alternatives Analysis, which is included in **Appendix E** of this report.

The two conceptual alternatives included in the Build Alternative were the grade separations at SW 87th and SW 107th Avenue. These two grade separations will likely improve cross-street and corridor mobility as well as overall safety. Although these alternatives reduce visibility for businesses on the south side of SW 8th Street and would have high construction costs and associated impacts, they were analyzed in detail to determine impacts to the system network.

Strategies that cannot be modeled but are recommended to be implemented by others include:

- FIU Ridesharing Program
- Adaptive signal technology pilot project
- Flagler BRT

FIU is currently expanding it ridesharing program, while the adaptive signal technology pilot project is scheduled for construction by the summer of 2016. The Flagler BRT project is scheduled for a detailed Project Development and Environment (PD&E) study by FDOT in 2016.

Remaining alternatives considered were not recommended for evaluation or implementation for a number of reasons, most of which related to meeting the study objectives. Some alternatives such as the transit only flyover at SW 107th Avenue do not provide significant enhancements to mobility compared to the overall costs and associated impacts, and therefore were not recommended for further consideration.

Cost Estimates

Planning-level construction estimates for each of the conceptual grade separations were also provided as a part of Technical Memorandum #4 (**Appendix D**). The grade separation at SW 107th Avenue was estimated at approximately $31 million. Right-of-way impacts would occur on the north side of the road adjacent to the canal with the grade separation; right-of-way impacts were estimated at approximately $306,000. The grade separation at SW 87th Avenue construction was estimated at approximately $25 million. Right-of-way impacts are not anticipated for this grade separation. These alternatives address corridor needs including safety, corridor mobility, and improved mode splits. As confirmed later in the future build conditions analysis, it appears that these alternatives will positively impact the corridor.

5.0 CONCEPTUAL ALTERNATIVES ANALYSIS

In order to perform the traffic operational analysis, a No-Build Alternative and a Build Alternative were evaluated for two different years: 2025 and 2045. The morning and afternoon peak hour conditions were evaluated using Synchro/SimTraffic as the traffic analysis tool. Each SimTraffic Scenario was run 10 times in order to account for the stochastic nature of the model.

The No-Build and Build alternatives for traffic operations analysis slightly differ from those identified in the travel demand modeling. Detailed improvements along any of the transit routes were not modeled in the traffic operational analysis, however, impacts to traffic as a result of these improvements were in essence accounted for in the travel demand model outputs. Any "mode shift" would be reflected in the traffic volumes estimated by the travel demand model results. Additional detailed operational improvements were included in the SimTraffic model such as an enhancement to a movement at SW 76th Avenue.

Travel Demand Forecasting Analysis

The year 2014 networks were used to develop the 2025 networks. The following changes were made to reflect the 2025 transit service levels:

Five bus routes were added including:

- SR 836 Line A
- SR 836 Line B
- SR 836 Line C
- Flagler EBS
- Route 8M

Two Stations were added including:

- Dolphin Station
- Panther Station (MIC and Government Center station were already part of the year 2014/2025 network)

For the roadway network update, all projects included in the No-Build were analyzed including:

- Widening of SW 107th Avenue from West Flagler Street to SW 11th Street

- Improved Access to the new FIU Terminal. Exclusive bus lanes in the eastbound as well as in the westbound directions are proposed between SW 109th Avenue and SW 112th Avenue. These exclusive bus lanes will allow westbound Miami-Dade Transit Buses to perform an u-turn maneuver at the intersection of SW 112th Avenue to enter the FIU terminal. Then, these westbound buses will also perform a u-turn maneuver at the intersections with SW 109th Avenue in order to continue their route to the west

- Florida Turnpike improvements at the interchange with SW 8th Street

- Improvements at SW 8th Street and SW 117th Avenue intersection

For the year 2045, the adopted cost feasible networks as developed for the 2040 LRTP were used. No additional projects were added. All of the networks were reviewed for accuracy. All the networks included projects in the No-Build.

The following sections describe the scenarios analyzed from the traffic operational perspective.

Traffic Operational Analysis

No-Build Alternative

The No-Build Alternative incorporated all of the programmed projects within the limits of the study area (from west of SW 122nd Avenue to east of SW 74th Avenue) that considered changes in geometry. The projects included in the No-Build Alternative were the same from the travel demand modeling roadway network.

No-Build Scenario (2025) – Without the Improved Access to the new FIU Terminal

In addition to the previously described, there was an additional No-Build Scenario analyzed only for the year 2025, in order to assess the sensitivity to traffic operations along the corridor without the proposed MDT/FIU bus lanes. This additional No-Build Scenario considered all projects, except for the exclusive bus lanes proposed between SW 109th Avenue and SW 112th Avenue.

Build Alternative

At the direction of the MPO, the composite Build Alternative ultimately analyzed included all the projects listed in the No-Build alternative, except for the exclusive bus lanes between SW 109th Avenue and SW 112th Avenue. The decision to not include these lanes in the Build Alternative stemmed from the fact that the lanes have not officially been approved for implementation by FDOT. However, to assess the potential impact of the exclusive lanes, they were included in the 2025 No Build scenario.

As mentioned previously, an additional roadway enhancement included in the Build Alternative is the closing of the northbound to westbound movement at the intersection with SW 76th Avenue which allows extending the eastbound to northbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road.

Also, the exclusive westbound left-turn lane at the intersection of SW 8th Street and SW 82nd Avenue was lengthened from 145 feet to 345 feet. This was done to accommodate the increased demand for this movement since several median openings will be closed as a result of the grade separations and drivers will need alternate access to reach their destination on the south side of SW 8th Street.

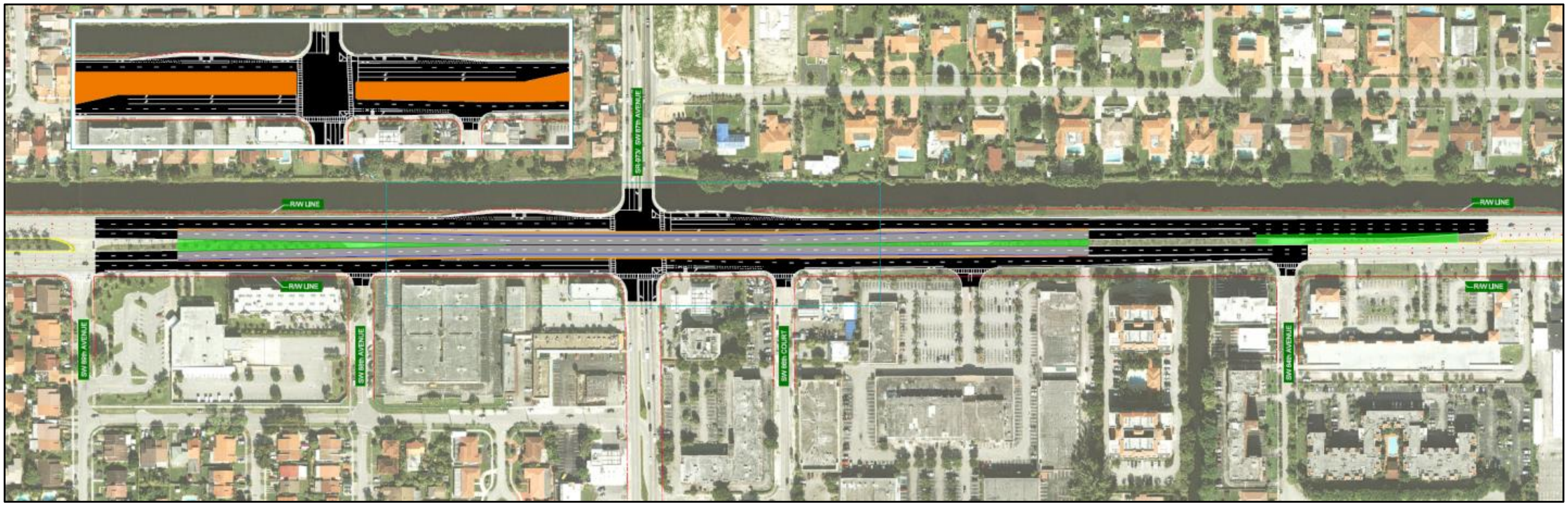
Lastly, the Build Alternative includes the two grade separations at the intersections of SW 107th Avenue and SW 87th Avenue.

SW 87th Avenue Grade Separation

The SW 87th Avenue grade separation was listed as an unfunded project in the 2035 LRTP and therefore not included in the No-Build scenario consistent with this study's approved methodology. The recently adopted 2040 LRTP lists this project as funded in Priority II (pre-engineering, right-of-way, and construction).

The proposed grade separation will provide two lanes in each direction for the east/west through traffic. Two lanes will remain at grade for local access and turning movements. The bridge portion will be on structure and the required number of turn lanes at the intersection can be accommodated under the bridge. By removing the east-west through-traffic from the signal cycle, more green time can be provided to the congested north/south movements and all of the other at-grade movements. This will improve the operations of the at-grade intersection. This alternative does not have any right-of-way impacts. **Figure 3** graphically depicts the grade separation over SW 87th Avenue.

Figure 3 – Grade Separation Alternative at SW 87th Avenue



SW 107th Avenue Grade Separation

The second grade separation included in the Build Alternative was SW 8th Street over 107th Avenue. Based on coordination with FDOT, FIU, and the MPO, multiple concept designs were developed and considered for this location. Major factors considered during design were the location of the touch down of the western end of the grade separation, existing and proposed turning movements, access into the FIU campus from SW 8th Street, and the future pedestrian bridge that is proposed to span SW 8th Street just west of SW 109th Avenue.

After much review and discussion with study partners, it was determined that the alternative design to be included in the composite Build analysis is a grade separation from SW 105th Avenue to SW 109th Avenue with two grade separated lanes in both the eastbound and westbound directions. Considering the future growth anticipated in the Sweetwater and FIU area, this grade separation alternative prioritizes existing access into FIU as well as accommodates vehicular capacity, both for the existing and future conditions.

In order to maintain the left turn bays accessing FIU at SW 109th and SW 112th Avenues, this alternative proposes that the westbound grade separated lanes are constructed over the northern side of the roadway while the eastbound grade separated lanes are constructed over the median. Two at-grade lanes are provided in both directions between SW 105th and SW 109th Avenues.

Based on this preferred alternative, the westbound approach of the SW 107th Avenue intersection will have two left turn lanes (westbound to southbound), two grade separated westbound through lanes, two at-grade westbound through lanes, and one at-grade exclusive right turn lane (westbound to northbound). This design proposes four total westbound through lanes (two at-grade and two grade separated), which is one more through lane than what is currently provided. After passing through this intersection, two at-grade westbound through lanes will be maintained to accommodate future capacity needs, and to receive northbound-to-westbound turning traffic from SW 107th Avenue, as well as southbound-to-westbound turning traffic from SW 107th Avenue.

The eastbound approach of the intersection at SW 107th Avenue will maintain the existing left turn bays (eastbound to northbound), albeit both turning lanes being slightly shortened to 200’ to accommodate the grade separation. Two at-grade eastbound through lanes are proposed, which when combined with the two grade separated lanes, results in one more eastbound through lane than what currently exists. The existing exclusive right turn lane (eastbound to southbound) is also maintained.

The western touch down of the grade separation will land just east of SW 109th Avenue. In order to receive the two at-grade and two grade separated westbound lanes, the segment of SW 8th Street between SW 109th and SW 112th Avenues would be widened to four lanes. SW 8th Street will then be tapered back down to three westbound through lanes prior to reaching the intersection at SW 112th Avenue. This touch down and typical section configuration will not have any adverse impacts on the proposed pedestrian bridge since the pedestrian bridge is now being designed to touch down north of the Tamiami Canal, thus not impacted by any road widening.

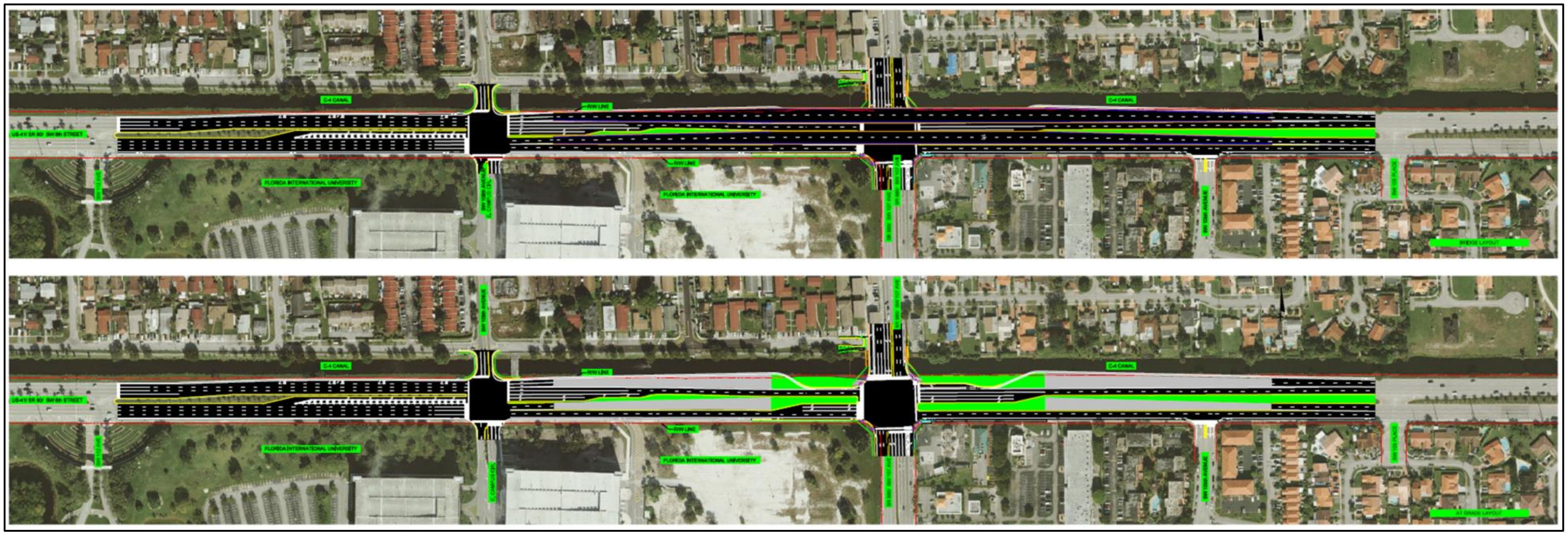
This preferred grade separation concept will require varying widths of right of way on the north side of SW 8th Street east of SW 109th Avenue. The maximum right of way width needed is 12 feet, although this width is less in other areas. The estimated length of right of way impact is just over 1700 feet. None of the right of way needed encroaches into the Tamiami Canal, although secondary impacts to the canal can be expected due to construction.

Operationally, at-grade right turning movements at SW 109th Avenue (westbound to northbound) cannot be accommodated because of the touch down of the grade separated lanes. Access to SW 109th Avenue for westbound vehicles wanting to travel northbound is limited to grade separated traffic only. Additional wayfinding signs will have to be provided to alert drivers wanting to access northbound SW 109th Avenue. This alternative also limits business access along SW 8th Street between SW 107th Avenue and SW 105th Place. Westbound traffic wishing to access businesses here must take an alternative route, such as making a U-turn at SW 107th Avenue / SW 8th Street.

A grade separation at SW 107th Avenue and SW 8th Street was listed as an unfunded project in the 2035 LRTP and therefore not included in this study's No-Build scenario. However, a grade separation project is listed as a funded Priority II project (pre-engineering, right-of-way, and construction) in the recently adopted 2040 LRTP.

Figure 4 graphically depicts the proposed grade separation for the intersection of SW 107th Avenue.

Figure 4 – Grade Separation Alternative at SW 107th Avenue



6.0 SUMMARY OF FINDINGS

As part of Technical Memorandum #5 **-** Conceptual Alternatives Analysis (**Appendix E**), it was determined that from the Travel Demand Forecasting perspective, the grade separations over SW 87th Avenue and SW 107th Avenue do not attract more traffic to SW 8th Street. There will be a slight increase in traffic; however it is not so significant as to relieve congestion in adjacent/parallel facilities. Localized improvements such as these are difficult to analyze and assess an impact using a large regional model. The implementation of the grade separations over SW 87th Street and SW 107th Avenue showed a minimal increase in the traffic volume growth rate.

The summary of findings related to the operational analysis is described below.

From the traffic operational analysis conducted it was determined that overall the Build Alternative performs more efficiently than the No-Build Alternative. It has to be pointed out that the Build Alternative included not only the grade separations at the intersections of SW 107th Avenue and SW 87th Avenue; it also included improvements that the intersection of SW 8th Street with Tamiami Canal Road and at the intersection of SW 8th Street with SW 82nd Avenue. The last improvement was necessary because the increase in number of left-turns from westbound SW 8th Street to southbound SW 82nd Avenue.

The No-Build Alternatives included some proposed improvements already included in the cost-feasible plan such as the widening of SW 107th Avenue between Flagler Street to SW 11th Street, improvements at the intersections with the SR 821/Florida Turnpike Ramps (NB/SB) and reconfiguration of the intersection of SW 8th Street with SW 117th Avenue.

From the comparison of the No-Build Alternatives (with and without the bus lanes) for the years 2025 and 2045 (AM and PM peak hours) it was determined that the major impact of the exclusive bus lanes (to be located between the intersections of SW 109th Avenue and SW 112th Avenue) will be on the delay. Implementation of the signal phase for the buses will cause that all of the other approaches at these intersections need to stop. In addition, (for safety reasons) all of the right-turn-on reds will need to be prohibited at the intersections of SW 112th Avenue and SW 109th Avenue. In order to keep the cycle length constant, the phases for the other approaches will need to be shortened to be able to provide the phasing for the U-turning buses. All these factors will cause delay to increase.

The increase in delay also translates in more queued vehicles at these intersections, especially in the northbound/southbound approaches at SW 109th Avenue (the theoretical demand will only be partially processed). These queued vehicles impact the westbound approaches at adjacent intersections such as SW 112th Avenue and SW 117th Avenue. Theoretical demand volumes will not be processed through SW 109th Avenue and in turn not the theoretical demand will reach the intersections at SW 112th Avenue and SW 117th Avenue.

In general, average speeds for the two 2025 No-Build Alternatives (with and without bus lanes) resulted in very similar values, even for the segment between SW 112th Avenue and SW 109th Avenue. These similar speeds between SW 112th Avenue and SW 109th Avenue (in the eastbound and westbound directions for the AM and PM peak hours) seem to be due to the distance between intersections. Since there are several closely spaced intersections within this segment, drivers are not able to speed up. The presence of the exclusive bus lanes between SW 109th Avenue and SW 112th do not have a significant impact on average speeds.

From the comparison of the 2025 No-Build Alternatives (with and without bus lanes) with the 2025 Build Alternative (without bus lanes) it was determined that the Build Alternative offers some improvements in traffic operation over the No-Build Alternatives.

Average delay at the intersections of SW 87th Avenue and SW 107th Avenue (directly impacted by the grade separations) reduces (for the AM and PM peak hours). In addition, a high percentage of vehicles will cross these two intersections experiencing zero delay. It has to be pointed out that the reduction in delay at the intersection with SW 87th Avenue is more significant that the reduction in delay for the intersection with SW 107th Avenue.

Delay at the intersection of SW 87th Avenue was impacted by the eastbound queue that formed along SW 8th Street in the vicinity of SR 826/Palmetto Expressway. This queue extended from the SR 826/Palmetto Expressway Interchange to west of SW 82nd Avenue. Eastbound vehicles crossing the intersection with SW 87th Avenue were slowed down by this queue and contributed to the higher delay at this intersection. The Build Alternative considered the lengthening of the eastbound exclusive left-turn at the intersection with Tamiami Canal Road. This improvement allowed a more efficient traffic flow in the eastbound direction and a reduction in the queue that formed in the No-Build Alternatives. Therefore, this more efficient traffic flow pattern in the eastbound direction allowed for a more significant delay reduction at the intersection with SW 87th Avenue.

The difference in delay at the intersection with SW 107th Avenue is not as significant as for the intersection with SW 87th Avenue. One of the reasons for these results is the fact that as SW 107th Avenue is widened all of the exclusive right turn lanes become signalized. In addition, in the Build Alternative the eastbound right turn lane becomes a shared/through right-turn lane. Eastbound right turn volumes at this intersection are high and the conversion to a shared through/right lane restricts capacity causing the reduction in delay not to be so significant.

Overall, the Build Alternative allowed processing higher volumes along most of the intersections within the area analysis. The intersections of SW 87th Avenue and SW 107th Avenue are able to process the entire theoretical demand for the northbound/southbound approaches.

Average speeds for the Build Alternative also resulted in higher values than for the No-Build Alternatives. Some specific differences that were identified between the average speed profiles of the No-Build Alternatives and the Build were that in the locations of the entrances to the grade separations, average speeds tend to be lower than for the No-Build Alternatives (at those particular locations). This traffic pattern seems to be related to the lane changes maneuvers that drivers have to perform in order to position themselves in the appropriate lane.

For the PM peak hour (2025 and 2045 years) westbound, the reduction in delay is not that significant, given that the overall volumes traveling along the network are higher during the AM peak hour. In the afternoon, drivers traveling on the evaluated option will only save approximately one minute when traveling along the entire limits of the project, comparing to the No-build with bus lanes option.

Analysis for the year 2045 determined that traffic patterns identified in the year 2025 will still exist for the No-Build and Build Alternatives. In the year 2045, capacity of the cross-streets will be very limited. In addition, limited capacity along SW 8th Street (in the No-Build Alternative) in the eastbound direction in the vicinity of SR 826/Palmetto Expressway will cause a more critical queue that has the potential to affect operations at the intersection with SW 92nd Avenue.

In the case of the Build Scenario the eastbound shared right/through lane at the intersection of SW 107th Avenue might cause the delay to increase (since this volume will not be entirely processed through this intersection).

Before a final recommendation for the implementation of the grade separations it will be necessary to perform a cost/benefit analysis in order to quantify the benefits of these improvements when compared to the impacts, such as westbound/eastbound median closures, blocking of the view from the south side of SW 8th Street, traffic diversion due to the closing of the median.

In addition, a public involvement period is recommended in order to obtain feedback from the every-day users of the median opening of SW 8th Street and SW 76th Avenue. A cost/benefit analysis should be performed in order to account for the fact that to extend the eastbound to northbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road, the access from northbound SW 76th Avenue to westbound SW 8th Street will need to be closed.

This closure will cause that most the northbound to westbound traffic from SW 76th Avenue be re-routed to SW 74th Avenue in order to perform the desired movement. This traffic diversion might have detrimental impacts to the traffic operations at the intersection of SW 8th Street and SW 74th Avenue. For that reason, a more detailed analysis focused in this specific segment of SW 8th Street (from SR 826/Palmetto Expressway to SW 74th Avenue) should be conducted before any final decision for implementation is made.

The SW 8th street corridor has a morning eastbound peak hour flow. The analysis shows that for the Grade separation alternative (in the year 2045), the build-up of traffic at the Palmetto Expressway (eastbound queue) will extend westward to the west side of the 82nd Avenue intersection. In other words, the traffic coming off the 87th Avenue grade separation will be coming down to grade and will be at the back of the eastbound queue, headed toward the Palmetto Expressway, in stop and go traffic.

The SW 8th Street corridor has a late afternoon westbound peak hour flow. The analysis shows that for the Grade separation alternative (in the year 2045), traffic coming off the 107th Avenue grade separation will be coming down to grade at 109th Avenue and will experience congested conditions at four traffic signals prior to passing the Florida's Turnpike. In other words, there will be virtually no travel time improvement for westbound traffic between 107th Avenue and Florida's Turnpike.

The proposed exclusive bus lanes on SW 8th Street between 109th and 112th Avenues (MDT project to access the Panther Station at FIU) will negatively affect delay and travel times in the afternoon westbound peak hour.

Overall, travel time savings are more significant during the AM peak hour direction (eastbound) than for the PM peak hour direction. As previously mentioned in the report, the afternoon peak hour, shows significantly higher volumes (at all intersections) than the morning peak hour. Therefore, the travel time savings in the afternoon are less noticeable (since more vehicles are traveling along SW 8th Street).

For the year 2025, it was determined that commuters could potentially save approximately five minutes during the morning peak hour in the peak direction (eastbound). In addition, for the year 2045 the travel time savings could potentially be about seven minutes. The reason for the higher travel time savings for the year 2045 than for the year 2025 is the fact that the No-Build average speeds for the year 2045 are significantly lower than for the year 2025. Therefore, the higher difference in speeds causes a higher travel time savings in the year 2045. For instance, average speeds for the year 2025 (for the entire length of the corridor) are: 17 mph (No-Build) vs. 23 mph (Build). For the year 2045, average speeds are 13 mph (No-Build) vs. 19 mph (Build). For the afternoon peak hour the difference in average speeds between the No-Build and Build Alternatives are not that significant.

The minimal improvement in corridor speeds and travel times does not justify the cost of more than $80 million to implement the grade separation projects at this time. The grade separation projects may prove to be viable in the future if implemented systematically throughout the corridor.

The following **Tables 5 and 6** provide measures of effectiveness (MOE)'s for year 2045 for the intersections of SW 107th Avenue and SW 87th Avenue for comparison.

Table 5 – 2045 - SW 107th Avenue and SW 87th Avenue Intersections Delay Comparison (AM Peak Hour)

Intersection	Approach	Movement	2045 No-Build with Bus Lane AM Peak Hour			2045 Build AM Peak Hour		
			Expected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)	Expected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)
SW 8 Street and SW 107 Avenue	EB	At-Grade	2800	2360	61.5	1592	1482	56.5
		Elevated				1309	1026	0
		Total				2901	2508	
	WB	At-Grade	2100	2283	36.9	1305	1263	43.5
		Elevated				955	900	0
		Total				2260	2163	
	NB		2065	2077	46.1	2200	2190	47.2
	SB		1270	1266	70.6	1400	1390	71.5
	Overall		**8235**	**7986**	**51.9**	**8761**	**8251**	**54**
SW 8 Street and SW 87 Avenue	EB	At-Grade	3500	2743	298.5	1489	1470	55
		Elevated				2011	1957	0
		Total				3500	3427	
	WB	At-Grade	1900	1846	57.5	1054	955	60.4
		Elevated				1489	1470	0
		Total				2543	2425	
	NB		1500	1449	107.9	1650	1641	70
	SB		930	892	108	980	978	58.8
	Overall		**7830**	**6930**	**174.4**	**8673**	**8471**	**61.7**

Table 6 – 2045 - SW 107th Avenue and SW 87th Avenue Intersections Delay Comparison (PM Peak Hour)

Intersection	Approach	Movement	2045 No Build with Bus Lane PM Peak Hour			2045 Build PM Peak Hour		
			Expected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)	Expected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)
SW 8 Street and SW 107 Avenue	EB	At-Grade	2600	2087	61.4	1658	1420	79.5
		Elevated				1042	886	0
		Total				2700	2306	
	WB	At-Grade	2950	2834	126.1	1658	1482	75.4
		Elevated				1542	1376	0
		Total				3200	2858	
	NB		2200	2204	60	2360	2375	53.4
	SB		2500	2323	172.5	2600	2426	152.4
	Overall		**10250**	**9448**	**108.4**	**10860**	**9965**	**93.8**
SW 8 Street and SW 87 Avenue	EB	At-Grade	2800	2498	85.2	870	800	72
		Elevated				1923	1727	0
		Total				2793	2527	
	WB	At-Grade	3450	3086	38.5	1399	1188	51.9
		Elevated				2331	2014	0
		Total				3730	3202	
	NB		1500	1362	173.4	1510	1503	50.4
	SB		1300	1103	205.9	1320	1309	43.9
	Overall		**9050**	**8049**	**100.1**	**9353**	**8541**	**52.6**

7.0 RECOMMENDED ACTION PLAN

Documented study findings indicate that some enhancements to corridor mobility and cross-street improvements will occur as a result of the grade separations and other minor roadway improvements. However, as evidenced in the findings, the interchange with SR 826 and the operations at the interchange now and in the future has a significant impact on corridor mobility. Moreover, this is also related to the change in existing typical section (narrowing to 4 lanes east of SW 8th Street). From a subarea regional perspective, any improvements west of SR 826 may be short term unless this narrower typical section on the east and/or the SR 826 interchange itself is further analyzed for improvement. Currently, the LRTP does not identify improvements in either of these areas.

Recommendations to move forward include:

- Continued coordination with FIU in their campus access enhancements and pedestrian bridge implementation plans
- Continued coordination with MDT with respect to their bus operations plans to access the FIU parking terminal
- Continued coordination with the Turnpike with respect to their improvements and alternative access to FIU
- Coordination with the City of Sweetwater regarding their transit services and parking facilities for students

The following **Table 7** is a summary of recommendations and action plan. The projects listed below should be considered to move forward with a cost/benefit analysis and/or the next phase of PD&E.

Table 7: Recommendations and Action Plan

Project	Agency	Recommendation/ Action
SW 87th Avenue Grade Separation	Florida Department of Transportation (FDOT) / Miami-Dade County	**Cost/Benefit Analysis and PD&E**
SW 107th Avenue Grade Separation	Florida Department of Transportation (FDOT) / Miami-Dade County	**Cost/Benefit Analysis and PD&E**
FIU Ridesharing Program	Florida International University (FIU) / Florida Department of South Florida Commuter Services	**Expand program**
Adaptive Signal Technology Pilot Project	Florida Department of Transportation (FDOT) / Miami-Dade County	**Implement project and review impacts**
Flagler Bus Rapid Transit (BRT)	Miami-Dade Transit (MDT)	**PD&E**
Northbound to Westbound Movement Closure at Intersection of SW 8th Street and SW 76th Avenue	Florida Department of Transportation (FDOT) / Miami-Dade County	**Cost/Benefit Analysis and PD&E**
Feasibility Study for SR 826 Interchange Improvements at SW 8th Street	Florida Department of Transportation (FDOT) / Miami-Dade County	**PD&E**
Feasibility Study for SW 8th Street Corridor East of SR 826	Florida Department of Transportation (FDOT) / Miami-Dade County	**PD&E**
Lengthening Eastbound to Northbound left turn lane at SW 8th Street and Tamiami Canal Rd (by closing the median opening allowing access from Northbound SW 76th Avenue to Westbound SW 8th Street)	Florida Department of Transportation (FDOT) / Miami-Dade County	**More detailed analysis needs to be performed in order to evaluate impacts of traffic diversion to SW 74th Avenue**

Appendix A – Technical Memorandum #1 - Project Need Statement

SW 8TH STREET CORRIDOR STUDY - PROJECT NEED STATEMENT TECHNICAL MEMORANDUM #1

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September 2014

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1.0 INTRODUCTION

1.1 Study Purpose

The Miami-Dade Metropolitan Planning Organization (MPO) has retained HNTB to conduct a Corridor Study along SW 8th Street (also known as US 41/State Road 90) between SW 122nd Avenue and SW 74th Avenue. This analysis will assess existing conditions along this important arterial and identify various improvements that will alleviate congestion and improve traffic flow. Figure 1 shows the project location map and the limits of the Corridor Study.

Figure 1 – SW 8th Street Project Location Map

1.2 Prior Efforts

SW 8th Street has been the subject of several studies in the last few years. In June 2005, the MPO conducted a comprehensive Grade Separation Study. This study identified the intersections of SW 107th Avenue and SW 87th Avenue (along SW 8th Street) as candidates for grade separation improvements that would allow more efficient traffic operations.

Following the 2005 Grade Separation Study from the MPO, the Florida Department of Transportation (FDOT) completed a SW 8th Street Corridor Study from the Homestead Extension of the Florida Turnpike (HEFT) interchange to SR 826/Palmetto Expressway interchange in 2007. This analysis indicated that some type of grade separation could improve operations of the intersections of SW 107th Avenue and SW 87th Avenue in order to provide more efficient mobility along SW 8th Street. In addition, this analysis also considered the implementation of a reversible lane system. However, this alternative was deemed difficult to implement, given the large number of intersections and left-turns in the corridor.

In June 2009, FDOT completed a Project Concept Study for the intersection of SW 87th Avenue and SW 8th Street. The analysis favored the implementation of widening of SW 87th Avenue between Flagler Street and SW 8th Street over the implementation of grade-separation of the intersection.

In 2012, FDOT completed a Feasibility Study for the intersection of SW 8th Street and SW 87th Avenue. In this Feasibility Study, various alternatives were developed and evaluated (including grade-separation improvements) which resulted in the grade-separation of SW 8th Street over SW 87th Avenue as the recommended alternative.

Based on the previous studies, various individual grade separation improvements have been identified. However, the main objective of this Corridor Study is to determine the system wide impacts of individual improvement projects on the subarea transportation network.

2.0 EXISTING PLANNING/BACKGROUND DOCUMENTS

2.1 Document Review

The 2035 Long Range Transportation Plan (LRTP) provides the following projects and phasing within the study area:

- Pedestrian facility improvements along SW 8 Street between SW 102nd - 107th Avenue, SW 112th - 122nd Avenue, and SW 76th Court - 82nd Avenue Planning/Construction programmed for 2015 - 2020 (Priority II)
- SW 117th Avenue widening from two to four lanes between SW 8th Street and SW 40 Street (Unfunded)

The 2014 Transportation Improvement Program (TIP) was reviewed and the following relevant projects were identified:

- PD&E/Environmental Management Office Study programmed for SW 8th Street / SW 87th Avenue intersection for 2014 – 2015 (Project # DT4336271)
- Lanes to be added and rehabilitated along SW 107th Avenue between 11th Street and W. Flagler Street (2014 - 2018). These improvements to be included in future analysis (Project # DT4124792 and # DT4124793)
- Resurfacing is planned for SW 8th Street between SW 127th Avenue and the HEFT (Project # DT4291623)
- Construction of SR 836 / NW 87th Avenue interchange improvements. MDX funded
- Florida Turnpike improvements planned at the SW 8th Street interchange
- FDOT Adaptive Signal Control Technology SW 8th Street Pilot Project from SW 74th Avenue to SW 142nd Avenue (2015 - 2017)

A number of projects for the corridor were recommended from earlier studies:

- Recommended grade separation at SW 8th Street and SW 87th and SW 107th Avenues
    - 2005 MPO Grade Separation Study
    - 2012 FDOT SW 87th Avenue Intersection Improvements Concept and Feasibility Study

Recently, a Resurfacing, Restoration, and Rehabilitation (RRR) Project was completed (2013) between the HEFT and SR 826 which implemented operations improvements along the corridor including access management, turbo lanes, and the addition of bicycle lanes.

Currently, a SR-836 Enhanced Bus Service (EBS) is being advanced along SW 8th Street west of SW 107th Avenue with a stop planned at FIU (est. 2019).

Florida International University (FIU) is very active in the corridor.

- $11.4 Million Transportation Investment Generating Economic Recovery Grant (TIGER) to construct a pedestrian bridge across SW 8th Street at SW 109th Avenue (Planning efforts were completed and the Request for Proposal is underway)
- The campus Master plan has some of the following emphases
  - Complete Streets improvements
  - On/off-campus ITS infrastructure
  - Focused effort to reduce automobile trips to campus – ridesharing, non-motorized trips, increased transit service/use
  - Student population is forecast to grow 55% in the next 20 years
- FIU is constructing a new parking garage along SW 8th Street between SW 112th and 109th Avenues. The garage will contain a new transit terminal and a number of Miami-Dade Transit vehicles in the area will be rerouted to serve the new location.

FIU and the City of Sweetwater have been working to change the zoning in the area immediately north of the FIU campus to what is now called "The University District", to:

- Encourage increased density and floor area ratio (FAR) to allow for the construction of taller developments (up to 170 feet)
- Encourage student housing/commercial/mixed used developments in anticipation of more students in the future

The Turnpike has completed a draft Design Traffic Memorandum for the HEFT interchange at SW 8th Street between SW 122nd Avenue and SW 117th Avenue. Coordinating these interchange improvements with the SW 8th Street corridor improvements will maximize the operational benefits. The programmed interchange improvements include:

- Reconstruction of the southbound to westbound tangent ramp and replacement of the free-flow right-turn lane with three (3) right-turn lanes controlled by the existing traffic signal
- Reconstruction of the southbound to eastbound loop ramp to replace the dual northbound right-turn lanes with triple right-turn lanes and extend the storage length
- Realign and widen the northbound off-ramp terminal intersection to replace the single left-turn lane and free-flow right-turn lane with two (2) left-turn lanes and two (2) right-turn lanes. All turning lanes will be controlled by the existing signal.
- Increase the westbound left-turn storage lane by approximately 200 feet at the intersection of SW 8th Street and SW 122nd Avenue

- Increase the westbound left-turn storage lane by approximately 50 feet at the intersection of SW 8th Street and the HEFT west ramps

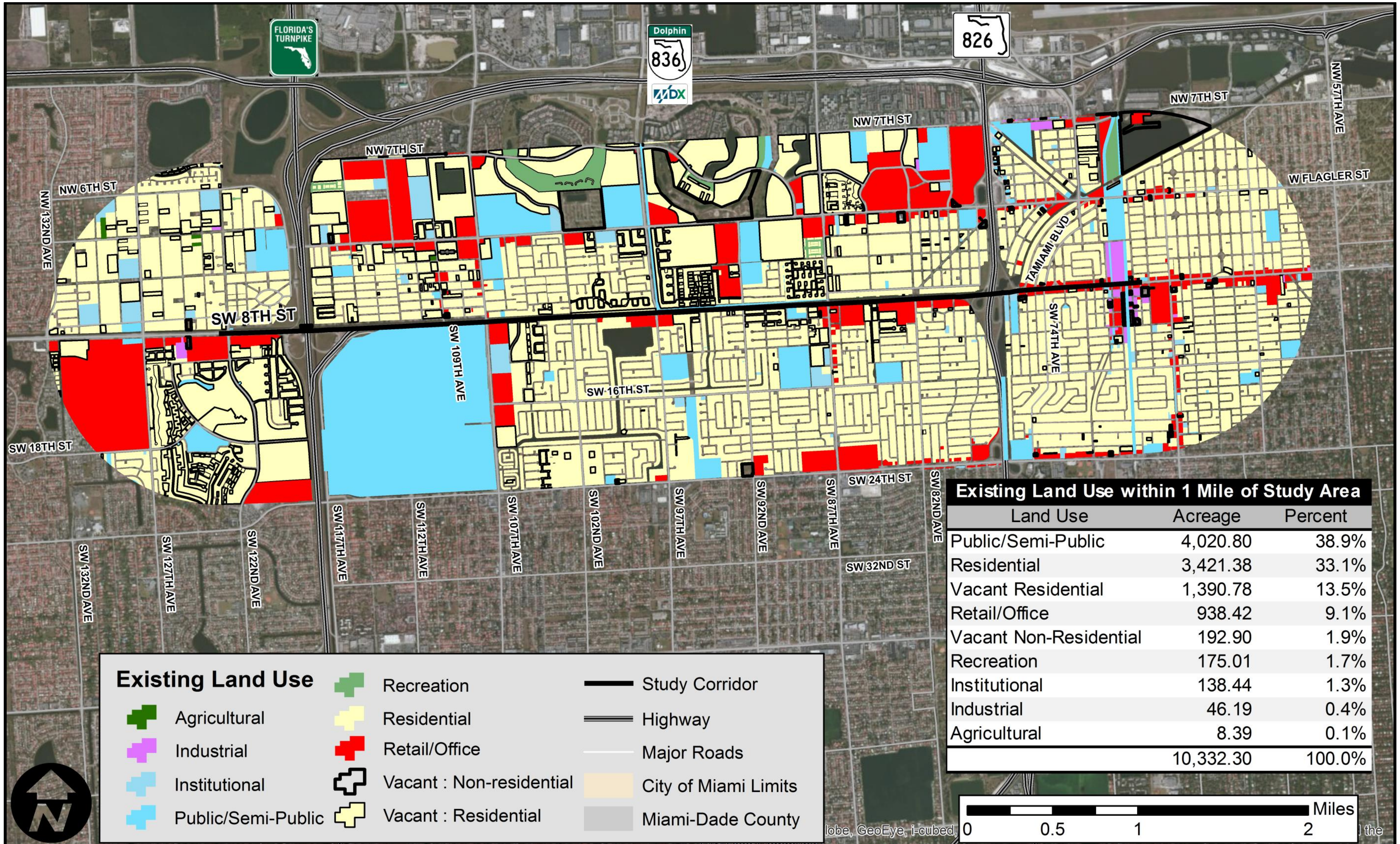
- Revision of the signal phasing and timing to account for the new intersection geometry. The decision for allowing right turns on red will be based on sight distance, local preference, and other safety considerations.

2.2 Study Area Land Use

Figure 2 shows the existing land use for the corridor as presented in the Miami–Dade County Comprehensive Development Management Plan (CDMP). The corridor consists of low-density residential development with strip-commercial along the major intersections. This segment of SW 8th Street is mostly built out with no vacant parcels and significant changes to the future land uses are not anticipated. SW 8th Street is unique in that the Tamiami Canal is adjacent to the north edge of the right-of-way. In fact, the northern right-of-way line for SW 8th Street is the southern bank of the canal. The location of the canal restricts development along the north side of the roadway and limits the number of local streets that intersect SW 8th Street from the north. Single family residential development backs onto the north side of the canal.

FIU represents the largest single land use in the study area bordered by SW 8th Street, SW 117th Avenue, SW 24th Street and SW 107th Avenue. The major entrance to the campus is at SW 8th Street and SW 112th Avenue. The area along SW 8th Street is predominantly used for parking garages.

Figure 2 – Existing Land Use



Existing Land Use within 1 Mile of Study Area

Land Use	Acreage	Percent
Public/Semi-Public	4,020.80	38.9%
Residential	3,421.38	33.1%
Vacant Residential	1,390.78	13.5%
Retail/Office	938.42	9.1%
Vacant Non-Residential	192.90	1.9%
Recreation	175.01	1.7%
Institutional	138.44	1.3%
Industrial	46.19	0.4%
Agricultural	8.39	0.1%
	10,332.30	100.0%

Source: Miami Dade County CDMP

3.0 CORRIDOR ISSUES

The SW 8th Street study area corridor is a four mile segment of roadway between SR 826 (the Palmetto Expressway) on the east and the HEFT on the west. The study area corridor is a segment of US Route 41 and State Road 90 that runs from the city of Naples on the west coast of Florida to Miami and Downtown Miami on the east coast of Florida.

The corridor serves two major functions:

1. Movement of commuter traffic from the far western suburbs to job areas further east towards the Miami International Airport and Downtown, and

2. Connection of the regional network to Florida International University's Main Campus.

In the study area, an obvious traffic issue facing the corridor occurs during the morning peak when the eastbound traffic hits the bottleneck caused by the lane drop in the eastbound direction at SW 87th Avenue. In the AM peak, traffic is building as it moves from west to east toward SR 826 when it hits the drop from 4 lanes to 3 lanes causing backups along the corridor in the morning. An additional issue for eastbound traffic is a preponderance of non-signalized, "T" intersections and driveways along the south side of the corridor. Westbound traffic in the afternoon is congested mainly at the SW 107th Avenue intersection and west of the Turnpike. Queues are evident along north/south cross streets such as SW 87th Avenue.

4.0 ROADWAY DATA COLLECTION

Information in reference to the different roadway configurations at the intersections and along SW 8th Street was gathered using aerial photographs and design plans for recently completed projects, including FDOT FM. No. 425145-1-52-01 (which implemented resurfacing and some minor improvements along SW 8th Street).

4.1 Overview of SW 8th Street

SW 8th Street is a segment of State Road 90 within Miami-Dade County that runs from West Miami-Dade County to Brickell Avenue in Downtown Miami. Within the study area, SW 8th Street is a two-way divided arterial running east-west. SW 8th Street has various cross sections along its limits.

4.2 Typical Sections

Table 1 lists the typical sections by segment and Figures 3 through 8 graphically depict the cross sections within the study area.

Table 1 – Typical Section by Segment

Segment	From	To	EB Lanes	WB Lanes	Total Lanes	Distance (miles)
A	SW 122 Ave	HEFT On-Ramp	4	4	8	0.33
B	HEFT On-Ramp	SW 112 Ave	3	3	6	0.70
C	SW 112 Ave	SW 107 Ave	4	3	7	0.49
D	SW 107 Ave	SW 88 Ave	4	4	8	1.89
E	SW 88 Ave	SR 826 (western) On-Ramp	3	3	6	0.93
F	SR 826 (western) On-Ramp	SR 826 (eastern) On-Ramp	3	2	5	0.21
G	SR 826 (eastern) On-Ramp	SW 74 Ave	2	2	4	0.25

Figure 3 – Typical Sections by Segment

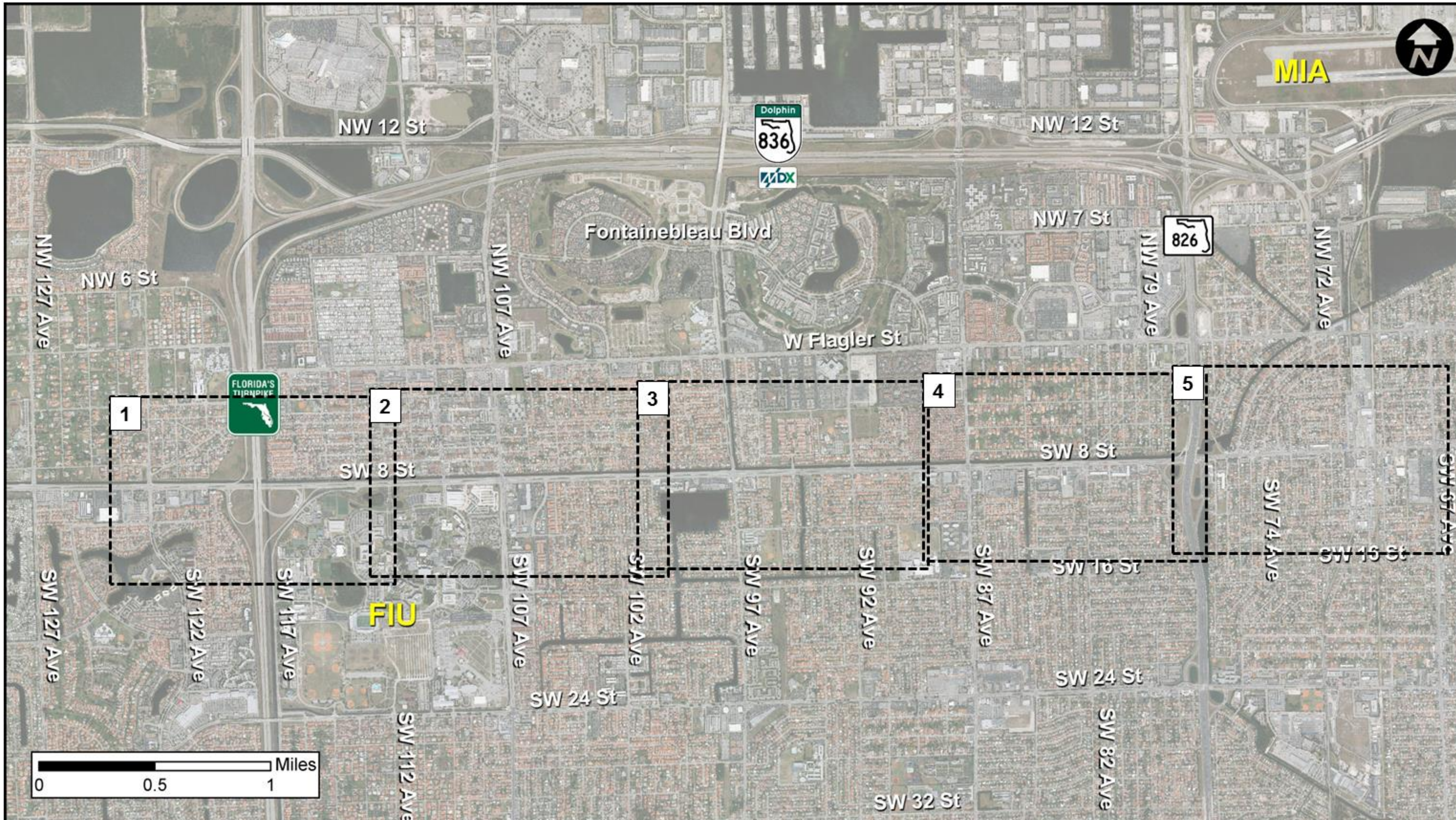


Figure 4 – Typical Sections – Segment 1

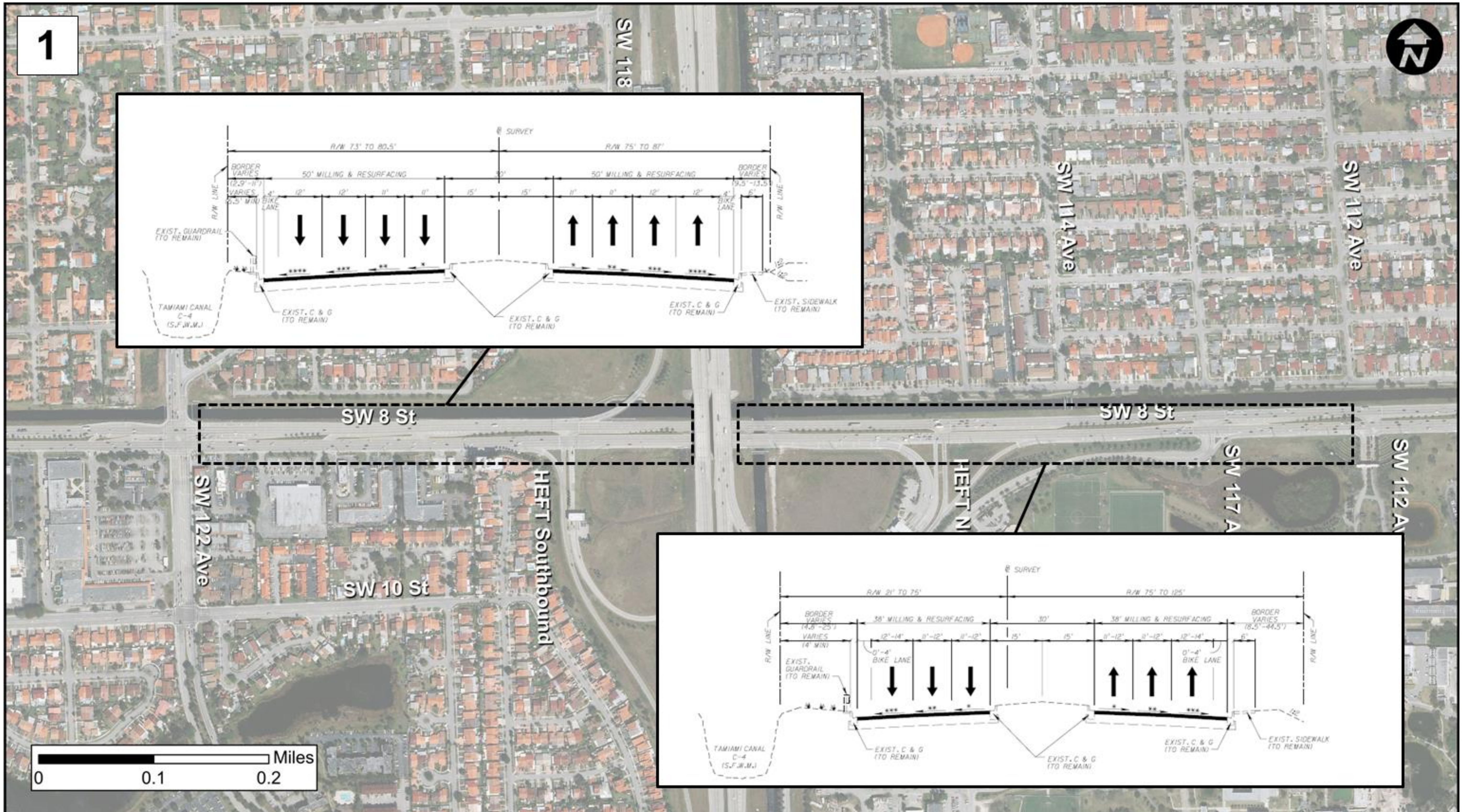


Figure 5 – Typical Sections – Segment 2

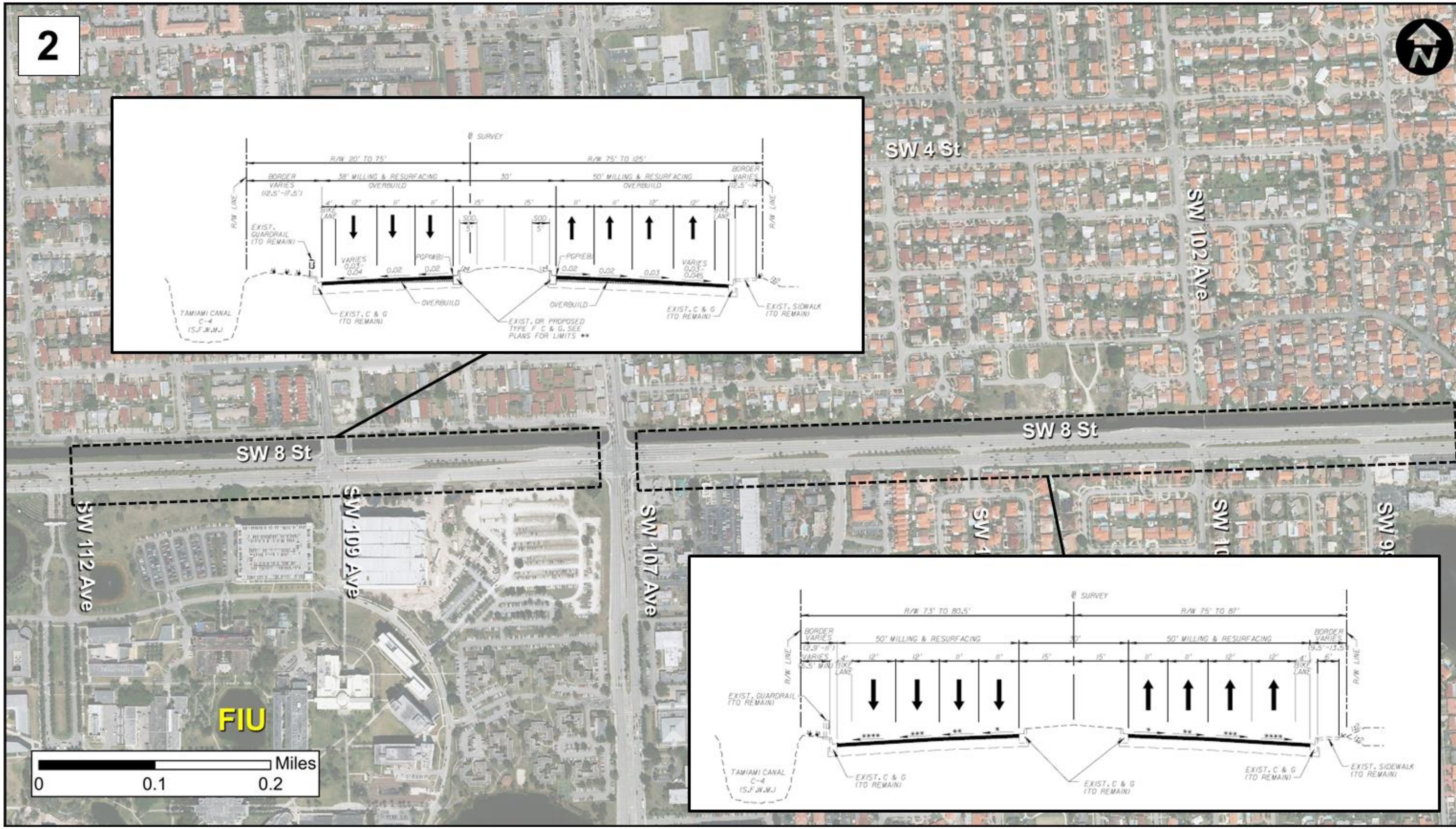


Figure 6 – Typical Sections – Segment 3

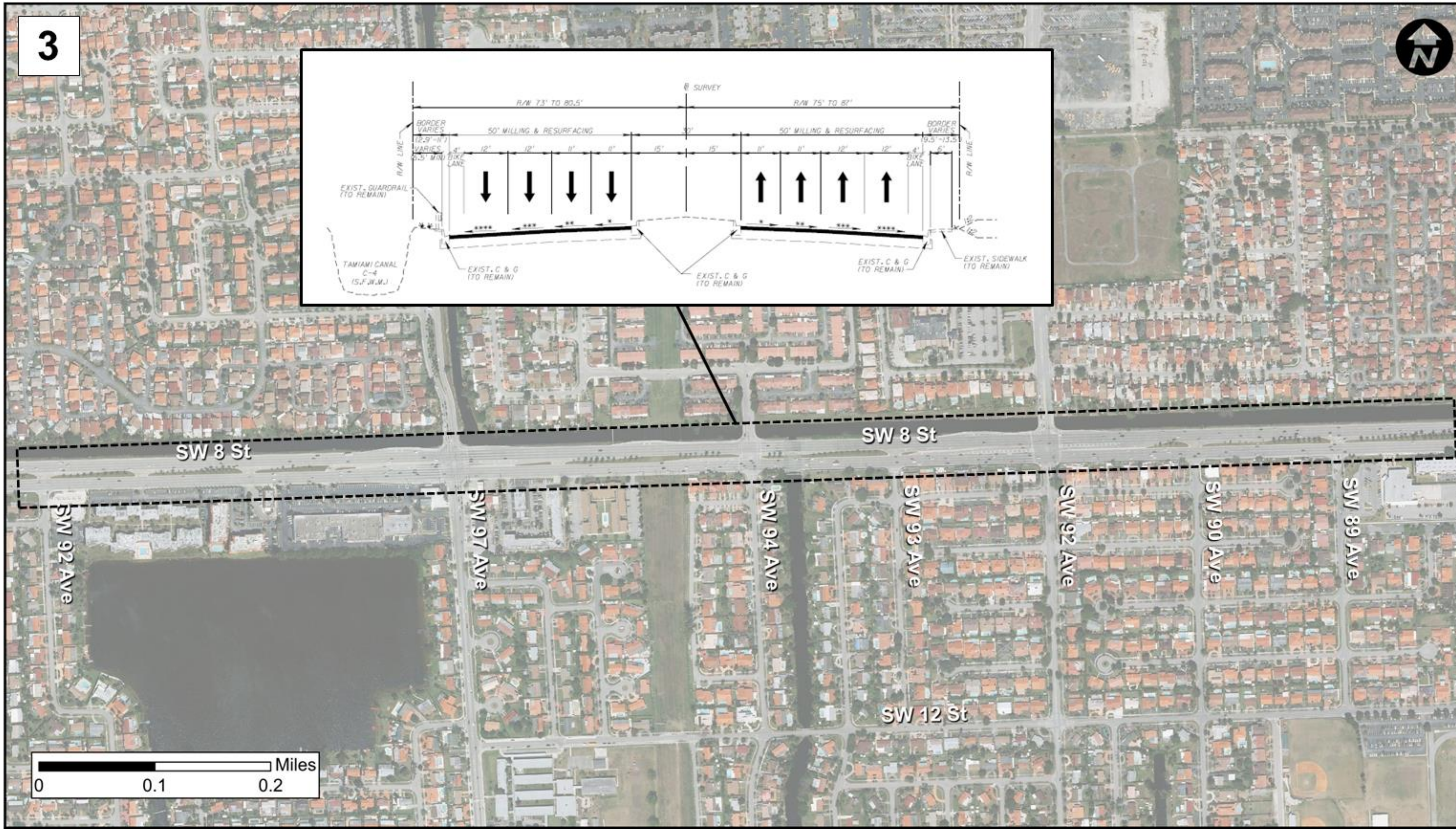


Figure 7 – Typical Sections – Segment 4

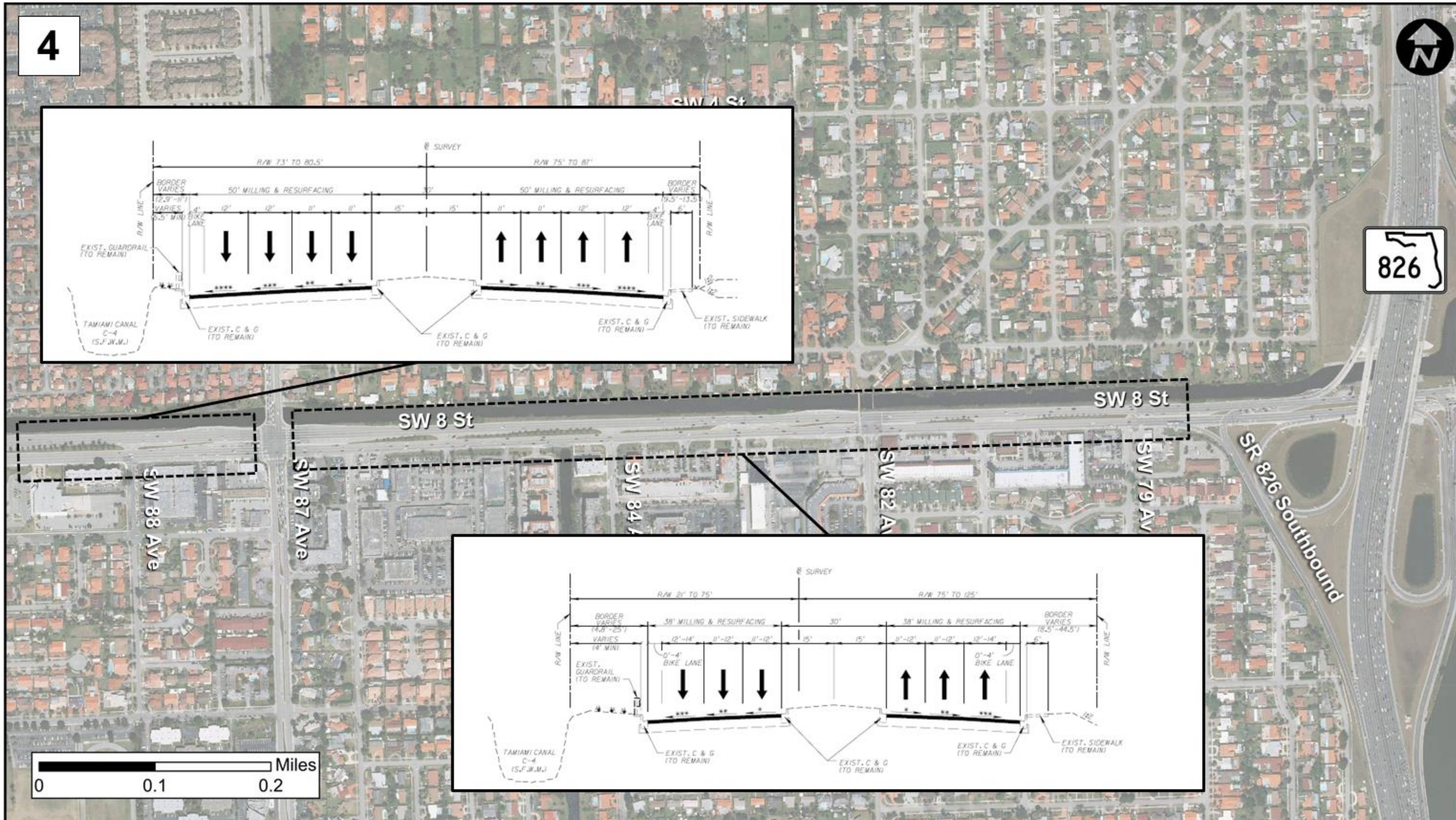
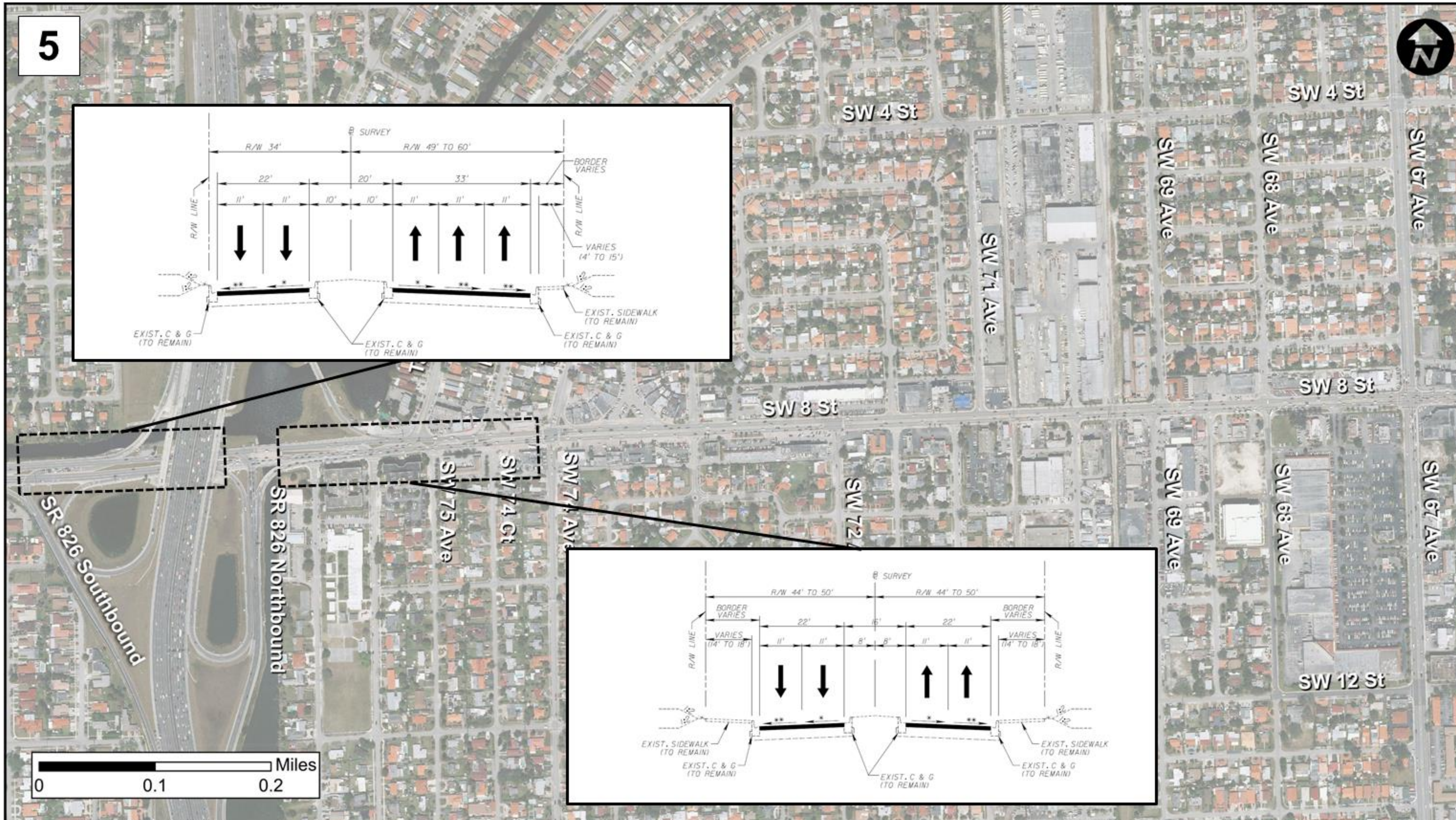


Figure 8 – Typical Sections – Segment 5



4.3 Functional Classification

SW 8th Street has several functional classifications:

1. From SW 177th Avenue to SW 157th Avenue it is classified as Rural Principal Arterial

2. From SW 157th Avenue to Brickell Avenue it is classified as Urban Other Principal Arterial

4.4 Horizontal and Vertical Geometry

SW 8th Street is extremely flat but with enough slope to maintain drainage. The roadway was generally constructed with a high point in the profile every 600 feet and a low point every 600 feet. The profile of the roadway has a low point of 6.68 feet and a high point of 9.24 feet; basically having lower elevation in the east and higher elevation in the west. Nowhere along the corridor does the grade reach 1%.

4.5 Intersection Lane Diagrams

Figures 9 through 14 below depict the existing lanes at each intersection.

Figure 9 – Intersection Lane Diagram by Segment

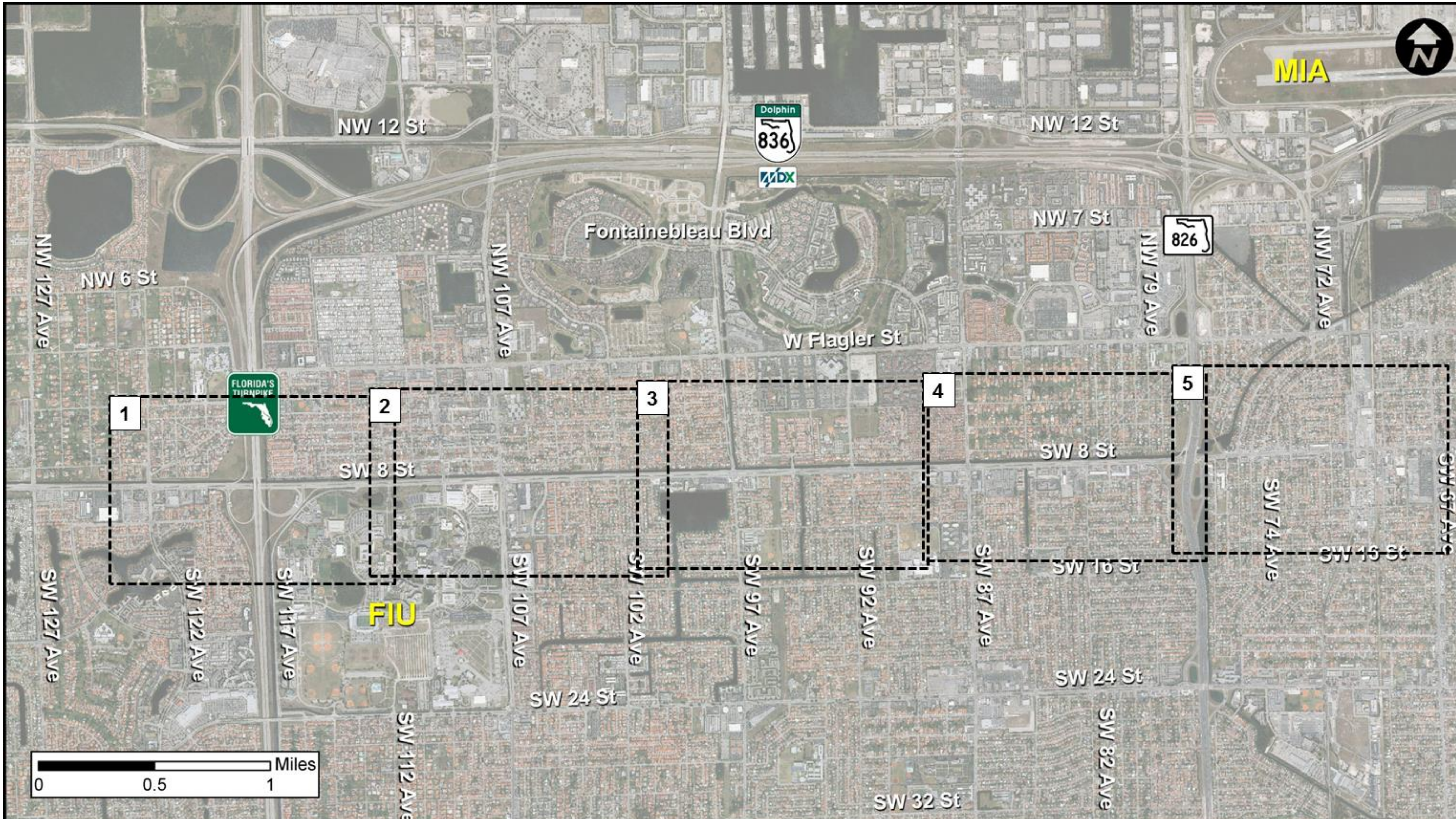


Figure 10 – Intersection Lane Diagram – Segment 1

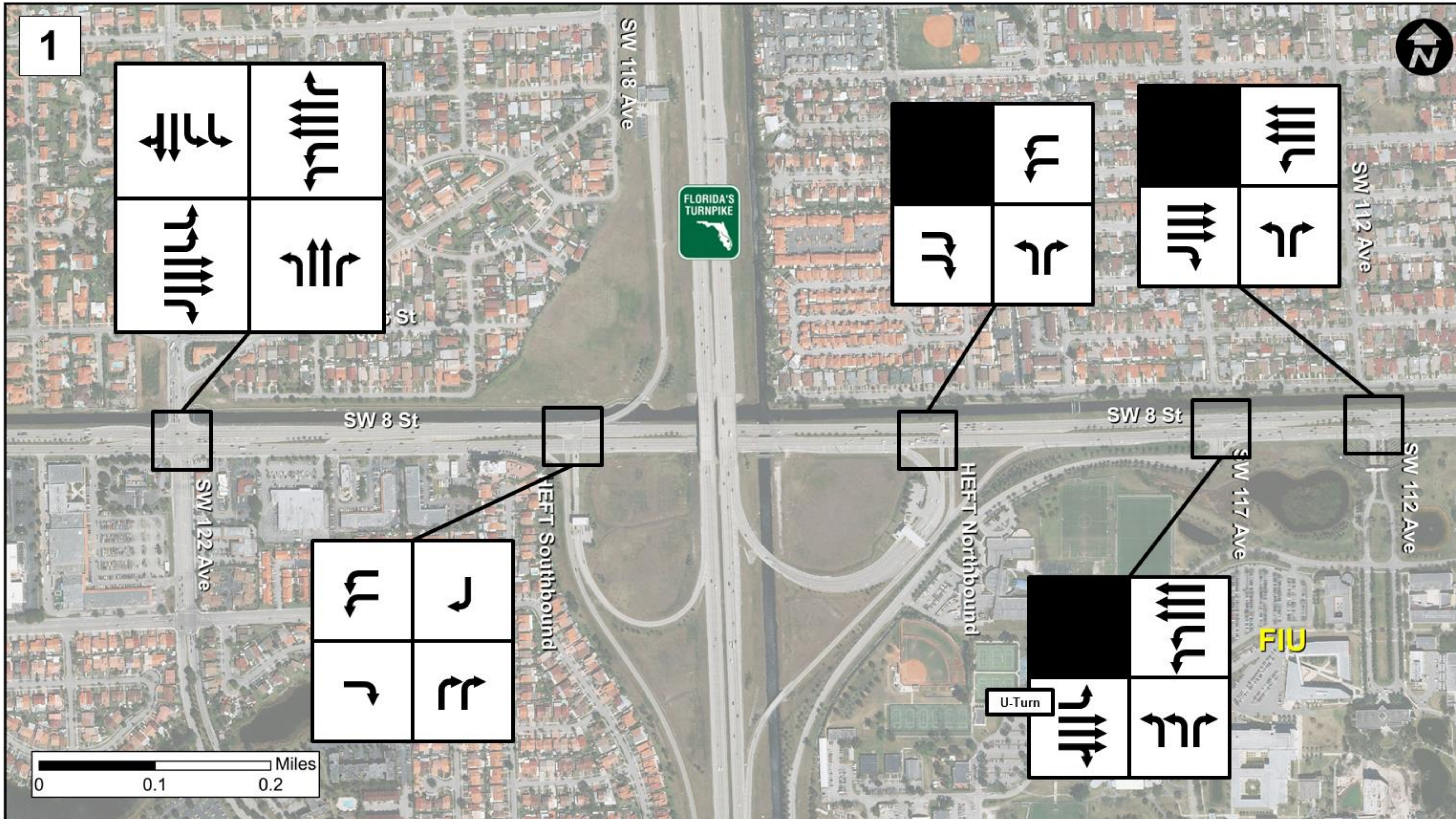


Figure 11 – Intersection Lane Diagram – Segment 2

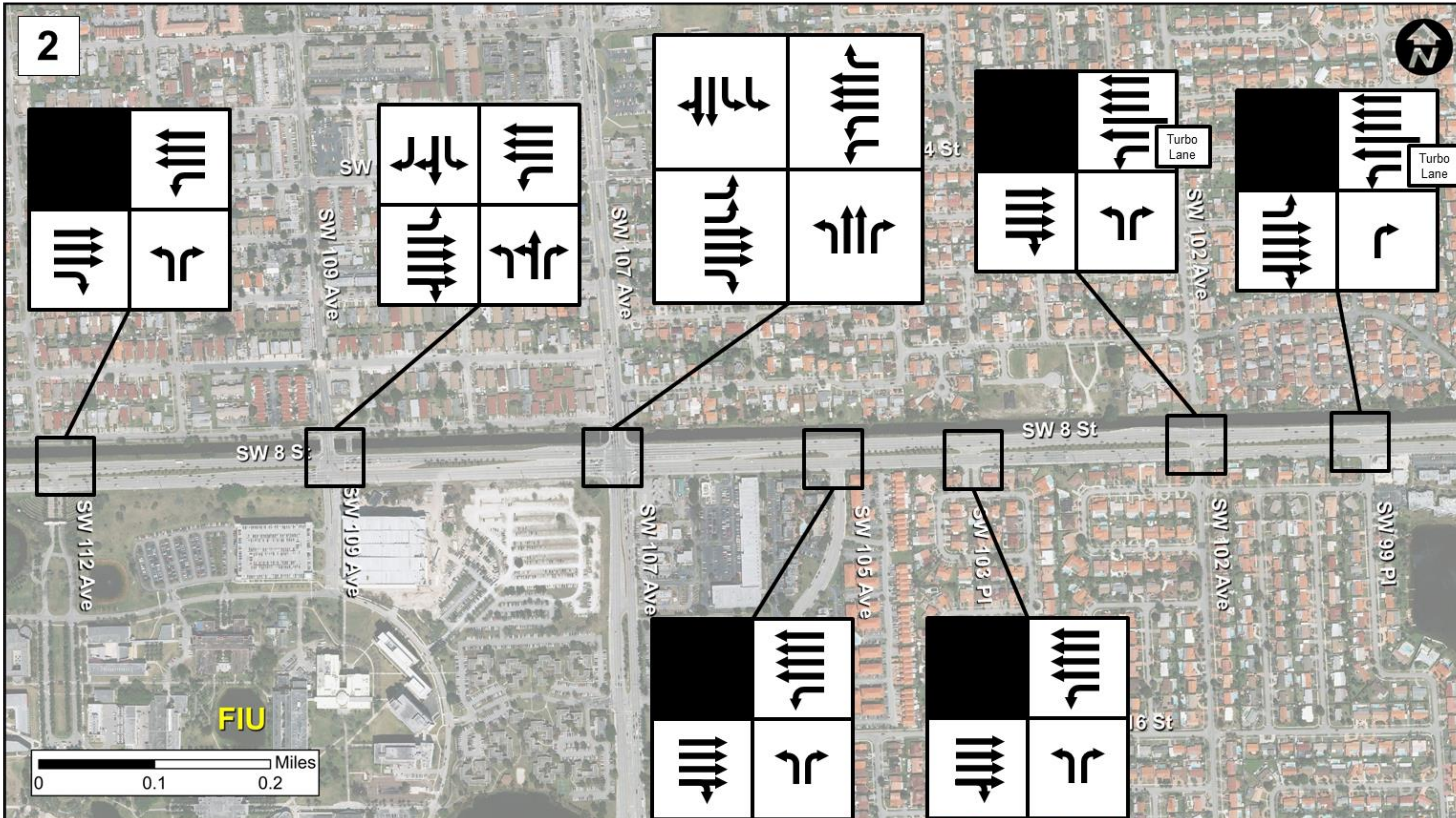


Figure 12 – Intersection Lane Diagram – Segment 3

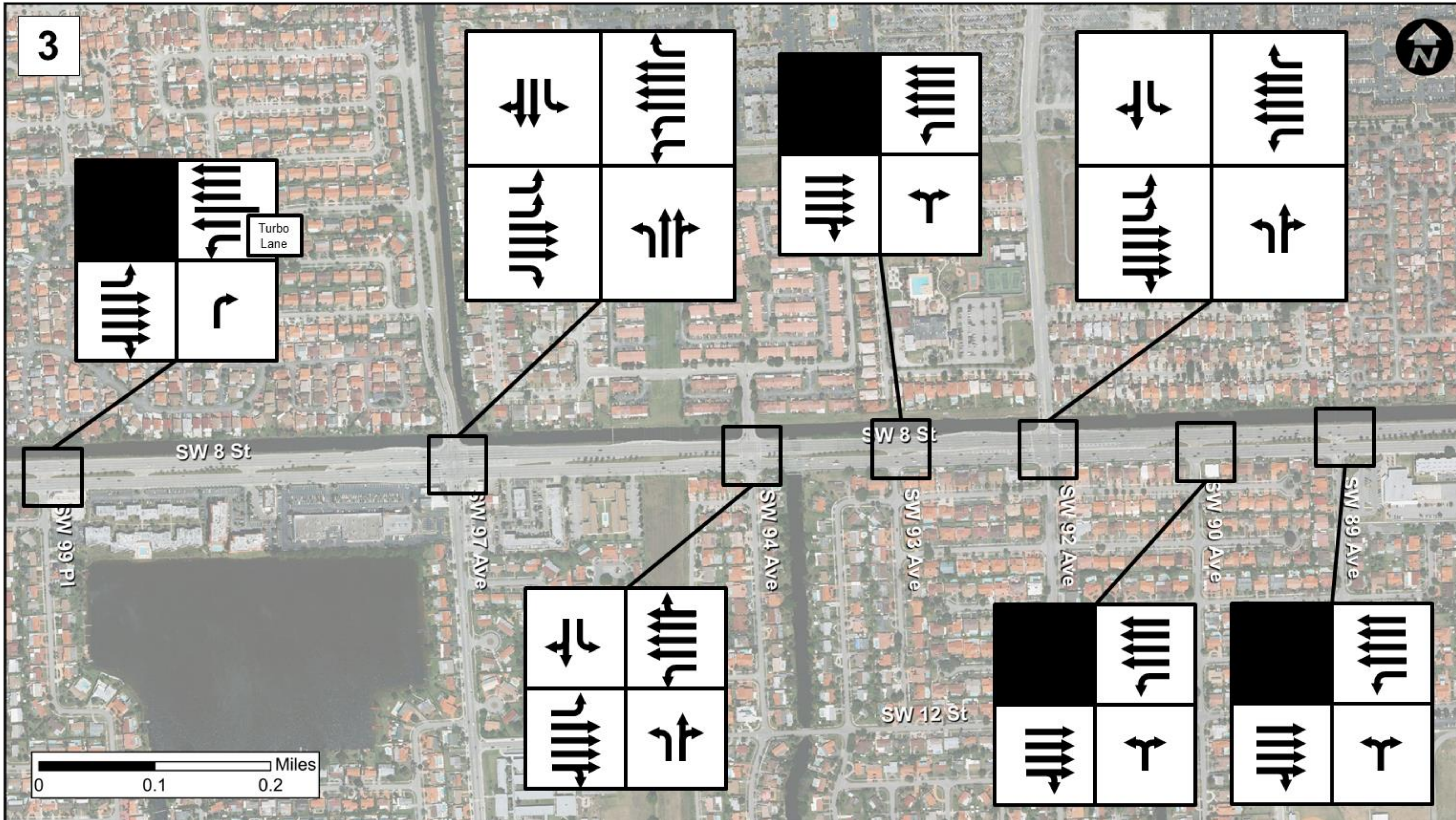


Figure 13 – Intersection Lane Diagram – Segment 4

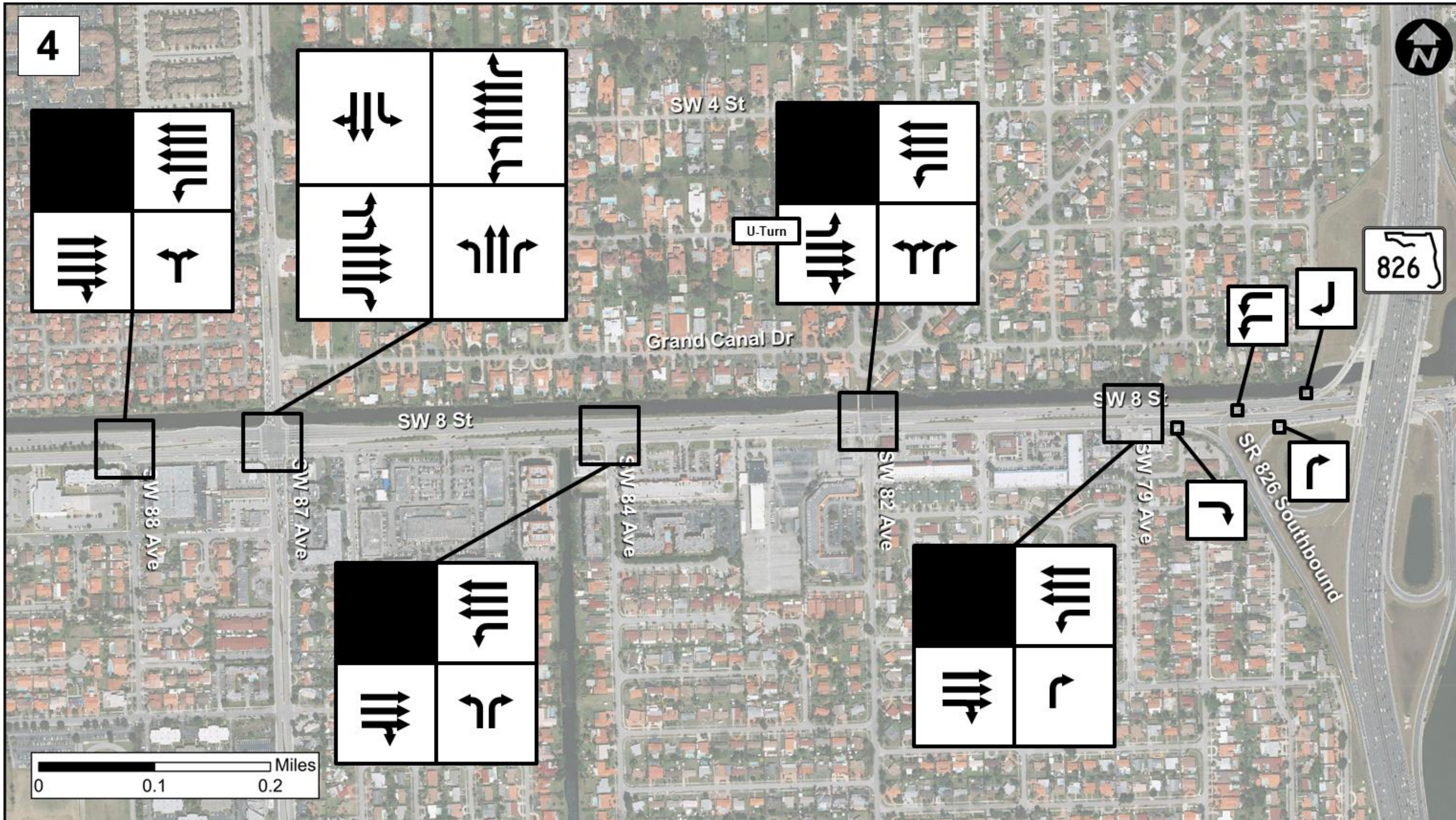
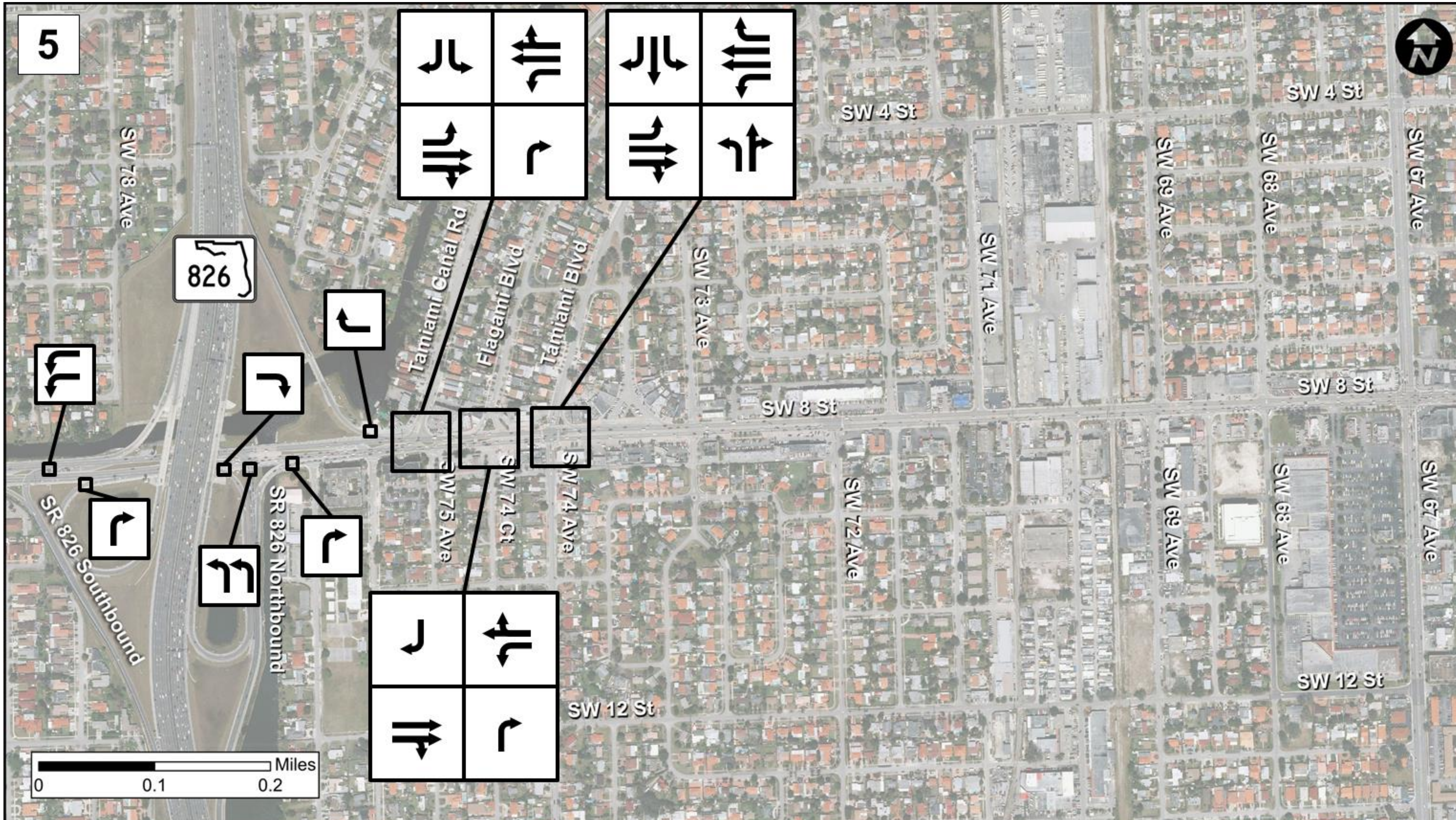


Figure 14 – Intersection Lane Diagram – Segment 5



4.6 Drainage Structures/System

SW 8th Street collects storm water via a Type F curb and gutter system on both the north and south side of the street and the median. Catchment basins occur every 600 feet and are connected by 15 to 18 inch pipes to the south side of the street. There are French Drains and pipes that run alternately under most of the median to provide collection of the storm water from the median. All of the water that is collected from the roadway is transported to a 24 inch sanitary sewer line that runs along the south side of the SW 8th Street. Inlets and underground pipes frequently do not line up between the northside of the roadway and the southside, due to variations in the profile between the westbound lanes and the eastbound lanes. In those cases where the drainage from the northside of the street does not tie directly to the main on the southside of the street, it ties into a pipe under the median to drain. In no case does the drainage system outfall to the Tamiami Canal.

4.7 Level of Service (LOS)

The following figures (obtained from FDOT Generalized Planning tables) depict the existing Level of Service within the study area. This generalized information will be confirmed during the conduct of the detailed existing traffic operational analysis.

As Figures 15 and 16 indicate, it appears that the corridor is operating at deficient levels of service.

Figure 15 – SW 8th Street Daily LOS 2013

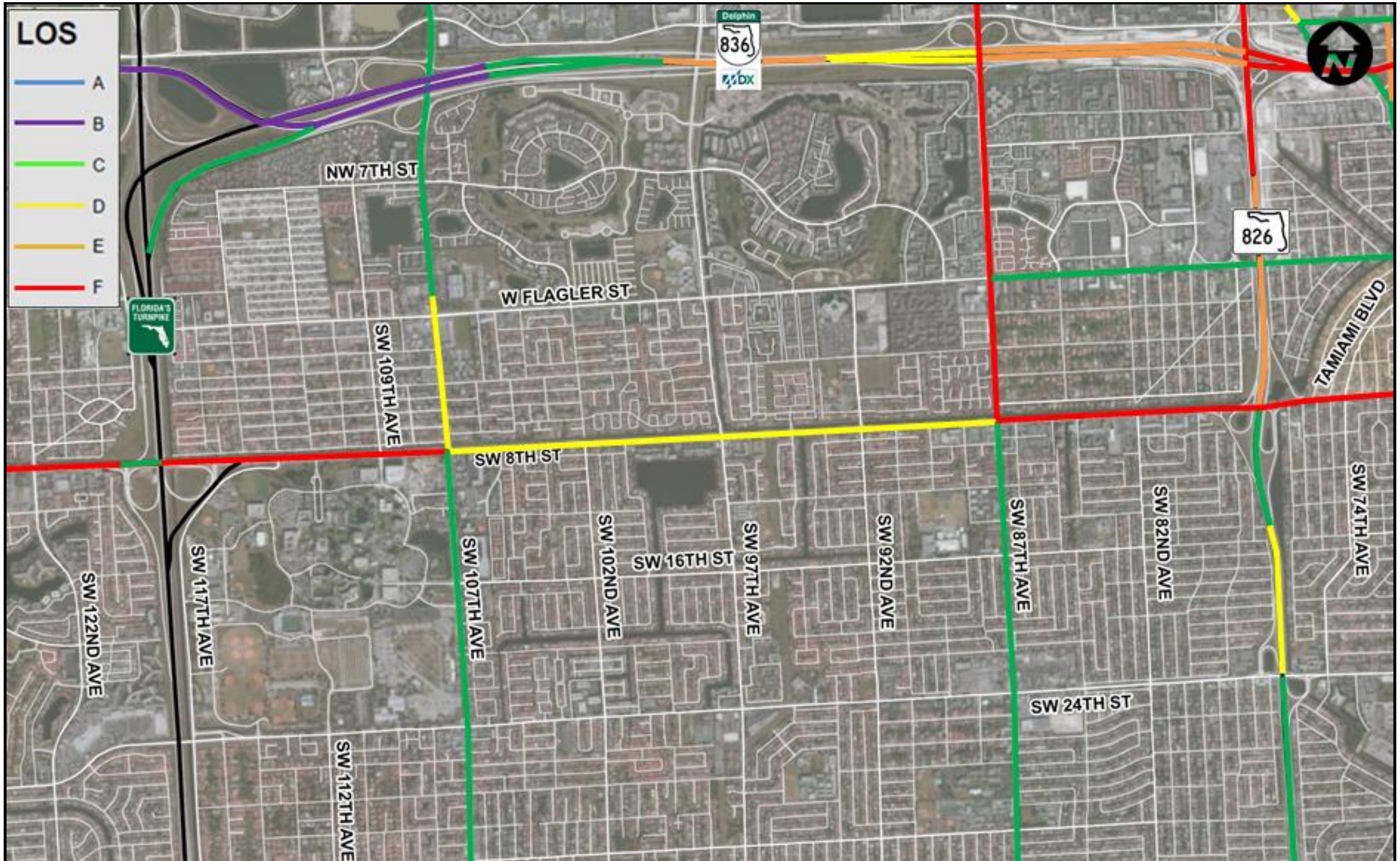
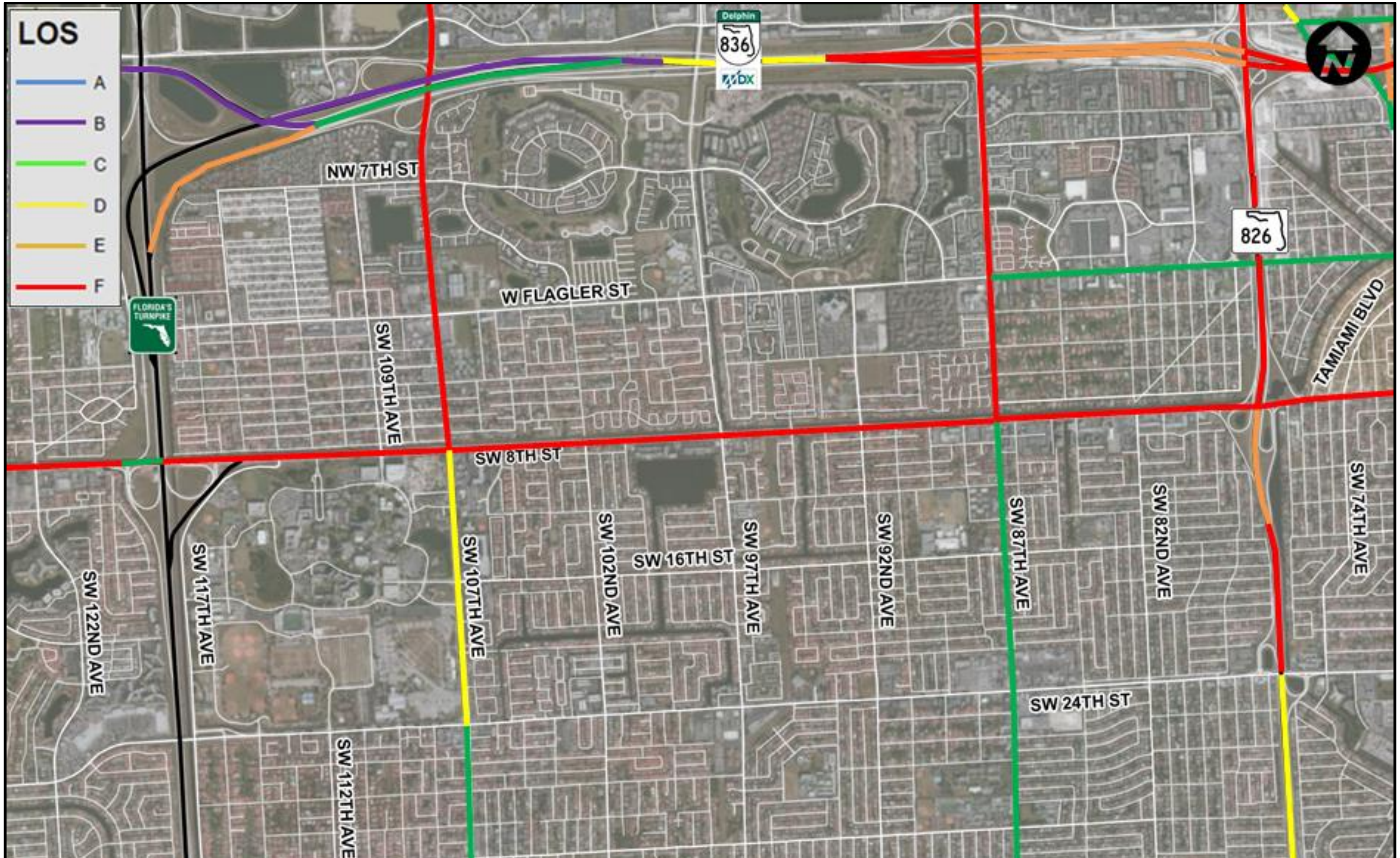


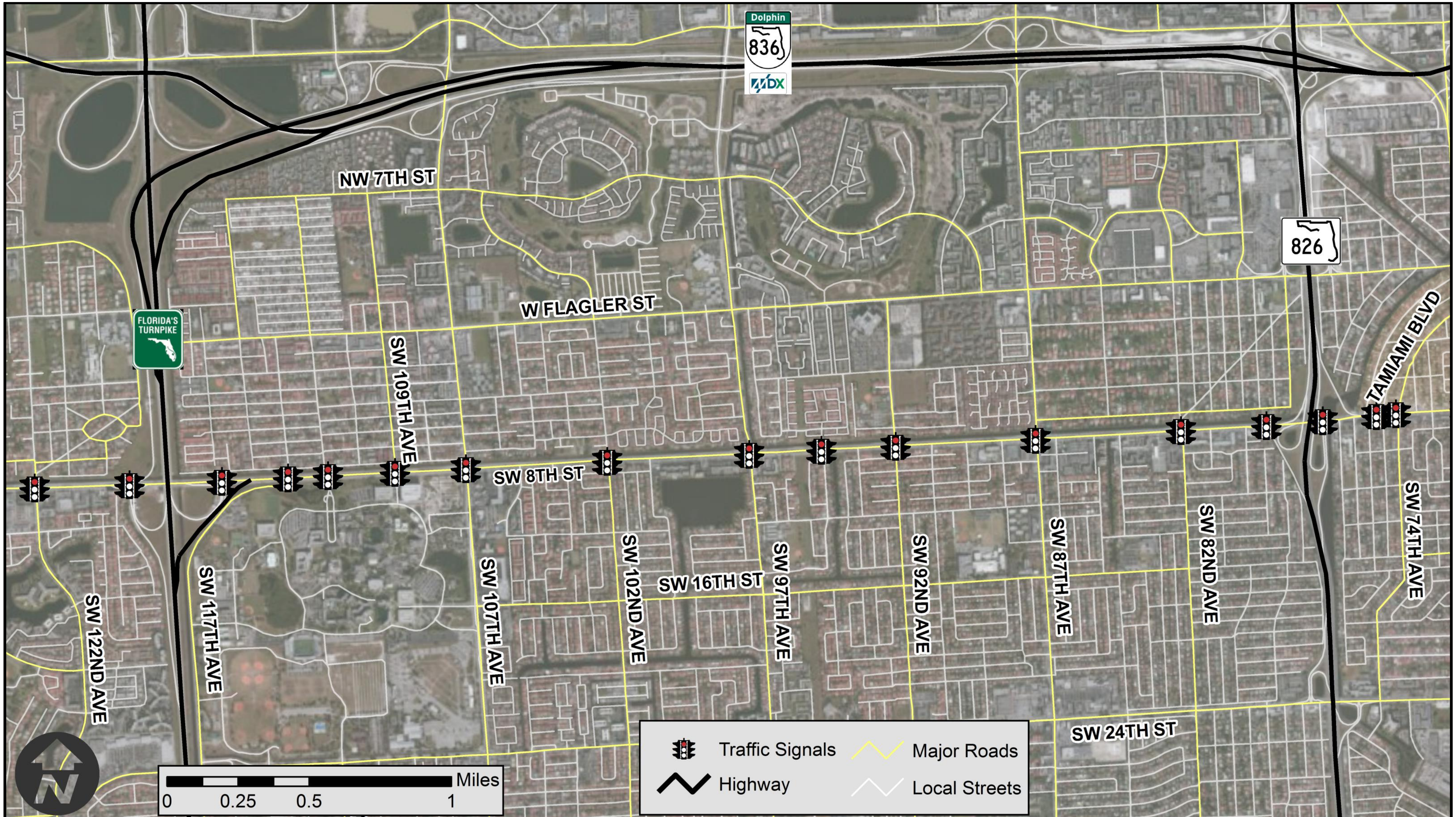
Figure 16 – SW 8th Street PM Peak LOS 2013



4.8 Location of Traffic Signals

Figure 17 shows the location of traffic signals within the study area. Due to the many traffic signals along the corridor, special attention was paid to how best to analyze and simulate traffic conditions along the corridor. Using Simtraffic, which can better optimize traffic signals, was recommended and selected as the simulation model for assessment.

Figure 17 – Traffic Signal Locations



5.0 TRAFFIC AND SAFETY

5.1 Existing Network

The following is a description of the major roadways within the study area:

SW 122nd Avenue

This County owned road runs in a north-south direction and provides for a two-lane (one-lane in each direction) undivided urban typical section, north of SW 8th Street. North of SW 8th Street, SW 122nd Avenue provides access to residential neighborhoods. South of SW 8th Street it is a six-lane roadway (3 lanes in each direction) undivided arterial with left turn lanes in the northbound and southbound directions, extending from south of SW 8th Street to SW 10th Street. South of SW 10th Street, SW 122nd Avenue narrows down to a four-lane (2 lanes in each direction) divided arterial. The speed limit along SW 122nd Avenue is 30 miles per hour (mph). The Functional Classification is Major Urban Collector.

Homestead Extension of the Florida Turnpike (HEFT)

This freeway provides a nine-lane section in the vicinity of the interchange with SW 8th Street (four lanes in the northbound direction and five lanes in the southbound direction). It is categorized as a Principal Urban Arterial Freeway and Expressway based on the Functional Classification categories. The speed limit along the HEFT is 60 mph.

SW 117th Avenue

This County owned road is located only on the south segment of SW 8th Street. It is a two lane undivided road that provides access to the west side of the FIU campus. The speed limit on this road is 30 mph. The Functional Classification is Minor Urban Arterial. A school zone speed limit sign is located on the south leg of this intersection in the north/south directions.

SW 112th Avenue

This roadway intersects SW 8th Street in a T-configuration, from the south. It only provides for a three-leg intersection, there is not a north leg. It is a four-lane (two lanes in each direction) divided roadway and it also provides access to and from the FIU main campus. The speed limit along SW 112th Avenue is 25 mph. The Functional Classification is Urban Local Road.

SW 109th Avenue

The northern segment of this roadway is a two lane (one in each direction) undivided urban roadway including sections with a two-way left turn lane painted median. The southern segment is a five-lane divided road with two lanes in the southbound direction providing access to the FIU main campus and three lanes in the northbound direction with a left turn lane, shared left thru lane and a right turn lane. The speed limit along this roadway on the north section is 30 mph and on the south section is 20 mph.

SW 107th Avenue

This is a State Road (SR 985) that runs in a north-south direction. Geometrically, it provides a four-lane (two lanes in each direction) urban typical section with a raised median, south of SW 8th Street. North of SW 8th Street it provides a four-lane, undivided typical section with a reversible painted left-turn lane, separating both directions. The speed limit along SW 107th Avenue in proximity to SW 8th Street is 40 mph. This roadway is programmed to undergo a widening by 2016. The Functional Classification is Urban Minor Arterial. A school zone speed limit sign is located on the north leg of this intersection in the north/south directions.

SW 102nd Avenue

This roadway is only located on the south side of SW 8th Street and is a two lane (one in each direction) undivided urban roadway. The Functional Classification is Major Urban Collector. The speed limit for this road is 35 mph.

SW 97th Avenue

This roadway is a major urban collector roadway that provides a four lane (two lanes in each direction) typical section with a raised median on the northern segment. On the southern segment it provides a two-lane undivided typical section with a reversible painted left-turn lane, separating both directions. The speed limit along SW 97th Avenue is 35 mph. The Functional Classification is Urban Minor Arterial. A school zone speed limit sign is located on the south leg of this intersection in the north/south directions.

SW 94th Avenue

This roadway provides a two lane (one in each direction) typical section. The speed limit along SW 94th Avenue is 35 mph. The Functional Classification is Urban Local.

SW 92nd Avenue

This roadway is also a major urban collector roadway that provides an undivided four-lane (two lanes in each direction) typical section on the northern segment. On the southern segment it provides a two-lane undivided typical section. The speed limit on the northern end is 30 mph and the southern segment is 35 mph. This roadway does not continue north of West Flagler Street.

SW 87th Avenue

This roadway provides a divided four-lane (two lanes in each direction) typical section. Its Functional Classification is a Minor Urban Arterial. Its speed limit is 40 mph.

SR 826/Palmetto Expressway

This expressway is categorized as a Principal Urban Arterial Freeway and Expressway based on the Functional Classification categories. It provides a nine-lane section in the vicinity of the interchange with SW 8th Street (four lanes in the northbound direction and five lanes in the southbound direction). The speed limit is 55 mph.

SW 76th Avenue

This minor roadway provides a two-lane undivided typical section on the south side of SW 8th Street. A school zone speed limit sign is located in the north/south directions.

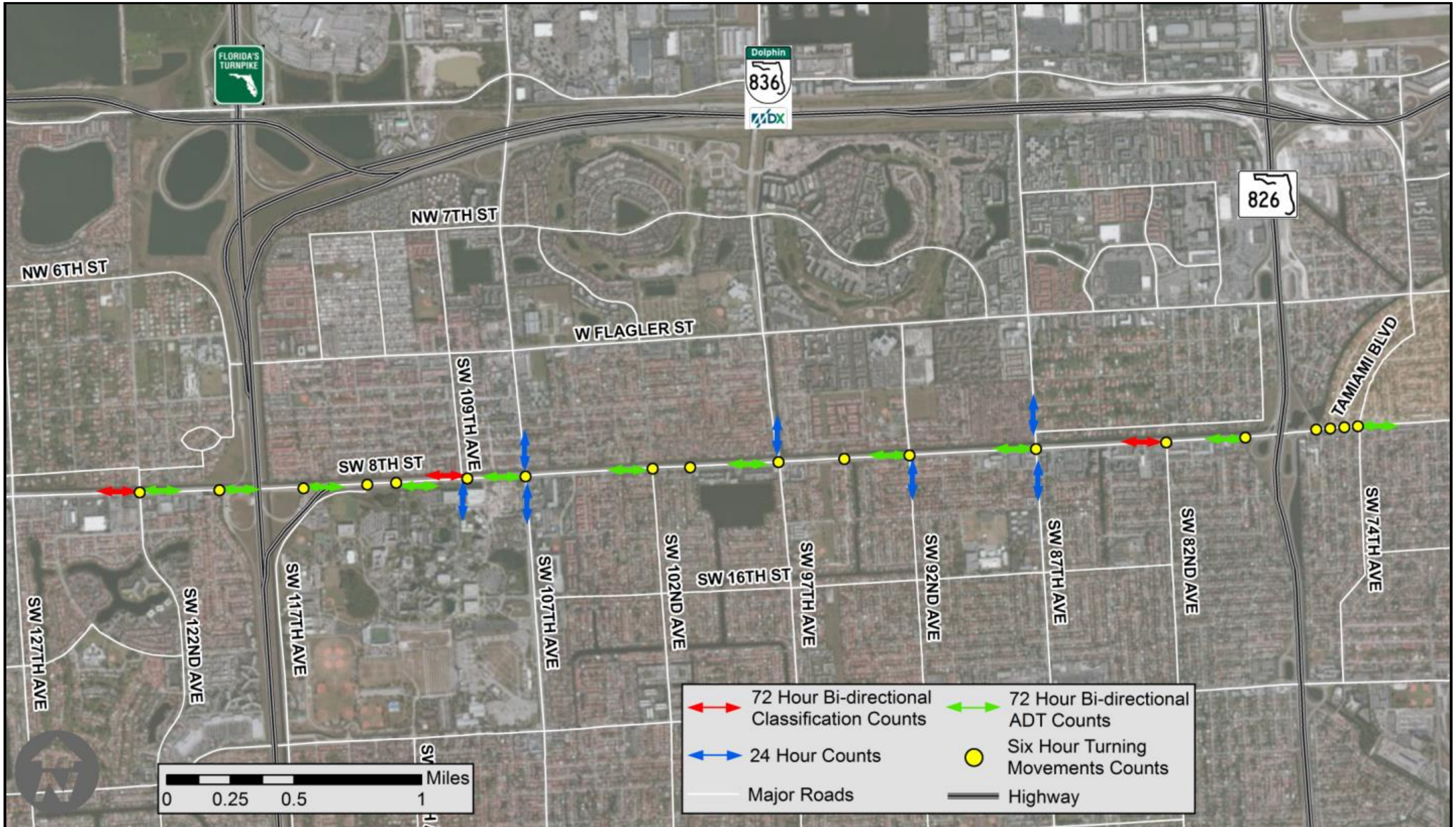
SW 74th Avenue

This roadway provides a two-lane undivided typical section. The Functional Classification is Major Urban Collector. The speed limit is 30 mph.

5.2 Data Collection

A traffic data collection plan was prepared in order to gather all the necessary data to complete the traffic analysis for the SW 8th Street Corridor Study. The traffic data collection plan took place for two-weeks from March 11-13, 2014 and from March 18-20, 2014. Figure 18 illustrates the type of data collected.

Figure 18 – Traffic Count Locations



72 Hour Bi-directional Classification Counts

1. SW 8th Street/Tamiami Trail west of NW 122nd Avenue
2. SW 8th Street/Tamiami Trail west of SW 109th Avenue
3. SW 8th Street/Tamiami Trail west of SW 82nd Avenue (about 1,300 feet east of NW 87th Avenue)

Appendix A includes the raw data for 72-Hour Classification Counts

72 Hour Bi-directional ADT Counts

1. SW 8th Street/Tamiami Trail about 800 feet east of NW 122nd Avenue
2. SW 8th Street/Tamiami Trail west of SR 821/HEFT
3. SW 8th Street/Tamiami Trail east of SR 821/HEFT (between the EB and WB intersection from NB ramp from the HEFT)
4. SW 8th Street/Tamiami Trail west of SW 112th Avenue
5. SW 8th Street/Tamiami Trail west of SW 107th Avenue
6. SW 8th Street/Tamiami Trail west of SW 102nd Avenue (between SW 105th Avenue and SW 103rd Place)
7. SW 8th Street/Tamiami Trail west of SW 97th Avenue (about 760 feet west of NW 97th Avenue)
8. SW 8th Street/Tamiami Trail west of SW 92nd Avenue (between NW 93rd Place and NW 93rd Avenue)
9. SW 8th Street/Tamiami Trail west of SW 87th Avenue (between SW 89th Avenue and SW 88th Avenue(
10. SW 8th Street/Tamiami Trail west of SR 826/Palmetto Expressway (about 250 feet west of SW 79th Avenue)
11. SW 8th Street/Tamiami Trail east of SW 74th Avenue

72-Hour Cross-Street Counts

1. SW 87th Avenue north of SW 8th Street - Bi-Directional
2. SW 87th Avenue south of SW 8th Street – Bi-Directional
3. SW 92nd Avenue south of SW 8th Street – Bi-Directional
4. SW 97th Avenue north of SW 8th Street) – Bi-Directional
5. SW 107th Avenue north of SW 8th Street – Bi-Directional
6. SW 107th Avenue south of SW 8th Street – Bi-Directional
7. SW 109th Avenue south of SW 8th Street – Bi-Directional

Appendix B includes the raw data for 72-Hour Counts for SW 8th Street and Cross Streets

Six Hour Turning Movements Counts

1. SW 8th Street/Tamiami Trail and SW 122nd Avenue
2. SW 8th Street/Tamiami Trail and SR 821/HEFT – Southbound ramps

3. SW 8th Street/Tamiami Trail and SR/HEFT – northbound ramps
4. SW 8th Street/Tamiami Trail and Snapper Creek Road
5. SW 8th Street/Tamiami Trail and SW 112th Avenue (FIU entrance)
6. SW 8th Street/Tamiami Trail and SW 109th Avenue (FIU entrance)
7. SW 8th Street/Tamiami Trail and SW 107th Avenue (two day counts)
8. SW 8th Street/Tamiami Trail and SW 102nd Avenue
9. SW 8th Street/Tamiami Trail and SW 99th Place
10. SW 8th Street/Tamiami Trail and SW 97th Avenue (two-day counts)
11. SW 8th Street/Tamiami Trail and SW 94th Avenue
12. SW 8th Street/Tamiami Trail and SW 92nd Avenue
13. SW 8th Street/Tamiami Trail and SW 87th Avenue (two-day counts)
14. SW 8th Street/Tamiami Trail and SW 82nd Avenue (for this intersection the U-turns should be considered when counting)
15. SW 8th Street/Tamiami Trail and SR 826/Palmetto Expressway – Southbound Ramps
16. SW 8th Street/Tamiami Trail and SR 826/Palmetto Expressway – Northbound Ramps
17. SW 8th Street/Tamiami Trail and Tamiami Canal Road
18. SW 8th Street/Tamiami Trail and Flagami Boulevard/SW 74th Court
19. SW 8th Street/Tamiami Trail and SW 74th Avenue

Appendix C includes the raw turning movement counts collected in the field.

24 Travel Times Runs (6 per direction) during peak period (AM and PM)

The Travel Time Runs were conducted along SW 8th Street beginning at SW 67th Avenue and ending at SW 127th Avenue. Control points in between were as follows:

1. SW 122nd Avenue
2. SW 117th Avenue/Snapper Creek Canal Road
3. SW 112th Avenue
4. SW 109th Avenue
5. SW 107th Avenue
6. SW 102nd Avenue
7. SW 97th Avenue
8. SW 92nd Avenue
9. SW 87th Avenue
10. SW 82nd Avenue
11. SW 74th Avenue

Appendix D includes the Travel Time Studies for SW 8th Street.

Queue data was collected for six hours at major intersections for the major and minor approaches.

1. SW 8th Street/Tamiami Trail and SW 109th Avenue (FIU entrance)
2. SW 8th Street/Tamiami Trail and SW 107th Avenue
3. SW 8th Street/Tamiami Trail and SW 97th Avenue
4. SW 8th Street/Tamiami Trail and SW 87th Avenue

Appendix E includes the queue data collected in the field

The data collection was performed in such a way that approximate midblock volumes (entering/exiting) SW 8th Street from adjacent land-uses, median openings and minor cross-streets could be estimated and included in the analysis as sink/source nodes.

5.3 Data Processing

Data processing was conducted by adjusting the raw traffic counts in order to account for seasonal variances and common issues associated with axle counting procedures during the data collection efforts.

Table 2 lists the traffic adjustment factors used to alter the raw traffic counts. FDOT does not develop seasonal factors by roadway. FDOT develops seasonal factors and groups them based on eight geographical categories: (Miami-Dade North (arterials), Miami-Dade South (arterials), Miami-Dade North (Expressways), Miami-Dade South (Expressways), Miami-Dade I-195, Miami-Dade I-395, Miami-Dade I-75 and Miami-Dade I-95). SR 821/HEFT is considered a different FDOT District and has its own category. Therefore, factors are only listed for Miami-Dade South (arterials) and SR 821/HEFT.

Table 2 – Weekly Adjustment Factors

Roadway	Week of the Year	Axle Factor	Seasonal Factor	Peak Seasonal Factor (PSCF)
SR 90/US 41/SW 8th Street	03/11/2012-03/17/2012	0.99	NA	NA
	03/18/2012-03/24/2012	0.99	NA	NA
SR 973/SW 87th Avenue	03/11/2012-03/17/2012	0.97	NA	NA
	03/18/2012-03/24/2012	0.97	NA	NA
SR 985/SW 107th Avenue	03/11/2012-03/17/2012	0.99	NA	NA
	03/18/2012-03/24/2012	0.99	NA	NA
SR 826/Palmetto Expressway	03/11/2012-03/17/2012	0.99	NA	NA
	03/18/2012-03/24/2012	0.99	NA	NA
SR 826/Palmetto Expressway Ramps	03/11/2012-03/17/2012	0.96	NA	NA
	03/18/2012-03/24/2012	0.96	NA	NA
SR 821/HEFT	03/11/2012-03/17/2012	0.96	NA	NA
	03/18/2012-03/24/2012	0.96	NA	NA
Miami-Dade South Area	03/11/2012-03/17/2012	NA	0.97	0.99
	03/18/2012-03/24/2012	NA	0.98	1.00
SR 821/HEFT	03/11/2012-03/17/2012	NA	0.94	0.97
	03/18/2012-03/24/2012	NA	0.95	0.98

5.3.1 Average Annual Daily Traffic (AADT)

72- Hour counts and 72-Hour classification counts were converted into Average Annual Daily Traffic (AADTs), using the Axle Factors and Seasonal Factors and peak hour periods were determined. Time-of-day vs. volume profiles were developed, these are included in Appendix F.

5.3.2 Turning Movement Counts

Turning Movement Counts (TMCs) were adjusted using the seasonal factors only. Peak hour volumes were estimated using the turning movement counts at the intersections and the volumes recorded by the 72 hour counts.

In addition, from the turning movement counts, turning movement percentages at the various intersections were obtained. Appendix G includes the processed Turning Movement Counts.

5.3.3 Peak Hour Factors (PHFs)

Based on the Highway Capacity Manual 2010 (HCM 2010), estimation of an average peak hour factor is recommended for the entire intersection. Table 3 lists the PHFs for the signalized intersections within the study area.

Table 3 – Estimated Peak Hour Factors

#	Intersection	PHF (AM)	PHF (PM)
1	**SW 122 Ave**	0.956	0.994
2	**HEFT Southbound (SB)**	0.974	0.946
3	**HEFT Northbound (NB)**	0.964	0.980
4	**SW 117 Ave**	0.965	0.961
5	**SW 112 Ave**	0.955	0.929
6	**SW 109 Ave**	0.943	0.969
7	**SW 107 Ave**	0.926	0.973
8	**SW 102 Ave**	0.882	0.952
9	**SW 99 Pl**	0.900	0.979
10	**SW 97 Ave**	0.948	0.982
11	**SW 94 Ave**	0.938	0.933
12	**SW 92 Ave**	0.949	0.909
13	**SW 87 Ave**	0.954	0.950
14	**SW 82 Ave**	0.929	0.954
15	**SR 826 Southbound (SB)**	0.974	0.967
16	**SR 826 Northbound (NB)**	0.938	0.934
17	**Tamiami Canal Rd**	0.923	0.927
18	**Flagami Blvd**	0.960	0.988
19	**SW 74 Ave**	0.977	0.929

5.3.4 Typical Traffic Volumes (72-Hour Counts) and Peak Hour Turning Movement Counts

Hourly volumes vs. time of day profiles (developed from the 72-Hour counts collected) were reviewed and they revealed that the morning peak hour occurred in the eastbound direction and it was very well defined. The westbound direction did not show any significant peak volume during the morning hours.

However, the afternoon peak period, unlike the morning, was very spread-out and depicted a flat continuous volume across several hours. The figure below shows a typical hourly volume vs. time of day profile for a location along SW 8th Street. See Appendix F for profiles along all segments of the corridor.

Figure 19 – SW 8th Street Typical - Hourly Volume vs. Time of Day Profile

It is also noteworthy to mention that the 72-Hour Counts were collected using the traditional pneumatic tubes machines. This technology is known to relatively underestimate volumes as speeds are reduced at a particular location. Therefore, turning movement counts at the intersections were also compared against the approach counts collected. Turning movement volumes resulted to be slightly higher than the approach hourly count obtained from the 72-Hour count.

From the turning movement count information, it was determined that peak hour volumes were occurring at a relatively later time that the ones identified from the 72-Hour counts. For most of the locations, the 72-Hour counts determined a bi-directional peak hour occurring from 6:45 AM to 7:45 AM during the morning peak, while the turning movement counts identified a peak hour occurring between 7:30 AM to 8:30 AM. Two factors should be considered when comparing the peak hours from these two different types of counts. One factor is that pneumatic tubes might have under-counted the approach volume; while the actual intersection was processing slightly higher volumes due to the shorter spacing among vehicles at the aggressive (fast reaction time) for which Miami drivers are characterized. The second factor is the fact that the crossing-streets have different peaking times and therefore, peak hour volumes at the intersection may peak at a different time than mid-block volumes. Table 4 – lists the peak hour identified through the turning movement counts (these peak hours were identified considering the volumes entering at the intersections from all approaches).

Table 4 – Turning Movement Volume Peak Times

Intersection	AM Peak Hour	PM Peak Hour
SW 122 Ave	7:30 to 8:30	5:00 to 6:00
HEFT SB	7:30 to 8:30	4:30 to 5:30
HEFT NB	7:30 to 8:30	4:30 to 5:30
SW 117 Ave	7:30 to 8:30	4:30 to 5:30
SW 112 Ave	7:30 to 8:30	4:15 to 5:15
SW 109 Ave	7:30 to 8:30	4:30 to 5:30
SW 107 Ave	7:30 to 8:30	5:00 to 6:00
SW 102 Ave	7:00 to 8:00	5:00 to 6:00
SW 99 Pl	7:15 to 8:15	3:15 to 4:15
SW 97 Ave	7:30 to 8:30	5:00 to 6:00
SW 94 Ave	7:15 to 8:15	4:45 to 5:45
SW 92 Ave	7:15 to 8:15	5:00 to 6:00
SW 87 Ave	7:30 to 8:30	3:00 to 4:00
SW 82 Ave	7:00 to 8:00	3:15 to 4:15
SR 826 SB	7:30 to 8:30	4:45 to 5:45
SR 826 NB	7:15 to 8:15	5:00 to 6:00
Tamiami Canal Rd	7:30 to 8:30	4:15 to 5:15
Flagami Blvd	7:45 to 8:45	4:30 to 5:30
SW 74 Ave	7:45 to 8:45	4:45 to 5:45

A similar situation was observed when the peak hour volumes from the 72-Hour counts were compared to the turning movement counts for the afternoon peak. Peak hour volumes from the turning movement counts were slightly higher than the ones obtained from the 72-Hour counts and the identified peak hours were also different,4:00 PM to 5:00 PM (from the 72-Hour counts) vs. 5:00 PM to 6:00 PM (from the turning movement count).

In addition, when analyzing the peak hour flow (based on the turning movement counts) it was determined that SW 8th Street actually peaks at different times depending on the roadway segment. For instance, the western end of the projects shows peak hour volumes between 7:30 AM to 8:30 AM; while locations near SW

87th Avenue show peak hour volumes occurring between 7:00 AM and 8:00AM (half-an hour earlier).

In summary, after carefully examining the data collected, it was determined that the prevalent times for which high volumes were observed were between 7:30 AM and 8:30 AM (during the morning) and between 5:00 PM and 6:00 PM (in the afternoon). Therefore, these were identified as the area-wide peak hours.

In order to determine whether a peak hour spreading analysis needed to be performed, average speeds through the corridor were analyzed. Based on the preliminary analysis results, it was determined that SW 8th Street only experiences congestion in very specific segments (within the limits of the study area). The majority of the segments are not operating at saturated or oversaturated conditions.

In the morning peak, the eastbound direction (peak direction) experiences heavy congestion between east of NW 87th Avenue and SR 826/Palmetto Expressway. Also, some congestion is observed in the eastbound approach at the intersection of SW 8th Street and SW 107th Avenue. However, congestion at these locations remains relatively constant through the peak hour and they start dissipating just after the peak hour (7:30-8:30 AM).

In the afternoon peak hour, the westbound direction (peak direction) experiences congestion at the westbound approach at the intersection of SW 8th Street and SW 107th Avenue. Other segments of SW 8th Street operate at relatively high speeds (20 to 30 + mph). Therefore, these average speeds do not categorize operations along SW 8th Street as over-saturated conditions. Cross-streets, such as SW 87th Avenue and SW 107th Avenue, experience some back-up in the morning and afternoon peak hours. However, these also start dissipating as peak hour elapses.

5.3.5 Truck Factor (T-Factor), Directional Distribution Factor (D-Factor), and Peak Hour to AADT Ratio (K-Factor)

Historic truck factors, directional distribution factors, and peak hour to AADT ratios for 2012 were obtained from FDOT traffic count stations along SW 8th Street. Table 5 below lists the recommended truck factors for the different roadways within the study area.

Table 5 – Recommended Truck Factors

Count Location	T-Peak
SR 821/HEFT	3.00%
SR 826	3.00%
SW 117 Avenue	2.00%
SW 107 Avenue	2.50%
SW 87 Avenue (NB)	3.00%
SW 87 Avenue (SB)	2.00%
SW 8 Street	4.00%
Other Roadways	2.00%

Table 6 – Recommended Traffic Factors (K and D)

Location	D-Factor	K-Factor
SR 821/HEFT (Ramps)	100.00%	9.00%
SR 826 (Ramps)	100.00%	9.80%
SW 117 Avenue	59.70%	9.00%
SW 107 Avenue	63.39%	8.22%
SW 97 Avenue	59.70%	9.00%
SW 87 Avenue	63.37%	8.22%
SW 82 Avenue	59.70%	9.00%
SW 74 Avenue	59.70%	9.00%
Tamiami Boulevard	59.70%	9.00%
SW 8 Street	63.39%	8.22%
Other Roadways	59.70%	9.00%

5.3.6 Field Observations

Field observations confirmed the findings from the traffic data collected for this study. The 72-Hour counts revealed that the morning peak hour was very well defined in the eastbound direction, while the westbound direction did not show any significant peak volumes during the morning hours. However for the afternoon peak, traffic volumes were more disperse depicting a continuous volume of traffic over the course of several hours.

The turning movement counts suggested that the peak hour volumes were occurring later than what the 72-hour counts suggested. For most locations, the bi-directional peak hour occurred between 6:45 AM and 7:45 AM according to the 72-hour counts, while the turning movement counts suggested the peak hour to occur between 7:30 AM to 8:30 AM for most locations.

The peak hour volumes at intersections may vary from the peak hour volumes at mid-block locations, in part because of the varying peak hour volumes for individual cross-streets. Peak hour volumes differed depending on which segment of SW 8th Street was being analyzed. *In summary, it was determined and confirmed in the field that the prevalent times for high volumes for the morning was between 7:30 AM and 8:30 AM, while the afternoon saw its highest volumes between 5:00 PM and 6:00 PM.*

During the morning peak hour, high levels of congestion and bottlenecking were observed along SW 8th Street in the eastbound direction near the SR 826 ramps where there are only four travel lanes (two in each direction). This congestion extended approximately from the SR 826 northbound to SW 8th Street eastbound on-ramp to SW 87th Avenue. According to field observations, this queue started minimizing just after 8:30 AM.

From the morning field observations it was also identified that the eastbound approach at the intersection with SW 107th Avenue showed some congestion. This was mostly caused by the traffic signal at this location. Field observations revealed that (on some occasions), the eastbound vehicles turning northbound at SW 107th Avenue blocked the vehicles traveling westbound at the intersection. This was due to the slow speeds associated with the school zones in the SW 107th Avenue northbound direction. These turning vehicles would block the intersection for westbound crossing traffic since they had not cleared the intersection by the time the signal green time commenced. The same condition was observed at the intersection of SW 87th Avenue, where the eastbound to northbound vehicles blocked (sometimes) the flow of the westbound vehicles. However, no school zone is located along SW 87th Avenue. Nevertheless, this roadway experiences heavy volumes as it offers access to SR 836/Dolphin Expressway.

In addition, the northbound approaches at the majority of the intersections (major/minor cross-streets) experienced queues of about 16 vehicles or more (during the red-light phase). Southbound approaches did not show significant queues in the am peak.

Field reviews during the afternoon peak hour revealed that most of the segments along SW 8th Street in the westbound direction (peak direction) are operating at average speeds ranging from 14 mph to 37 mph. Only the segment in the vicinity of SW 107th Avenue is operating at an average speed of nine (9) mph. In some occasions it took about two signal cycles to cross this intersection. Westbound queues extend back to SW 105th Avenue (about 900 feet). Rarely did the spillback extend beyond this upstream intersection. No major spillbacks are occurring at any other locations along SW 8th Street.

Southbound approaches at major/minor streets experience heavy volumes. The SW 87th Avenue queue length extends back to approximately SW 4th Street (approximately 1,500 from the SW 8th Street intersection). A similar situation is observed at SW 107th Avenue and SW 97th Avenue. Northbound approaches do not experience such a heavy demand in the pm peak.

The intersection of SW 8th Street and SW 74th Avenue experiences heavy volumes in the northbound and southbound approaches during the afternoon peak hour, with the northbound approach being the most critical one.

5.3.7 Existing Signal Timing and Phasing

In order to have a clear understanding of the traffic operations along SW 8th Street, the traffic signal operations plans were reviewed. These traffic control devices will actually define and regulate the traffic flow along SW 8th Street.

Existing signal timing and phasing plans were downloaded from the Miami-Dade County Traffic Signal Division web page for the Advanced Traffic Management System (ATMS). The signal timing for each signalized intersection along the SW 8th Street Study Corridor can be found in Appendix H. The downloaded information included the actuated traffic signal timing sheet for Time of Day (TOD) Schedule Report. The signalized intersections within the study area are listed in Table 7.

Table 7 – Traffic Signals Overall Settings

Asset No.	Cross-Street	AM Peak Period Cycle	PM Peak Period Cycle	AM Cycle Length	PM Cycle Length	Notes
3730	SW 122nd Avenue	6:30-9:30	4:30-7:30	180	150	
4239	SB Ramps from/to HEFT	6:30-9:30	4:30-7:30	180	150	
4238	NB Ramps from/to HEFT	6:30-9:30	4:30-7:30	180	135	
4974	SW 117th Avenue	6:30-9:30	4:00-7:00	180	180	
3879	SW 112nd Avenue	6:30-9:30	4:00-7:00	180	180	
5430	SW 109th Avenue	6:30-9:30	4:00-7:00	180	180	
3709	SW 107th Avenue	6:30-9:30	4:00-7:00	180	180	
4510	SW 102nd Avenue	6:30-9:30	4:00-7:00	180	180	
3743	SW 97th Avenue	6:30-9:30	4:00-7:00	180	180	
4563	SW 94th Avenue	6:30-9:30	4:00-7:00	180	180	
5164	SW 92nd Avenue	6:30-9:30	4:00-7:00	180	180	
3362	SW 87th Avenue	6:30-9:30	4:00-7:00	180	180	
4565	SW 82nd Avenue	6:30-9:30	4:00-7:00	180	180	
5425	SB Ramps from/to SR 826	6:00-9:30	3:30-7:00	180	180	
5424	NB Ramps from/to SR 826	6:00-9:30	3:30-7:00	180	180	
2135	SW 74th Court	6:00-9:30	3:30-7:00	180	90	Pedestrian Signal
2634	SW 74th Avenue	6:00-9:30	3:30-7:00	180	180	

Based on coordination with Miami-Dade County Traffic Signal Division, it was determined that the traffic signals along SW 8th Street operate under a semi-actuated/coordinated mode. The through movements along SW 8th Street are not provided with detection loops; therefore, these are the coordinated movements.

In addition, most of the minor crossing streets approaches operate under actuated mode. Phases could be skipped and unused green time is re-assigned to subsequent phases.

As depicted in Table 7, the traffic signal operating plan during the peak hours for SW 8th Street (7:30 AM to 8:30 AM and 5:00 PM to 6:00 PM) have different durations, some extend from 4:30 PM to 7:30 PM while others last from 3:30 PM to 7:30 PM. If a multi-hour analysis (from 3:00 PM to 7:00 PM) was to be considered, the starting traffic signal operating plan would be different for all intersections. Then, at 4:30 PM a new signal timing plan would start for the western intersections and at 3:30 PM a new signal timing plan would start at the eastern intersections.

These signal operating plans differ in cycle lengths as well as in settings such as the phasing recall parameters (where phases can be skipped or serviced with the minimum/maximum green, etc.). All these factors impact traffic flow along the corridor.

Research information provided by the Miami-Dade County Traffic Signal Division indicated that Traffic Signal Operations Engineers (at the center) may change the recall setting on any phase/movement/direction operating on recall (MIN or MAX) by time-of-day, depending on real-time field conditions in order to provide a better flow or coordination.

These changes in signal plan operations may impact the travel times along SW 8th Street. Based on the data collected during the travel time studies, it was noted that some total travel times (for a particular run) varied during the morning peak hour as much as 57% from the average and as much as 36% from the average in the afternoon. These changes in travel times could be due to occasional changes in the recall parameters of a particular signal or the impact of mid-block traffic entering a particular segment of SW 8th Street (via a driveway or minor street approach).

6.0 SAFETY DATA COLLECTION

SW 8th Street between the SW 122nd Avenue at milepost 5.523 and SW 74th Avenue at milepost 10.329 has 17 signals, 13 full median openings, and 6 directional median openings over a 4.806 mile segment.

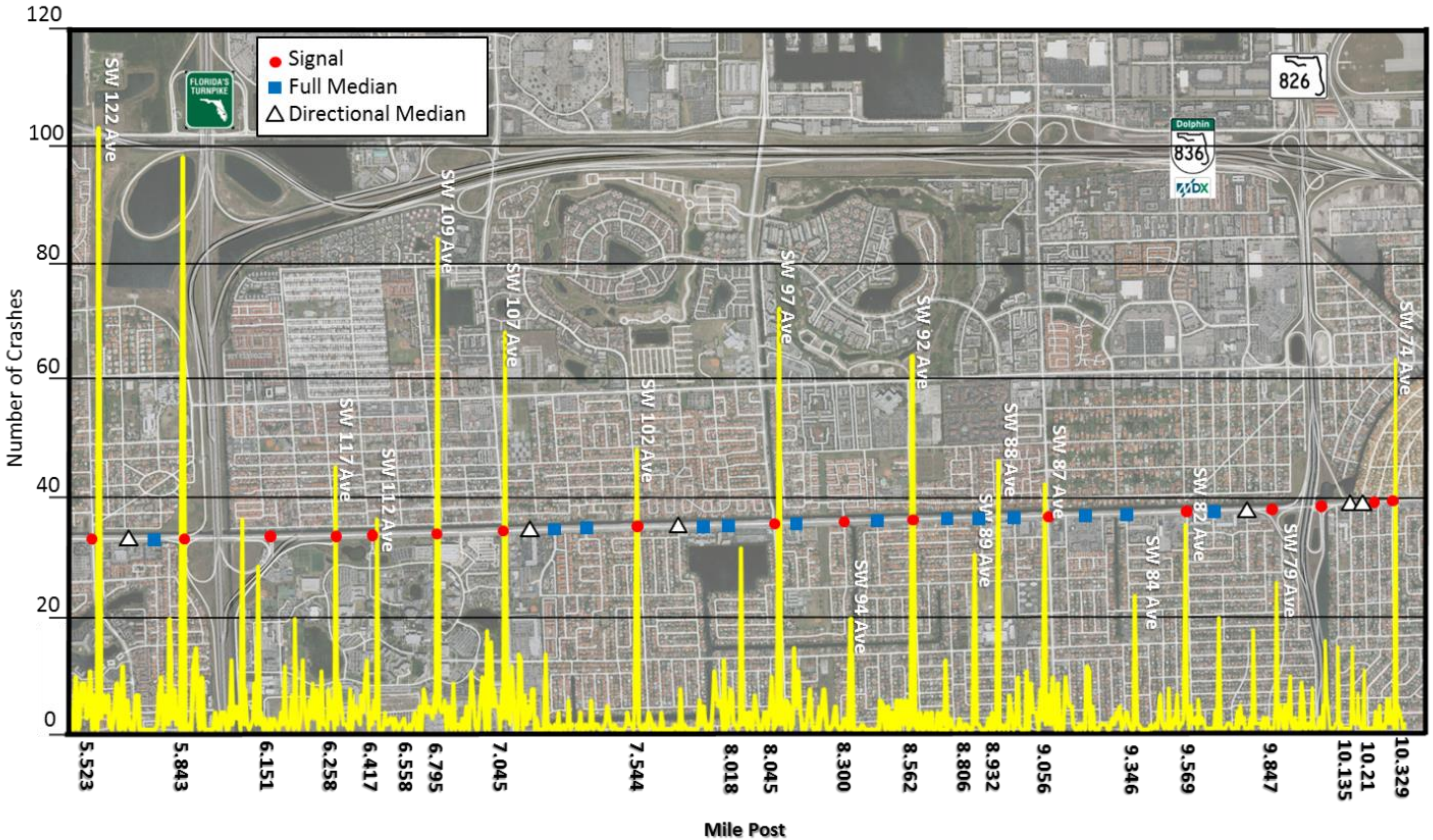
SW 8th Street varies from four to eight lanes but is a divided roadway throughout the corridor. Table 8 details the number of lanes throughout the corridor.

Table 8 – Number of Lanes by Segment

Segment	From	To	EB Lanes	WB Lanes	Total Lanes	Distance (miles)
A	SW 122 Avenue	HEFT On-Ramp	4	4	8	0.33
B	HEFT On-Ramp	SW 112 Ave	3	3	6	0.70
C	SW 112 Avenue	SW 107 Ave	4	3	7	0.49
D	SW 107 Avenue	SW 88 Ave	4	4	8	1.89
E	SW 88 Avenue	SR 826 (western) On-Ramp	3	3	6	0.93
F	SR 826 (western) On-Ramp	SR 826 (eastern) On-Ramp	3	2	5	0.21
G	SR 826 (eastern) On-Ramp	SW 74 Ave	2	2	4	0.25

The following Figure 20 details the number of crashes by mile post.

Figure 20 – Crashes by Mile Post



As depicted in Figure 20, a total of 3,975 crashes occurred within this segment between the years 2007 and 2012. Over those six years, the number of crashes increased each year, with 481, 570, 652, 759, and 774 crashes for the years 2007, 2008, 2009, 2010, and 2011 respectively until slightly declining to 739 crashes in 2012 (which can be seen in Table 9). During this six-year period, there were 17 fatalities and 1,655 injuries.

The SW 8th Street corridor for this study includes numerous high crash locations and high crash segments as defined and identified by FDOT. Many of these identified locations and segments appear yearly, indicating that safety improvements are needed in order to see any declines in the total number of crashes observed. A detailed safety analysis will be provided as part of the existing traffic conditions analysis. Tables 9 and 10 detail the high crash locations and segments for the study corridor for 2007 to 2011.

Table 9 – High Crash Segments by Year

High Crash Segments		
Year	Mile Posts	Crashes
2007	5.425-5.625	36
	6.325-6.425	21
	7.025-7.125	38
	8.025-8.125	35
	9.025-9.225	32
	10.164-10.329	16
2008	5.425-5.725	54
	7.025-7.325	64
	8.925-9.325	86
	10.064-10.329	44
2009	5.398-5.998	114
	6.998-7.298	79
	7.898-8.098	45
	8.898-9.298	66
	9.935-10.386	69
2010	5.398-6.098	129
	6.398-7.298	234
	8.898-9.298	102
	9.498-9.698	38
	9.935-10.386	70
2011	5.398-5.798	87
	5.798-5.898	24
	6.398-7.298	227
	8.498-8.598	34
	8.898-9.298	106
	9.935-10.386	73

Table 10 – High Crash Locations by Year

High Crash Locations							
Year	Mile Post	# of Legs	Crashes	Year	Mile Post	# of Legs	Crashes
2007	5.843	3	26	2010	5.523	4	44
	5.874	3	30		5.536	3	43
	6.417	3	26		5.843	3	39
	6.435	3	25		5.874	3	48
	8.045	4	36		5.883	3	41
	10.329	4	20		6.417	3	37
2008	5.523	4	40		6.435	3	34
	5.843	3	29		6.558	3	33
	5.874	3	26		6.795	4	50
	6.417	3	27		7.045	4	81
	6.435	3	26		8.045	4	38
	7.045	4	55		9.056	4	62
	9.056	4	57		9.569	3	27
	10.121	3	16		10.329	4	26
	10.124	3	17	2011	5.523	4	55
	10.167	4	20		5.536	3	52
	10.21	3	21		5.843	3	25
	10.234	3	18		5.874	3	30
	10.264	3	16		5.883	3	28
	10.278	4	19		6.417	3	40
	10.329	4	25		6.435	3	40
2009	5.523	4	46		6.558	3	27
	5.536	3	43		6.795	4	47
	5.843	3	33		7.045	4	84
	5.879	4	42		9.056	4	65
	5.883	3	32		10.167	4	22
	6.417	3	25		10.210	3	19
	7.045	4	63				
	7.544	3	21				
	8.045	4	38				
	9.569	3	21				
	10.106	3	17				
	10.124	3	22				
	10.138	3	22				
	10.210	3	18				

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Table 11 – Types of Crashes by Category

Categories	Type of Crash	Number of Crashes						Average	Total	Percentage of Total
		Year								
		2007	2008	2009	2010	2011	2012			
Crash Type	Rear End	236	245	323	401	426	437	344.7	2068	52.0%
	Head On	3	6	8	13	12	3	7.5	45	1.1%
	Angle	87	134	137	149	159	139	134.2	805	20.3%
	Left Turn	46	54	45	47	3	7	33.7	202	5.1%
	Right Turn	6	6	5	10	3	2	5.3	32	0.8%
	Sideswipe	53	70	60	78	0	0	43.5	261	6.6%
	Pedestrian/Bicycle	5	6	7	9	2	5	5.7	34	0.9%
	Fixed Object	15	20	25	14	16	20	18.3	110	2.8%
	Overturned	1	0	1	1	0	1	0.7	4	0.1%
	Other	29	29	41	37	153	125	69.0	414	10.4%
	TOTAL CRASHES	481	570	652	759	774	739	662.5	3975	100.0%
Surface Conditions	Dry	389	477	536	625	632	605	544.0	3264	82.1%
	Wet	86	90	115	131	141	134	116.2	697	17.5%
	Others	6	3	1	3	1	0	2.3	14	0.4%
	TOTAL CRASHES	481	570	652	759	774	739	662.5	3975	100.0%
Time of Day	Day	299	378	442	506	515	530	445.0	2670	67.2%
	Night	182	192	210	253	259	209	217.5	1305	32.8%
	TOTAL CRASHES	481	570	652	759	774	739	662.5	3975	100.0%
Crash Severity	Property Damage Only	243	270	353	421	512	504	383.8	2303	57.9%
	Injuries	235	300	295	334	258	233	275.8	1655	41.6%
	Fatalities	3	0	4	4	4	2	2.8	17	0.4%
	TOTAL CRASHES	481	570	652	759	774	739	662.5	3975	100.0%

The most frequent type of crash was rear-end crashes, for a total of 2,068 between 2007 and 2012. Angle, sideswipe, and left-turn crashes were also quite prevalent with 805, 261, and 202 crashes respectively over those six years. Typically, rear-end crashes are common within highly congested corridors, while left-turn and sideswipe are also prevalent within corridors with multiple left-turns, driveways, and intersections. This corridor fits these characteristics.

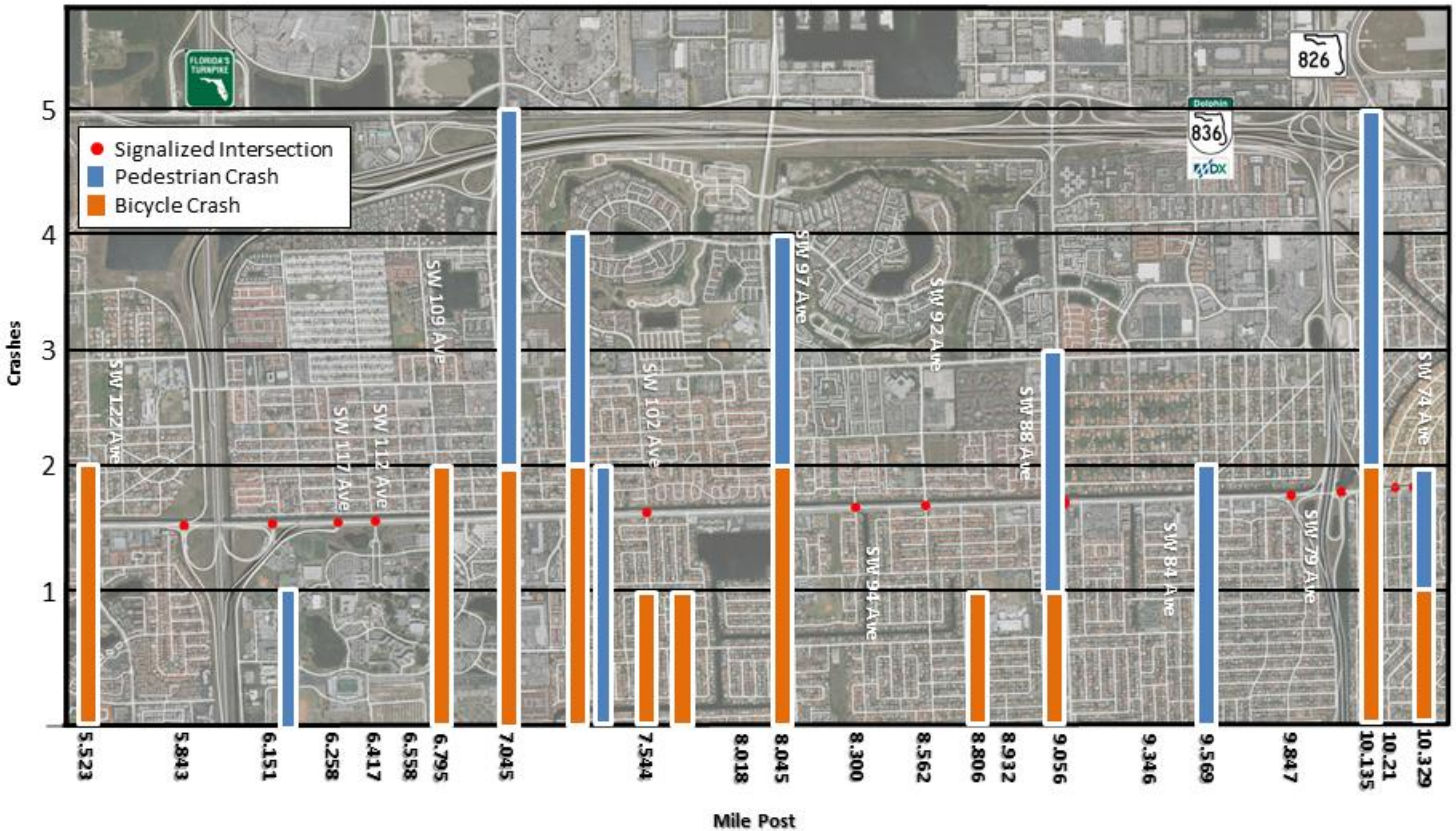
Angle, sideswipe, and left-turn crashes tend to be the most correctable. As an example closing the full median could prevent some crashes. However, this study demonstrated that the majority of the crashes are located at signalized intersections, with a few exceptions such as SW 88th Avenue which has a full median opening.

The FDOT crash data that was available for this study was for the years prior to the most recent Resurfacing, Restoration, and Rehabilitation (RRR) project (SW 8th Street from HEFT to SR 826) that was completed throughout the corridor in 2013. No crash data is currently available that considers the new configuration of SW 8th Street following the 2013 RRR project.

According to crash data obtained from FDOT, there were a total of 34 crashes involving bicycles and/or pedestrians along SW 8th Street between SW 122nd Avenue and SW 74th Avenue from 2007 to 2012, accounting for approximately 1% of the total crashes in the corridor. The following Figure 21 shows the location and frequency of pedestrian and/or bicycle crashes in the study corridor.

All of these crashes were recorded prior to the implementation of the exclusive bike lane from the 2013 RRR project in the corridor. Crash data for 2013 was not available at the time of this study.

Figure 21 – Pedestrian and Bicycle Crash Locations



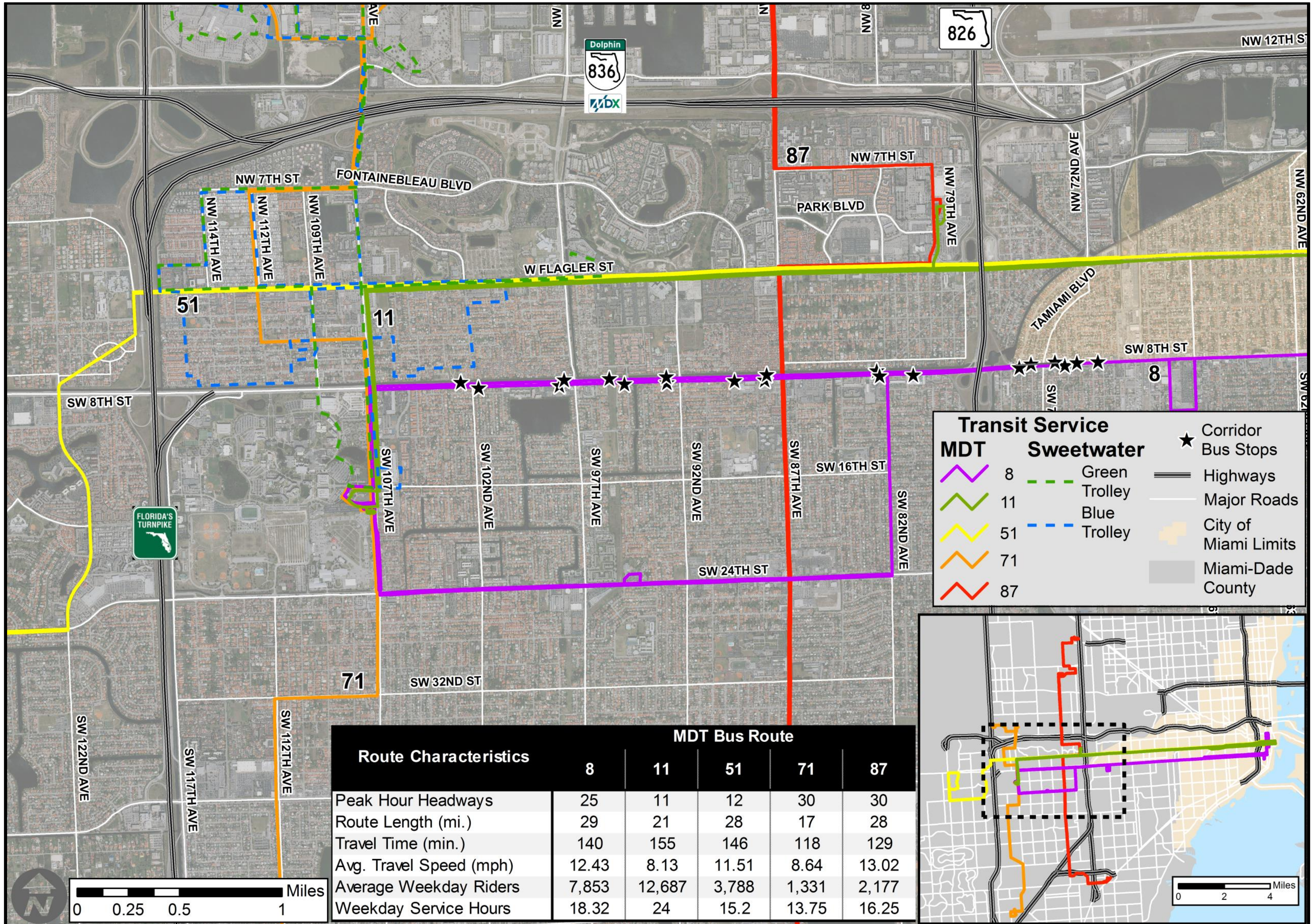
7.0 TRANSIT DATA COLLECTION

7.1 Existing Transit Services

Existing transit services are provided by Miami-Dade Transit (MDT). The study corridor is currently served by five Miami-Dade Transit Metrobus routes: Routes 8, 11, 51, 71 and 87. Route 8 is the only MDT transit service that exclusively serves SW 8 Street. The segment within the study corridor is served by Route 8 from 4:29 AM to 8:35 PM. The other four routes mentioned are routes that cross SW 8 Street and provide transfer opportunities with Route 8.

Bus routes and existing transit service located within the SW 8th Street study corridor are illustrated in the following Figure 22, including route characteristics for bus routes and bus stop locations.

Figure 22 – Existing Transit Service in Study Area



Route Characteristics	MDT Bus Route 8	11	51	71	87
Peak Hour Headways	25	11	12	30	30
Route Length (mi.)	29	21	28	17	28
Travel Time (min.)	140	155	146	118	129
Avg. Travel Speed (mph)	12.43	8.13	11.51	8.64	13.02
Average Weekday Riders	7,853	12,687	3,788	1,331	2,177
Weekday Service Hours	18.32	24	15.2	13.75	16.25

Route 8 has the longest route length of the five corridor MDT Metrobus routes, but is the second fastest route in terms of average travel speed. Route 8 also averages over 40,000 transit riders every week, ranking as one of MDT's highest ridership routes in the County. The peak hour headways for Route 8 are approximately 25 minutes, which is more than twice the headway for Route 51 along W. Flagler Street.

Three of the five routes serving the SW 8th Street corridor provide direct service to FIU. Route 8 only provides service to FIU once every three scheduled trips. The other two trips are short-runs; one trip turns around at SW 57th Avenue and the other deviates at SW 82nd Avenue to serve the SW 24th Street corridor. In order to maintain 25 minute headways during the peak period with the various trip alignments, six total buses are needed in service (two of which serve the SW 8th Street Study Corridor hourly).

All transit stops (20) are provided with transit signs including information on the transit routes and a bus bench. Some stops have a trash receptacle and the SW 75th Avenue eastbound stop has a shelter for riders. Currently, a few of the westbound transit stops include a bus bay.

Figure 23 below details the average number of daily boardings and alightings for each Route 8 bus stop within the corridor. A majority of the ridership activity occurs east of SR-826. The stop with the highest average of daily boardings is at SW 80th Court which is an eastbound stop just west of SR-826. Three stops have about the same number of average daily alightings – Flagami Road, SW 71st Place, and SW 87th Avenue with 36, 34, and 33 respectively. Each of these stops is westbound. Seven of the stops with the highest amount of riders alighting are westbound stops, while six out of seven of the highest boardings are eastbound stops.

Figure 23 – Bus Stops for Route 8 on SW 8th Street Corridor

There are two other MDT routes that intersect Route 8: Route 71 and Route 87. Table 12 details the average daily boardings and alightings of passengers for Routes 8, 71, and 87 from November 2012 for bus stops located within the SW 8th Street Study Corridor where transfers are likely.

Table 12 – MDT Daily Ridership

Daily Ridership Activity Near SW 8 Street/ 107 Avenue Intersection				
Route	Stop Location	Direction	Boardings	Alightings
8	SW 8 St/SW 102 Ave	EB	2	7
	SW 107 Ave/SW 11 St	SB	4	37
71	SW 107 Ave/SW 7 St	SB	10	4
	SW 107 Ave/SW 11 St	SB	13	9
	SW 107 Ave/SW 9 St	NB	8	7

Daily Ridership Activity Near SW 8 Street/ 87 Avenue Intersection				
Route	Stop Location	Direction	Boardings	Alightings
8	SW 8 St/SW 87 Ave	WB	33	4
	SW 8 St/SW 87 Ave	EB	7	28
87	SW 87 Ave/SW 8 St	NB	14	13
	SW 87 Ave/SW 8 St	SB	22	17

8.0 BICYCLE/PEDESTRIAN FACILITY COLLECTION

SW 8th Street, with the completion of the aforementioned FDOT RRR project in 2013, has 4 foot wide bicycle lanes in both directions between the Florida Turnpike and SR 826, as can be seen in Figure 24 below.

Figure 24 – Bicycle Lane on SW 8 Street east of SW 87 Avenue

On the north-side of SW 8th Street (westbound) the bikeway starts at SW 79th Avenue and ends at SW 117th Avenue. On the south-side of the street (eastbound) the bikeway starts SW 112th Avenue and ends at SW 79th Avenue.

Existing pedestrian facilities are almost exclusively on the southern side of SW 8th Street due to the presence of the Tamiami Canal on the northern side. There is a 6 foot sidewalk with crosswalks and handicapped accessible ramps from SW 74th Avenue to SW 122nd Avenue.

According to the Miami-Dade County LRTP, there are also pedestrian facility improvements scheduled along SW 8 Street between SW 102nd and SW 107th Avenues, between SW 112th and SW 122nd Avenues, and between SW 76th Court and SW 82nd Avenue. The planning and construction costs for these pedestrian facility improvements are programmed to be funded for 2015-2020.

Recently, FIU received a TIGER grant to a construct a pedestrian overpass across SW 8^{th} Street immediately west of SW 109^{th} Avenue. This project is currently under design.

9.0 ACCESS MANAGEMENT DATA COLLECTION

Table 13 lists the different classifications for Access Management along SW 8th Street. Table 14 lists the criteria for each of the Access Management Classification for SW 8th Street.

Table 13 – Access Management along SW 8th Street

Access Management Classification (Code)	Beginning Mile Post (M.P.)	End Mile Post (M.P.)
03	0.000 (SW 177th Avenue/Krome Avenue)	4.010 (SW 13th Avenue)
05	4.010 (SW 137th Avenue)	10.028 (SR 826/Palmetto Expressway) Interchange
07	10.028	18.147 (Brickell Avenue)

Table 14 – Access Management Criteria

<table>
<tr><th rowspan="2">Access Classification</th><th rowspan="2">Type of Median</th><th colspan="2">Median Opening Spacing (feet)</th><th rowspan="2">Signal Spacing (feet)</th><th colspan="2">Connection Spacing (feet)</th></tr>
<tr><th>Full</th><th>Directional</th><th>Posted Speed > 45 mph</th><th>Posted Speed of 45 mph or less</th></tr>
<tr><td>03</td><td>Restrictive</td><td>2,640</td><td>1,320</td><td>12,640</td><td>660</td><td>440</td></tr>
<tr><td rowspan="2">05</td><td rowspan="2">Restrictive</td><td>2,640 (Posted Speed > 45 mph)</td><td rowspan="2">660</td><td>2,640 (Posted Speed > 45 mph)</td><td rowspan="2">440</td><td rowspan="2">245</td></tr>
<tr><td>1,320 (Posted Speed of 45 mph or Less)</td><td>1,320 (Posted Speed of 45 mph or Less)</td></tr>
<tr><td>07</td><td>Both Median Types</td><td>660</td><td>330</td><td>1,320</td><td>125</td><td>125</td></tr>
</table>

Source: Florida Administrative Code Chapter 14-97.003 Access Control Classification System and Access Management Standards

The posted speed limit along SW 8th Street is as follows:

1. Between SW 177th Avenue and east of SW 157th Avenue is 55 mph
2. Between east of SW 157th Avenue and SW 139th Avenue is 45 mph
3. Between SW 139th Avenue and SW 137th Avenue is 35 mph
4. Between SW 137th Avenue and SW 79th Avenue is 45 mph
5. Between SW 79th Avenue and SW 72nd Avenue is 35 mph

Within the limits of this Corridor Study, SW 8th Street is classified with an Access Management Class of 5 and 7 (for a short distance).

The Functional Classification is categorized as Urban Other Principal Arterial. The posted speed limit varies from SW 122nd Avenue to SR 826 is 45 mph and from SR 826 to SW 74th Avenue is 35 mph.

The following Table 15 summarizes the access management analysis for SW 8 Street.

Table 15 – Access Management Analysis

Intersection	Signalized or Non-Signalized Intersection	Location (Milepost)	Opening Type	Distance from Previous Median Opening (feet)			Required Distance (feet)	
				Signal	Full	Direct-ional	Signal/ Full	Direct -ional
SW 122 Ave	Signalized	5.523	Full				1,320	660
SW 120 Ave	Non-signalized	5.629	Directional				1,320	660
SW 119 Ave	Non-signalized	5.672	Full				1,320	660
HEFT On-Ramp	Signalized	5.843	Full				1,320	660
HEFT On-Ramp	Signalized	6.151	Full				1,320	660
SW 117 Ave	Signalized	6.417	Full				1,320	660
SW 112 Ave	Signalized	6.558	Full	760			1,320	660
SW 109 Ave	Signalized	6.795	Full	1250			1,320	660
SW 107 Ave	Signalized	7.045	Full	1380			1,320	660
Between SW 107 Ave and SW 105 Ave	Non-signalized	7.109	Directional		530	455	1,320	660
SW 105 Ave	Non-signalized	7.232	Full		970		1,320	660
SW 103 Pl	Non-signalized	7.346	Full		600		1,320	660
SW 102 Ave	Signalized	7.544	Full		1040		1,320	660
SW 99 Pl	Non-signalized	7.69	Directional		780	450	1,320	660
Between SW 99 Pl and SW 97 Ave	Non-signalized	7.96	Full		450		1,320	660
Between SW 99 Pl and SW 97 Ave	Non-signalized		Full		520		1,320	660
SW 97 Ave	Signalized	8.045	Full	2640	950		1,320	660
Between SW 97 Ave and SW 94 Ave	Non-signalized	8.098	Full		480		1,320	660
SW 94 Ave	Signalized	8.3	Full	1350	880		1,320	660
SW 93 Ave	Non-signalized	8.43	Full		650		1,320	660
SW 92 Ave	Signalized	8.562	Full	1350	700		1,320	660
SW 90 Ave	Non-signalized	8.691	Full		770		1,320	660
SW 89 Ave	Non-signalized	8.806	Full		670		1,320	660
SW 88 Ave	Non-signalized	8.932	Full		660		1,320	660
SW 87 Ave	Signalized	9.058	Full	2640	680		1,320	660
Between SW 86 Ct and SW 84 Ave	Non-signalized	9.204	Full		450		1,320	660
SW 84 Ave	Non-signalized	9.346	Full		750		1,320	660
SW 82 Ave	Signalized	9.559	Full	2700	1200		1,320	660
SW 80 Ct	Non-signalized	9.687	Full		500		1,320	660
SW 79 Ave	Non-signalized	9.793	Directional			700	1,320	660

Intersection	Signalized or Non-Signalized Intersection	Location (Milepost)	Opening Type	Distance from Previous Median Opening (feet)			Required Distance (feet)	
				Signal	Full	Direct-ional	Signal/ Full	Direct-ional
SR-826 Off-Ramp	Signalized	9.871	Directional				1,320	660
SR-826 On-Ramp	Signalized	10.07	Directional				660 / 1,320	330
SW 76 Ave	Non-signalized	10.175	Directional				660 / 1,320	330
SW 75 Ave	Non-signalized	10.224	Directional				660 / 1,320	330
Flagami Blvd	Signalized	10.264	Directional					
SW 74 Ave	Signalized	10.329	Full				660 / 1,320	330

10.0 MAJOR UTILITIES

There are a number of utilities located under the eastbound lanes of SW 8th Street as shown in the following table.

Table 16 – Utility Location Under Street - Eastbound Lanes

Utility	Size	Material	Elevation	Notes
Water	30 inches			Force Main
Gas	8 inches	Plastic	2.05 feet	High pressure
Inactive Fiber				Starts at Sta.1743
Sewer	24 inch Force Main	PVC		Starts at Sta 1743+40
Telephone	2-4 inches	PVC	4.81 feet	Starts at Sta 1766+40

The table below shows the major utilities that run parallel to SW 8th Street and are located in the right-of-way along the south-side of the roadway.

Table 17 – Utility ROW South-side of Roadway

Type	Location	Notes
FPL	Buried Fibernet	
ATT	Low Definition Fiber	
Electrical	138 KV	Overhead
Sanitary Sewer	24 inch Force Main	West of Sta1743+40
ATT	4 inch Telephone	Overhead

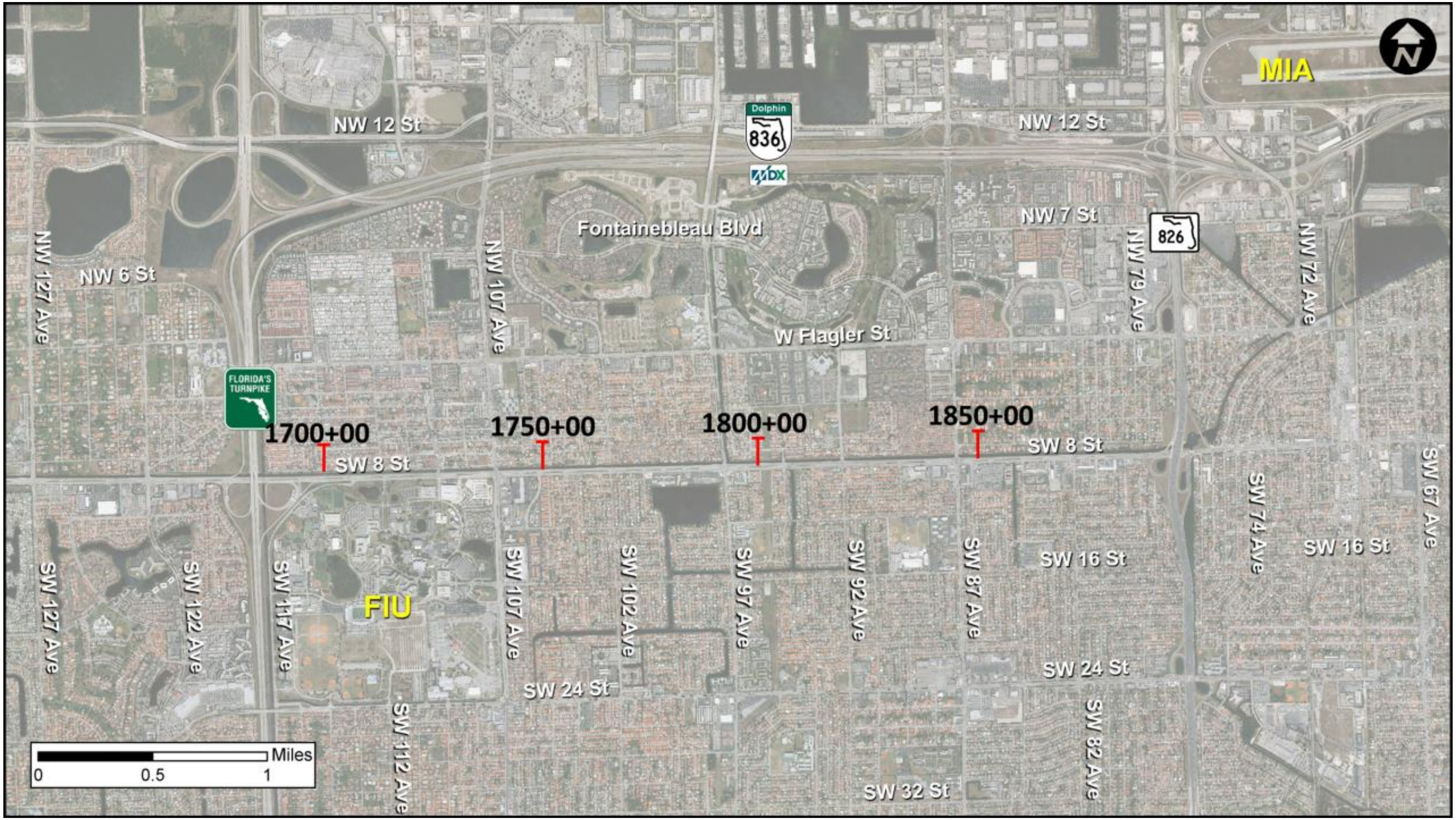
Additionally, the following table shows the major utilities that cross the corridor.

Table 18 – Utilities Crossing SW 8th Street

Station	Utility
1699+40	Overhead 23 KV Electric
1700+40	36 inch Water
1706+50	16 inch Water
1738+05	14 inches Casing with 6X4 inch PVC Telephone
1739+20	Overhead Electrical
1739+20	FPL Fibernet
1739+40	12 inch Water
1740+25	Overhead Electrical
1766+35	Overhead 138 KV Electrical
1766+35	4 inch PVC Telephone
1791+80	Overhead Electrical
1793	Overhead Telephone/Cable
1799+75	12 inch DIP Water Main
1799+95	Overhead 138 KV Electrical Transmission
1800+15	Overhead 138 KV Electrical Transmission
1801+20	Overhead 230 KV Electrical Transmission
1801+70	Overhead 230 KV Electrical Transmission
1801+85	Overhead 230 KV Electrical Transmission
1802+25	Overhead 230 KV Electrical Transmission
1802+45	Overhead 230 KV Electrical Transmission
1802+85	Overhead 230 KV Electrical Transmission
1803+05	FPL Fibernet
1805+40	Overhead Electrical
1806+40	4 inch PVC Telephone Conduit
1819+40	12 inch DIP Water Main
1819+80	Overhead 230 KV Electrical Transmission
1845+30	20 inch DIP Water main
1846	Buried 12-4 foot Transite Telephone
1846+20	18 inch High Pressure Gas Main
1846+25	Buried Fiber 1-2 inch PVC
1846+25	Overhead Electrical
1873	6 inch Gas Main
1873	24 inch Sewer Force Main

Figure 25 below provides the locations for stations along SW 8th Street that can be used to reference the location of the utilities listed above.

Figure 25 – Station Locations along the SW 8th Street Corridor



Major utility owners in the corridor are located in the table below.

Table 19 – Major Utility Owners

Utility Owner	Telephone Number
Atlantic Broadband	(305) 861-8069
AT&T Long Distance	(407) 578-8000
Florida City Gas	(305) 835-3632
Florida Gas Transmission	(407) 838-7171
FPL – Distribution	(305) 442-5129
FPL – Transmission	(561) 694-4060
FPL – Fibernet	(305) 552-2931
Level 3 Communications	(720) 888-4968
MCI/Verizon Business	(904) 355-0187
Miami-Dade Water and Sewer	(786) 552-8901
AT&T Florida (BellSouth)	(302) 222-8745
Systems Integration and Maintenance	(305) 624-6136

11.0 RIGHT-OF-WAY (ROW)

Right-of-way along the corridor varies between 85 feet and 156.9 feet. Because FDOT right-of-way extends to the south bank of the Tamiami Canal, there is substantial variation along the corridor due to the slightly irregular alignment of the canal. Right-of-way also varies at intersections. The right-of-way and the variation on each side of the facility are shown in the table below.

Table 20 – Right-of-Way

From	To	Right-of-Way	Variation	
			Curb to Canal	At Intersections
SW 122nd Avenue	**HEFT Ramps**	140 feet	<25 feet	<5 feet
HEFT Ramps	**SW 112th Avenue**	120 feet	<19.5 feet	<3 feet
SW 112th Avenue	**SW 107th Avenue**	143 feet	<5 feet	<1.5 feet
SW 107th Avenue	**SW 103rd Avenue Bus Stop**	145 feet	>6 feet	>4 feet
Bus Pull Out		152.5 feet	-	-
SW 102nd Avenue	**SW 94th Avenue**	145 feet	>6 feet	>4 feet
Bridge over canal		147.5 feet	-	-
SW 94th Avenue	**SW 92nd Avenue**	156.9 feet	>4 feet	-
SW 92nd Avenue	**SW 87th Avenue**	145 feet	>6 feet	>4 feet
SW 87th Avenue	**SR 826 Ramps**	120 feet	<19.5 feet	>3 feet
SR 826 Ramps	**SW 74th Avenue**	85 feet	-	<20 feet

12.0 EFFICIENT TRANSPORTATION DECISION MAKING (ETDM) PLANNING SCREEN

12.1 Project Description

SW 8th Street is one of the most traveled transportation corridors in Miami-Dade County. SW 8th Street is a segment of State Road 90 within Miami-Dade County that connects west Miami-Dade County to Downtown Miami at Brickell Avenue, and also serves as an evacuation route to Western Florida. SW 8th Street provides direct system-level connections to I-95, SR 821/The Florida Turnpike, and SR 826/Palmetto Expressway. The study corridor is bounded by SW 122nd Avenue on the west and SW 74th Avenue on the east. The four mile project traverses two municipalities: the City of Miami and the City of Sweetwater, as well as parts of Unincorporated Miami-Dade County.

The project area is located in the western portion of Miami-Dade County, which includes dynamic neighborhoods, land uses, and employment opportunities. Florida International University (FIU), a major public institution with over 40,000 current faculty and students, is located along the corridor and is projected to grow by 65% in 2035 to over 65,000 faculty and students.

Figure 26 – Project Location Map

Future development, mobility, and accessibility are limited due to the Tamiami Canal on the northern side of SW 8th Street. Congestion levels are higher along north-south streets that cross the Tamiami Canal such as SW 107th Avenue, SW 97th Avenue, and SW 87th Avenue. Eastbound traffic along the corridor tends to become more congested especially near the SR 826/Palmetto Expressway on and off ramps. It is here where lanes are reduced from four lanes in each direction to only two lanes in each direction. This creates a bottleneck situation for traffic flow.

This project will focus on developing transportation improvements, including transit and roadway, to serve existing and future anticipated demand along the corridor. The improvements that will be developed will focus on strategies that enhance capacity to alleviate congestion and support increased transit use planned for the corridor. Improvements will include potential grade separations at congested intersections, additional safety and pedestrian improvements (beyond what completed recently by FDOT project), Intelligent Transportation Systems (ITS), and potential enhancements for an Enhanced Bus Service (EBS).

12.2 Purpose

The purpose of this project is to analyze potential improvements that will enhance mobility and safety. These improvements include previously identified grade separations at SW 87th Avenue and SW 107th Avenue, pedestrian and bicycle improvements and transit enhancements. The objective of the improvements is to relieve congestion and provide additional travel options throughout the corridor. Constrained right-of-way, the Tamiami Canal on the northern side of the corridor, and the existing development intensity presents challenges for accommodating future traffic growth. Because of the lane drop in the corridor when traveling east, there are higher levels of congestion near the SR 826/Palmetto Expressway ramps, creating a bottleneck for traffic. The study will identify system wide level impacts from the corridor improvements.

12.3 Need

Improvements to this section of SW 8th Street may be needed in order to relieve congestion in various segments between SW 74th Avenue and SW 122nd Avenue. Planned improvements to roadways and transit service in the project area are limited and cannot accommodate the future demands to fully optimize local and regional mobility. The Miami-Dade MPO 2035 Long Range Transportation Plan (LRTP) indicates that levels of service (LOS) along the majority of SW 8th Street within the study corridor and surrounding arterials will continue to be congested and operate at LOS D-F in 2035.

An FDOT resurfacing, restoration, and rehabilitation (RRR) project was completed in 2013 that extended from SR 821/The Florida Turnpike to SR 826/Palmetto Expressway and included bicycle lanes in both directions and turbo lanes west of SW 97th Avenue. According to the LRTP, the planning and construction of pedestrian facility improvements along SW 8th Street between SW 102nd and SW 107th Avenues, SW 112th and SW 122nd Avenues, and between SW 76th Court and SW 82nd Avenue have been scheduled for 2015-2020. These improvements, although necessary to enhance safety, will not improve capacity of the roadway, and therefore will not likely improve the level of service or reduce congestion.

According to the 2035 South East Regional Planning Model (SERPM), even with implementation of the MPO's 2035 LRTP planned improvements along several adjacent arterials such as SW 107th Avenue, SR 836/Dolphin Expressway, and SR 826/Palmetto Expressway, congestion levels will remain high throughout the roadway network within the SW 8th Street study area.

This project will provide detailed analysis of the corridor with a focus on major intersections along the corridor such as at SW 107th Avenue and SW 87th Avenue, where congestion is greatest.

12.4 Transportation Demand and Capacity

Based upon 2012 FDOT Florida Traffic Information Software, the highest existing Annual Average Daily Traffic (AADT) volume for the project corridor of SW 8th Street is 68,726 vehicles per day (VPD) between SR 821/The Florida Turnpike and SW 122nd Avenue. Of these 68,726 vehicles, approximately 40,787 are in the eastbound direction.

Population and employment growth figures within the study area, based on the 2035 LRTP, are forecasted to grow from 127,700 in 2005 to 184,794 in 2035 (1.96% annual growth rate) and from 48,109 in 2005 to 63,075 in 2035 (1.43% annual growth rate), respectively. These numbers do not include the anticipated students that will be attending FIU. Currently, FIU has over 44,000 students and is projected to grow to over 65,000 students by 2035. Student travel patterns, changing demographics, and employment patterns would undoubtedly increase the number of daily vehicular trips to the local roadway network. Improved mobility is needed to accommodate the existing deficiencies and demand from the future population and employment growth expected in the study area.

Projections of future population and employment growth in the project area indicate that travel demand will continue to increase for years to come. Without improvements at key congested intersections, congested conditions will continue to occur for extended periods of time outside of the current peak periods.

12.5 System Linkage

SW 8th Street extends for over 100 miles from Downtown Miami to Naples Florida. Within the project study limits, SW 8th Street varies from an eight-lane divided arterial to a four-lane undivided arterial. SW 8th Street provides direct connections to I-95, SR 826/Palmetto Expressway and SR 821/The Florida Turnpike, although the connection to I-95 is outside of the project's limits. SW 8th Street is a major east west travel corridor that parallels SR 836 and is used as a major alternative for east west travel in the County.

12.6 Social Demands and Economic Development

Current land use within one mile of the study corridor is a mix of mostly public/semi-public and residential area, with nodes of retail/commercial land uses (as seen in the following table). The FIU Main Campus makes up most of the public/semi-public acreage in the study area, while a majority of the land uses south of SW 8th Street are residential. The highest density of residences is located in multifamily residential units north of SW 8th Street.

The City of Sweetwater has recently rezoned the area north of the FIU campus and just west of SW 107th Avenue as "The University District". This rezoning allows for taller developments (up to 170 feet) and aims to encourage mixed-use developments that incorporate student housing and commercial uses in anticipation for increased student populations in the future. This zone will result in more trips produced and attracted with the higher residential and commercial densities.

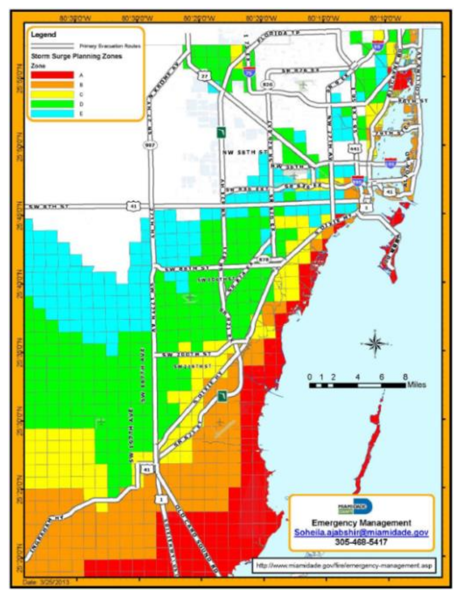
Existing Land Use within 1 Mile of Study Area

Land Use	Acreage	Percent
Public/Semi-Public	4,020.80	38.9%
Residential	3,421.38	33.1%
Vacant Residential	1,390.78	13.5%
Retail/Office	938.42	9.1%
Vacant Non-Residential	192.90	1.9%
Recreation	175.01	1.7%
Institutional	138.44	1.3%
Industrial	46.19	0.4%
Agricultural	8.39	0.1%
	10,332.30	100.0%

Source: GIS Traffic Analysis Zones 2010

12.7 Emergency Evacuation

SW 8th Street serves as part of the emergency evacuation route network designated by the Florida Division of Emergency Management as seen in the figure to the right. SW 8th Street is a major east-west evacuation route, and is critical in facilitating the movement of traffic during emergency evacuation period. Mobility improvements made to this corridor will allow for enhanced emergency access and incident response times as well.



Source: Miami-Dade County Emergency Management 2013

12.8 Modal Interrelationships

Opportunities for connectivity and modal interrelationships will be improved with enhancements to the roadway which address congestion and mobility. Potential transit users in the study area would benefit significantly from a higher level of transit service that could have improved run times and travel speeds, making transit more competitive with the personal automobile. The exclusive bike lanes that have been added to SW 8th Street as a part of FDOT's recent RRR project will benefit from any improvements to congestion and mobility.

12.9 Federal, State, and Local Government Consistency

Currently, this project is not included in the Miami-Dade County 2035 Long Range Transportation Plan (LRTP).

Appendix A - 72-Hour Classification Counts

Appendix B – 72-Hour Regular Counts for SW 8th Street and Cross-Streets

Appendix C – Raw Turning Movement Counts

Appendix D – Field Travel Time Studies

Appendix E – Field Queue Data

Appendix F – Volumes Profiles

Appendix G – Processed Turning Movement Counts

Appendix H – Signal Timing

Appendix B – Technical Memorandum #2 - Traffic Methodology

SW 8TH STREET CORRIDOR STUDY - TRAFFIC METHODOLOGY TECHNICAL MEMORANDUM #2

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September 2014

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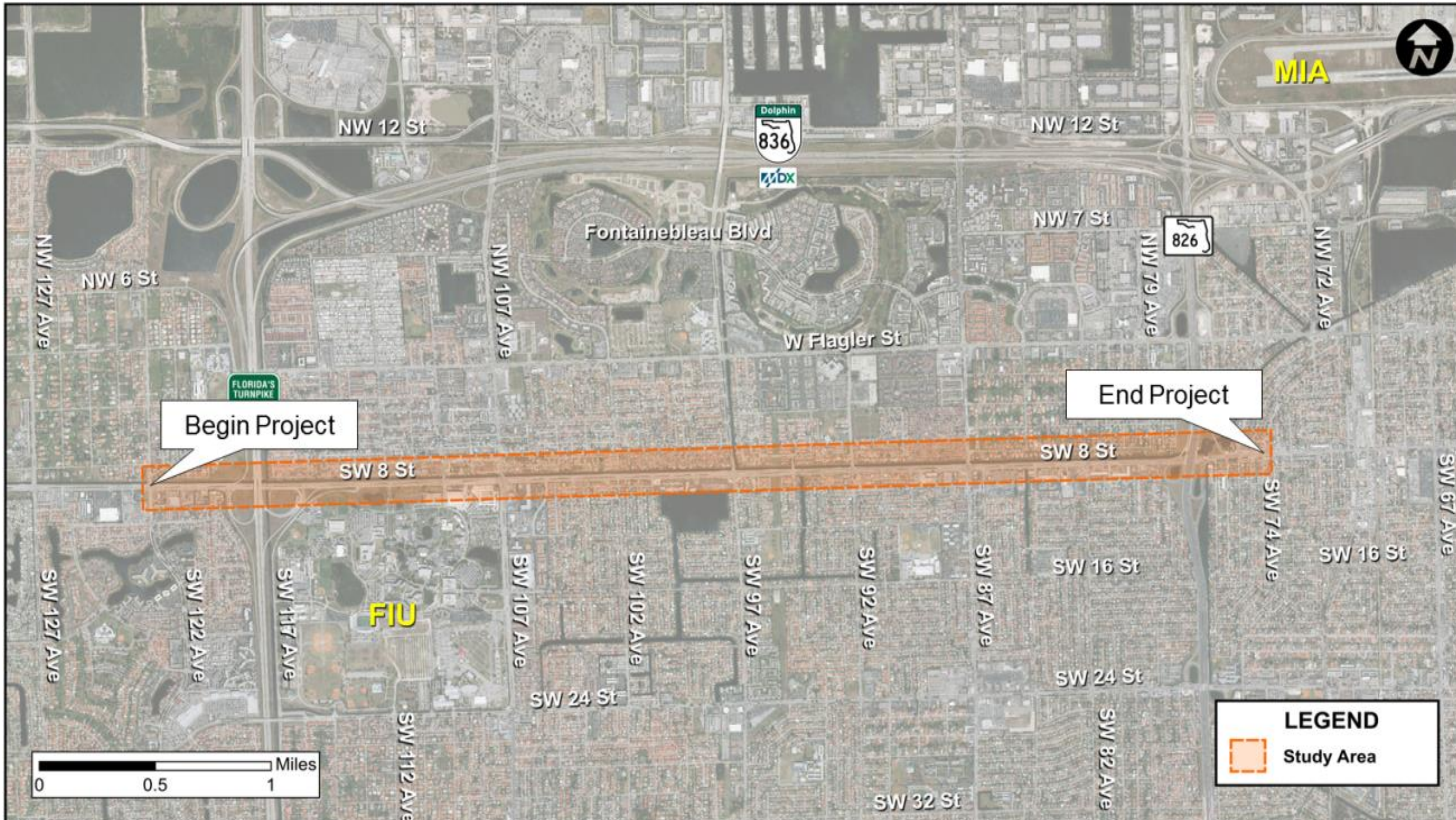
1.0 INTRODUCTION

The Miami-Dade Metropolitan Planning Organization (MPO) has retained HNTB to conduct a Corridor Study along SW 8th Street between SW 122nd Avenue and SW 74th Avenue. This analysis will assess existing conditions along this important arterial and identify various improvements that will alleviate congestion and improve traffic flow.

Figure 1 shows the project location map and the limits of the Corridor Study.

Figure 1: Project Location



1.1 Project Study Area

Based on the scope of work for the SR 90/US-41/SW 8th Street Corridor Study, the study area boundaries for this project are defined by SW 74th Avenue (eastern end) and SW 122nd Avenue (western end).

1.2 Study Structure

The methodology has been divided in two parts, each consistent with the level of detail expected during each phase of the environmental process; namely, Corridor Evaluation and Alternatives Analysis.

The first phase (i.e., Corridor Evaluation) would serve the purpose of validation of the travel demand model, creation of a Base Year model and Design Year No Build model.

The second phase (i.e., Alternatives Analysis) will include development of the Opening Year No Build and Build, and Design Year Build travel demand models, traffic operations screening analysis of a roadway alternative, a transit alternative and a combined alternative. The recommended Build alternative will be evaluated in a more detailed fashion in terms of traffic operation.

In this manner, each phase of the study builds onto the results from the previous. This will ensure maximization of resources and savings in data collection, by tailoring the efforts according to the scoped work in the particular phase.

1.3 Analysis Years

The following horizons have been identified for analysis purposes for this study.

Table 1 – Analysis Years

BASE YEARS	**2005 SERPM Model Base Year**	The current version of the Southeast Florida Regional Planning Model (SERPM) 6.5.4 has been calibrated and validated using 2005 data. This model will be used only as a basis for additional model developments.
BASE YEARS	**2014 SERPM Model Data and Validation Check** **And** **2014 Synchro Model Operations**	The 2035 SERPM model will be updated with the existing roadway network (2014) by deleting future projects after the year 2014 from the model. The model will be utilized for Corridor Evaluation and subsequent alternative evaluation. For the operational analysis, the existing conditions (2014) will be modeled using Synchro and 2014 traffic counts.
FORECAST YEARS	**2025 Project Opening Year Volumes**	For the 2025 volumes projections, a traffic volume interpolation between the 2005 SERPM model and the 2035 SERPM Base Model will be used. For the operational analysis a 2025 Opening Year model will be developed using Synchro and the appropriate scaled projections for 2025.
FORECAST YEARS	**2035 SERPM Model Horizon Year**	The 2035 SERPM Model (v. 6.5.4) current forecast horizon, consistent with the current Miami-Dade County Long Range Transportation Plan (2035 LRTP) will be run. This model will be used to develop the 2025 and 2045 Design Year volumes.
FORECAST YEARS	**2045 Project Design Year Volumes**	A growth rate will be used to forecast the 2045 volumes from the 2035 SERPM model. The future forecast year for the Corridor Analysis will be consistent with the projections from Existing, Opening Year and Horizon Year. Synchro will be used to operationally analyze 2045 forecasted traffic volumes in the corridor.

2.0 CORRIDOR EVALUATION

The purpose of the traffic analysis in this phase of the study is to assist with the substantiation of the purpose and need of the project; validate the traffic study sub-area of the travel demand model (SERPM) to existing conditions (2014) to be used throughout the project; and provide transportation operational input during the preliminary screening of alternatives.

The methodology for the travel demand modeling and traffic operations analysis to be performed as part of the Corridor Evaluation phase is discussed in the following sub-sections.

2.1 Area of Influence

For travel demand forecasting purposes, the area of influence would be extended past the limits described in the Scope of Work in order to determine whether proposed projects with regional impact have an impact on the current traffic flow along SW 8th Street and its crossing roadways. Therefore, the proposed influence area is as follows:

- SW 72nd Avenue/Milam Dairy Road to the east
- SW 177th Avenue/Krome Avenue to the west
- NW 25th Street to the north
- SW 24th Street/Coral Way to the south

The north and south limits were selected to be consistent with the analysis presented in the SW 8th Street and SW 87th Avenue Intersection Improvements Concept and Feasibility Study by FDOT.

2.2 Travel Demand Model Development

Covering a vast geographical area and hosting a multitude of travel options, SERPM is one of the most complex Florida Standard Urban Transportation Model Structure (FSUTMS) based models. Because of that, it is paramount that the specific area in which the model will be applied undergoes an evaluation and validation prior to such application.

This task involves the work to prepare and initially test the travel demand modeling tool that will be used to forecast future traffic for all phases of this study. The latest version of the SERPM at the time the SW 8th Street Study was scoped (SERPM 6.5.4 released on March 24, 2014) will be used for the analysis.

SERPM 6.5.4 consists of a 2005 validation year and the 2035 horizon year socioeconomic and network files; the horizon year network includes those projects identified in the 2035 Miami-Dade LRTP.

SERPM 6.5.4 will be executed using the full (Time-of-Day, Multimodal) running option. This running option explicitly models the fluctuations in travel behavior, traffic congestion, and traffic and transit operations for the following three time periods: AM-Peak Period (6:30 am-9:30 am); PM- Peak Period (3:30 pm-6:30 pm); and Off-Peak Period (9:30 am – 3:30 pm, 6:30 pm – 6:30 am).

The model validation will focus on the traffic study area defined for the Corridor Evaluation in the previous section. However, the entire SERPM chain will be used throughout the Corridor Evaluation and Alternative Analysis phases.

2.2.1 Development of Project Base Model (2014)

In order to produce defendable forecasts, it is necessary to verify the validated model (2005) datasets, assumptions and results against an up-to-date current year model. For this reason, the 2005 Base Year Model (see Table 1) will be updated with the 2014 roadway and transit network, thus creating a 2014 Project Base Year Model (herein 2014 Model). The following are brief descriptions of tasks that will be undertaken to verify/validate the SERPM for the Corridor Evaluation—and subsequent Alternatives Analysis—phase.

Socioeconomic Data for Year 2014

In order to produce defendable forecasts, it is necessary to verify the model datasets to reflect socio-economic conditions for the validation year and for the project year. This includes comparisons of the overall control totals of the demographics for the SERPM, as well as the location and intensity of large-scale developments within the traffic study area.

The socio-economic data for Year 2014 will be initially estimated by interpolating the data between the years 2005 and 2035.

This estimated 2014 data will then be compared on an aggregate for the SERPM area with available 2010 socio-economic data generated for the SERPM 7 model.

Within the traffic study area, all necessary adjustments to obtain the most sensible and logical socioeconomic data for 2014 will be thoroughly reviewed, and documented accordingly.

In addition, the other modeling input files, which reflect the external-external, external-internal and/or internal-external trips, will be interpolated between the years 2005 and 2035 to develop the volumes for the year 2014. The Special Generator file will be reviewed on projected growth and will be analyzed in order to asses if adjustments are needed to accurately reflect travel patterns within the traffic study area for the year 2014.

Transportation Network for Year 2014

The 2014 highway network will be developed by deleting highway improvement projects planned during the 2014-2035 time period from the 2035 highway network within the traffic study area. The 2014 roadway network will include the completed

SR 836/826 interchange. Additionally, the GIS files for the Miami-Dade Transit's (MDT) transit services operational during 2014 will be used to update the 2005 transit network to reflect the 2014 transit network.

Review Traffic Analysis Zone (TAZ) Structure

The existing TAZ structure within the traffic study area will be reviewed to determine if it is detailed enough to reflect the local network. A thorough review of the size and limits of the TAZs within the traffic study area will be first performed during the mini-validation process.

If necessary, TAZs will be split and their associated socioeconomic data will be distributed appropriately between the new zones. Where zones are split additional network links will be added to provide access from and to the new zones. Centroid connectors will be moved as necessary to more closely reflect the access to the major arterials.

2.2.2 Validation of Project Base Model (2014)

HNTB will perform a project level validation of the 2014 model. The validation effort will only focus on the sub-area indicated in Figure 1, which is the Corridor Evaluation traffic study area and therefore includes the future traffic study area(s) for the Alternatives Analysis phase. The goal is to improve the correlation between model estimates and observed conditions on the roadways within the sub-area.

The collected traffic counts and turning movements will be used for model validation. When the model forecasts for the known condition (2014) correlate—within acceptable tolerance—with actual traffic counts on the network, confidence will be established in the model's validity, and it will be considered ready to conduct various scenario analyses.

The steps included in the model validation are summarized below.

Functional Network Checks

Among the important data that must conform to the actual conditions of the validation year are the physical and operational features of the area roadway and transit networks. Once an accurate representation of the highway and transit networks, as they exist in the urbanized area in the year 2014 has been created, their correctness will need to be checked.

On the highway side, the review will focus on roadways characteristics, such as facility types, number of lanes, etc. This task will ensure that the base model has the appropriate number of lanes, travel speeds, and available traffic counts for the traffic study area. On the transit side the review will focus on routes, headways and stop locations.

Adjustment Process

The validation of the model will be limited to aggregate validation checks, and will concentrate on the highway component. The accuracy standards for screenlines published in FDOT's *FSUTMS-Cube Framework Phase II, Model Calibration and Validation Standards: Model Validation Guidelines and Standards* (2008) included in Attachment A will be applied.

2.2.3 Development of Opening Year No Build Model (2025)

An Opening Year No Build model will be prepared to reflect the conditions anticipated in the Opening Year (2025). The basic steps required for preparing future year data are summarized below.

Socio-Economic Data

All the socio-economic data within the SERPM's traffic analysis zones (TAZs) will be adjusted to reflect the demographics anticipated to be in place in Opening Year 2025. The adjustments will be based on straight line projections between the adopted 2005 socio-economic data and the adopted 2035 socio-economic data. Several statistics will be cross checked from the 2010 Census including employment, employees/households, average annual growth rate in population and households to check for reasonableness of the data within the traffic study area.

Network Data

Within the traffic study area, projects will be deleted from the 2035 Horizon Year model network to replicate the E+C projects and the Priority 2 improvements in the cost feasible portion of the 2035 LRTP that would be implemented by 2025.

In addition the other modeling input files, which reflect the external-external, external-internal and/or internal-external trips, will be interpolated between the years 2005 and 2035 to develop the volumes for the year 2025. The Special Generator file will be reviewed on projected growth and will be analyzed in order to asses if adjustments are needed to accurately reflect travel patterns within the traffic study area for the year 2025.

2.2.4 Development of Project Design Year No Build Model (2045)

A Project Design Year No Build model will be prepared to reflect the conditions anticipated in the Design Year (2045). The basic steps required for preparing future year data are summarized below.

Socio-Economic Data

All the socio-economic data within the SERPM's traffic analysis zones (TAZs) will be adjusted to reflect the demographics anticipated to be in place in Design Year 2045. The adjustments will be based on the growth rate obtained from the straight line projections between the adopted 2005 socio-economic data and the adopted 2035 socio-economic data. Within the traffic study area the projected population/household and employment numbers will be analyzed for their reasonableness and consistency with the newly developed 2014 socio-economic data set.

Network Data

Within the traffic study area, the 2035 Horizon Year model network will be updated to include committed highway and transit improvements to be implemented by 2045 according to the 2035 Miami-Dade LTRP. Any potential improvement projects beyond the published LRTP horizon will be discussed and agreed upon with Miami-Dade MPO to ensure validity of the assumptions.

In addition, the other modeling input files, which reflect the external-external, external-internal and/or internal-external trips, will be interpolated between the years 2005 and 2035 to develop the volumes for the year 2045. The Special Generator file will be reviewed on projected growth and will be analyzed in order to asses if adjustments are needed to accurately reflect travel patterns within the traffic study area for the year 2045.

2.3 Alternative Screening

In addition to the No Build alternative, the recommended alternative will be tested using the Opening Year (2025), the 2035, and the Project Design Year (2045) model. For each tested scenario, summary performance statistics from SERPM comparing each Build scenario with the 2045 No Build scenario will be documented. The measures will be limited to those that can be extracted from SERPM (i.e. travel time, vehicle miles traveled (VMT), vehicle hours traveled (VHT), and demand (AADT)).

3.0 TRAFFIC ANALYSIS

3.1 Length of Analysis Period

In order to determine the length of the analysis period and whether peak-hour spreading (multi-hour) analysis was necessary, data collected in the field was reviewed and evaluated in detail. Several factors were considered:

1) Area-wide Peak-hour
2) Time-of-Day Factors or Peak Hour Spreading Distribution Factors
3) Traffic Signal Operations
4) Current guidelines and software package to be used

Traffic analyses are usually a simplification of the real-world. Numerous assumptions need to be made prior to developing a methodology for a specific project. The analyst has to be aware of how the assumptions and traffic factors used (for the analysis) will affect the results.

Therefore, prior to deciding to perform a peak-hour spreading analysis (multi-hour analysis) for SW 8th Street several elements of the network were considered. In general, performing multi-hour analysis for freeways (limited access facilities) is relatively simpler than for arterials. Factors affecting traffic flow patterns in freeways are limited. However, traffic flow along arterials (such as SW 8th Street) is impacted by countless factors (traffic signal operations, cross-streets patterns, land use, etc). Before developing a multi-hour analysis along an arterial, the impact of these factors (on the overall analysis) needs to be considered.

The following sections explain the analysis performed in order to determine if a multi-hour analysis was suitable for SW 8th Street Corridor Study.

3.1.1 Area-wide Peak Hour and Land Use Adjacent Impacts

Hourly volumes vs. time of day profiles (developed from the 72-Hour counts collected, and included in Attachment B) were reviewed and they revealed that the morning peak hour occurred in the eastbound direction and it was very well defined. The westbound direction did not show any significant peak volume during the morning hours.

However, the afternoon peak period, unlike the morning, was very spread-out and depicted a flat continuous volume across several hours along the westbound direction. Figure 2 shows a typical hourly volume vs. time of day profile for a location along SW 8th Street.

Figure 2: SW 8th Street Typical - Hourly Volume vs. Time of Day Profile

Table 2 lists the locations where 72 Hour Counts were collected. In addition, this table summarizes the Average Annual Daily Traffic (AADT), the peak hour volumes (AM and PM) and the time when these were identified. Based on the bi-directional peak hour, during the AM peak, six locations (out of 14) were identified to peak between 6:45 AM and 7:45 AM. Four (of these six locations) were located between SW 122nd Avenue and SW 112th Avenue. Between SW 109th Avenue and SW 74th Avenue, locations were identified to peak at different times (a clear pattern could not be determined).

In the case of the PM peak hour, six locations were identified to peak between 4:15 PM and 5:15 PM. Four of these sites were located between west SW 97th Avenue and west of SR 826/Palmetto Expressway. Between west of the HEFT and west of SW 107th Avenue, the predominant peak hour occurred between 3:45 PM and 4:45 PM. Other sites' locations peaked at different times with no clear pattern.

Table 3 lists the AADTs, peak hour volumes and times estimated from the 72-Hour Counts collected along the major cross-streets with SW 8th Street. Based on the bi-directional peak hour, locations peaked at different times. No clear pattern could be identified in regards to the time these locations reported the highest volumes.

Table 2 – SW 8th Street Area-Wide Peak Hour Identification from the 72 - Hour Counts

		AADT (vpd)			Peak Hour Volumes (vph)			
Roadway	Location	EB	WB	Both Directions	Direction		AM	PM
SW 8th Street	1) West of SW 122nd Avenue	22,177	24,598	46,775	EB	Volume	1,663	1,422
						Time	615-715	330-430
					WB	Volume	1,240	1,962
						Time	1145-1245	500-600
					Both	Volume	2,673	3,314
						Time	645-745	315-415
	2) East of SW 122nd Avenue	34,660	32,609	67,269	EB	Volume	3,649	1,899
						Time	615-715	200-300
					WB	Volume	1,683	3,034
						Time	1145-1245	415-515
					Both	Volume	5,147	4,752
						Time	630-730	415-515
	3) West of SR 821/HEFT	40,788	27,939	68,727	EB	Volume	4,111	2,468
						Time	630-730	315-415
					WB	Volume	1,458	2,262
						Time	645-745	345-445
					Both	Volume	5,478	4,644
						Time	645-745	345-445
	4) East of SR 821/HEFT (between the EB and WB intersection from NB ramp from the HEFT)	32,305	32,631	64,936	EB	Volume	2,866	2,080
						Time	630-730	330-430
					WB	Volume	1,755	2,755
						Time	1145-1245	400-500
					Both	Volume	4,391	4,801
						Time	645-745	345-445
	5) West of SW 112th Avenue	34,982	24,112	59,094	EB	Volume	3,190	2,072
						Time	645-745	330-430
					WB	Volume	1,677	2,578
						Time	1145-1245	415-515
					Both	Volume	3,892	4,610
						Time	645-745	345-445
	6) West of SW 109th Avenue	29,458	27,022	56,480	EB	Volume	2,202	1,769
						Time	730-830	400-500
					WB	Volume	1,539	1,939
						Time	745-845	415-515
					Both	Volume	3,704	3,697
						Time	730-830	415-515

Roadway	Location	AADT (vpd) EB	AADT (vpd) WB	AADT (vpd) Both Directions	Direction		Peak Hour Volumes (vph) AM	Peak Hour Volumes (vph) PM
SW 8th Street	7) West of SW 107th Avenue	31,212	26,152	57,364	EB	Volume	2,280	2,009
						Time	615-715	345-445
					WB	Volume	1,622	1,826
						Time	645-745	500-600
					Both	Volume	3,839	3,816
						Time	630-730	345-445
	8) West of SW 102nd Avenue (between SW 105th Avenue and SW 103rd Place)	26,076	18,762	44,838	EB	Volume	1,609	1,761
						Time	615-715	400-500
					WB	Volume	1,261	1,903
						Time	1145-1245	200-300
					Both	Volume	2,532	3,525
						Time	645-745	230-330
	9) West of SW 97th Avenue (about 760' west of NW 97th Avenue)	32,209	28,183	60,392	EB	Volume	2,791	1,860
						Time	630-730	200-300
					WB	Volume	1,543	2,271
						Time	1145-1245	430-530
					Both	Volume	4,234	4,046
						Time	645-745	415-515
	10) West of SW 92nd Avenue (between NW 93rd Place and NW 93rd Avenue)	28,463	27,715	56,178	EB	Volume	2,595	1,742
						Time	630-730	215-315
					WB	Volume	1,602	2,274
						Time	1145-1245	430-530
					Both	Volume	3,922	3,894
						Time	630-730	415-515
	11) West of SW 87th Avenue (between SW 89th Avenue and SW 88th Avenue)	28,718	28,695	57,413	EB	Volume	2,624	1,730
						Time	615-715	200-300
					WB	Volume	1,688	2,360
						Time	1145-1245	445-545
					Both	Volume	3,936	3,981
						Time	630-730	415-515
	12) West of SW 82nd Avenue (about 1,300' east of NW 87th Avenue)	25,969	34,517	60,486	EB	Volume	2,231	1,672
						Time	600-700	230-330
					WB	Volume	1,926	2,635
						Time	1145-1245	315-415
					Both	Volume	3,536	4,221
						Time	1145-1245	345-445

Roadway	Location	AADT (vpd) EB	AADT (vpd) WB	AADT (vpd) Both Directions	Peak Hour Volumes (vph) Direction		AM	PM
SW 8th Street	**13) West of SR 826/Palmetto Expressway (about 250' west of SW 79th Avenue)**	29,602	25,830	55,432	EB	Volume	2,550	1,851
						Time	615-715	230-330
					WB	Volume	1,573	2,075
						Time	1145-1245	415-515
					Both	Volume	3,557	3,826
						Time	615-715	415-515
	14) East of SW 74th Avenue	20,789	25,359	46,148	EB	Volume	1,418	1,350
						Time	745-845	1200-100
					WB	Volume	1,608	1,755
						Time	700-800	245-345
					Both	Volume	2,932	2,985
						Time	700-800	215-315

LEGEND	
AM	PM
615-715	215-315
630-730	230-330
645-745	345-445
700-800	415-515
730-830	
1145-1245	

Table 3 – SW 8th Street (Cross-Streets) Peak Hour Identification from the 72 – Hour Counts

Roadway	Location	AADT (vpd) NB	AADT (vpd) SB	AADT (vpd) Both Directions	Direction		Peak Hour Volumes (vph) AM	Peak Hour Volumes (vph) PM
SW 87th Avenue	North of SW 8th Street	29,528	15,474	45,000	NB	Volume	2,339	1,963
						Time	645-745	145-245
					SB	Volume	1,076	1,107
						Time	1145-1245	1245-145
					Both	Volume	3,147	3,014
						Time	645-745	115-215
	South of SW 8th Street	16,443	16,777	33,220	NB	Volume	1,115	1,127
						Time	630-730	145-245
					SB	Volume	1,102	1,246
						Time	1145-1245	230-330
					Both	Volume	2,138	2,320
						Time	1130-1230	115-215
SW 92nd Avenue	South of SW 8th Street	4,858	4,787	9,645	NB	Volume	592	376
						Time	800-900	245-345
					SB	Volume	388	469
						Time	800-900	515-615
					Both	Volume	980	812
						Time	800-900	515-615
SW 97th Avenue	North of SW 8th Street	16,750	15,308	32,058	NB	Volume	1,242	1,378
						Time	630-730	430-530
					SB	Volume	967	1,496
						Time	645-745	400-500
					Both	Volume	2,185	2,848
						Time	645-745	415-515
SW 107th Avenue	North of SW 8th Street	20,685	17,364	38,049	NB	Volume	1,335	1,447
						Time	1100-1200	415-515
					SB	Volume	1,132	1,223
						Time	1130-1230	330-430
					Both	Volume	2,466	2,666
						Time	1130-1230	400-500
	South of SW 8th Street	23,875	23,868	47,743	NB	Volume	1,549	1,515
						Time	630-730	345-445
					SB	Volume	1,487	1,724
						Time	730-830	500-600
					Both	Volume	2,984	3,219
						Time	645-745	345-445

		AADT (vpd)			Peak Hour Volumes (vph)			
Roadway	**Location**	**NB**	**SB**	**Both Directions**	**Direction**		**AM**	**PM**
SW 109th Avenue	**South of SW 8th Street**	5,914	6,050	11,964	NB	Volume	429	569
						Time	1145-1245	230-330
					SB	Volume	906	437
						Time	800-900	330-430
					Both	Volume	1,092	957
						Time	800-900	330-430

LEGEND	
AM	**PM**
645-745	115-215
800-900	330-430
1130-1230	345-445
	400-500
	415-515
	515-615

It also noteworthy to mention that the 72-Hour Counts were collected using the traditional pneumatic tubes machines. This technology is known to relatively under estimate volumes as speeds are reduced at a particular location. Therefore, turning movement counts at the intersections were also compared against the approach counts collected. Turning movement volumes resulted to be slightly higher than the approach hourly count obtained from the 72-Hour count (along SW 8th Street).

From the turning movement count information, it was determined that peak hour volumes were occurring at a relatively later time that the ones identified from the 72-Hour counts. For most of the locations, the 72-Hour counts determined a bi-directional peak hour occurring from 6:45 AM to 7:45 AM during the morning peak, while the turning movement counts identified that the majority of the intersections were peaking between 7:30 AM to 8:30 AM (as listed in Table 4). Two factors should be considered when comparing the peak hours from these two different types of counts. One factor is that pneumatic tubes might have under-counted the approach volume; while the actual intersection was processing slightly higher volumes due to shorter spacing between vehicles, which can often be attributed to aggressive driving. The second factor is that the crossing-streets have different peaking times and therefore, peak hour volumes at the intersection peak at a different time than mid-block volumes. Peak hours identified in Table 4 consider volumes entering the intersections from all of the approaches.

Table 4 – Turning Movement Volumes Peak Times

#	Intersection	AM Peak Hour	PM Peak Hour
1	SW 122 Ave	7:30 to 8:30	5:00 to 6:00
2	HEFT SB	7:30 to 8:30	4:30 to 5:30
3	HEFT NB	7:30 to 8:30	4:30 to 5:30
4	SW 117 Ave	7:30 to 8:30	4:30 to 5:30
5	SW 112 Ave	7:30 to 8:30	4:15 to 5:15
6	SW 109 Ave	7:30 to 8:30	4:30 to 5:30
7	SW 107 Ave	7:30 to 8:30	5:00 to 6:00
8	SW 102 Ave	7:00 to 8:00	5:00 to 6:00
9	SW 99 Pl	7:15 to 8:15	3:15 to 4:15
10	SW 97 Ave	7:30 to 8:30	5:00 to 6:00
11	SW 94 Ave	7:15 to 8:15	4:45 to 5:45
12	SW 92 Ave	7:15 to 8:15	5:00 to 6:00
13	SW 87 Ave	7:30 to 8:30	3:00 to 4:00
14	SW 82 Ave	7:00 to 8:00	3:15 to 4:15
15	SR 826 SB	7:30 to 8:30	4:45 to 5:45
16	SR 826 NB	7:15 to 8:15	5:00 to 6:00
17	Tamiami Canal Rd	7:30 to 8:30	4:15 to 5:15
18	Flagami Blvd	7:45 to 8:45	4:30 to 5:30
19	SW 74 Ave	7:45 to 8:45	4:45 to 5:45

A similar situation was observed when the peak hour volumes from the 72-Hour counts were compared to the turning movement counts for the afternoon peak. Peak hour volumes from the turning movement counts were slightly higher than the ones obtained from the 72-Hour counts and the identified peak hours were also different (4:00 PM to 5:00 PM (from the 72-Hour counts) vs. 5:00 PM to 6:00 PM (from the turning movement count).

In addition, when analyzing the peak hour flow (based on the turning movement counts) it was determined that SW 8th Street actually peaks at different times depending on the roadway segment. For instance, the western end of the project shows peak hour volumes between 7:30 AM to 8:30 AM; while locations near SW 87th Avenue show peak hour volumes occurring between 7:00 AM and 8:00AM (half-an hour earlier).

In summary, after carefully examining the extensive data collected, it was determined that the prevalent times for which peak volumes were observed were between 7:30 AM and 8:30 AM (during the morning) and between 5:00 PM and 6:00 PM (in the afternoon). Therefore, these are the peak hours to be used for this corridor study analysis.

In order to identify the level of congestion that the corridor experiences average speeds collected in the field were reviewed. Since the eastbound direction represents the predominant direction in the morning peak and the westbound direction represents the peak direction in the afternoon, the review concentrated on these two directions (eastbound AM and westbound PM). As listed in Tables 5 and 6, the average speed in the eastbound direction is about 15 mph in the morning. Only the segments in the vicinity of SW 107th Avenue and east of NW 87th Avenue (approaching SR 826) experience speeds lower than 10 mph. Based on a preliminary arterial analysis, the majority of the segments along SW 8th Street operate at LOS between A and E, except for the segments listed above which operate at LOS F. Therefore, most of the segments along SW 8th Street <u>are not</u> operating at over-saturated conditions.

In the afternoon the average peak hour speed in the westbound direction is about 20 mph. Only the segment in the vicinity of SW 107th Avenue is operating at an average speed lower than 10 mph. Similar to the morning peak direction, most of the segments along SW 8th Street <u>are not</u> operating at over-saturated conditions.

Since most of the segments are not operating at over-saturated conditions a peak-spreading analysis is not necessary. The flat continuous volume across several hours depicted in the time-of-day vs. hourly volume profile does not seem to be associated to the peak-hour spreading phenomenon. Based on field observations, no major spillbacks are present within the limits of the corridor analysis. No queues from one intersection affect the operations of the upstream intersection. Traffic along SW 8th Street seems to be entering steadily for several hours, without exceeding capacity. Therefore, based on the traffic data collected and observed field conditions, a multi-hour analysis does not appear to be warranted.

Table 5 - Eastbound AM – Peak Hour Average Speeds

Node Name	Week 1 (mph)	Week 2 (mph)	Average (Week 1 and 2) (mph)
SW 127 Ave			
SW 122 Ave	20.90	12.70	16.80
FL Turnpike West Ramps	33.60	32.80	33.20
FL Turnpike East Ramps	39.10	28.50	33.80
SW 117 Ave	27.70	20.80	24.25
SW 112 Ave	34.00	31.90	32.95
SW 109 Ave	35.60	20.60	28.10
SW 107 Ave	10.40	7.90	9.15
SW 102 Ave	29.30	31.50	30.40
SW 99 Pl	38.60	38.60	38.60
SW 97 Ave	20.00	26.30	23.15
SW 94 Ave	35.20	36.10	35.65
SW 92 Ave	34.40	35.30	34.85
SW 87 Ave	9.00	19.20	14.10
SW 82 Ave	4.90	11.30	8.10
Palmetto West Ramps	6.30	12.30	9.30
Palmetto East Ramps	6.00	6.80	6.40
Tamiami Canal Rd	9.70	7.20	8.45
Flagami Blvd/ SW 74 Ct	6.20	11.30	8.75
SW 74 Ave	18.30	12.40	15.35
SW 67 Ave	22.50	18.50	20.50
AVERAGE	**13.80**	**16.70**	**15.25**

Table 6 - Westbound PM – Peak Hour Average Speeds

Node Name	Week 1 (mph)	Week 2 (mph)	Average (Week 1 and 2) (mph)
SW 67 Ave			
SW 74 Av/Tamiami Blvd	13.30	14.20	13.75
Flagami Blvd/SW 74 Ave	18.20	22.20	20.20
Tamiami Canal Rd	25.90	14.90	20.40
Palmetto East Ramps	19.30	16.10	17.70
Palmetto West Ramps	31.00	26.50	28.75
SW 82 Ave	19.20	23.30	21.25
SW 87 Ave	23.30	24.30	23.80
SW 92 Ave	24.70	18.60	21.65
SW 94 Ave	37.60	35.90	36.75
SW 97 Ave	29.30	21.60	25.45
SW 99 Pl	38.90	37.70	38.30
SW 102 Ave	39.00	39.40	39.20
SW 107 Ave	10.90	6.50	8.70
SW 109 Ave	33.70	15.80	24.75
SW 112 Ave	38.00	35.30	36.65
SW 117 Ave	27.40	26.60	27.00
FL Turnpike East Ramps	26.30	28.50	27.40
FL Turnpike West Ramps	35.40	37.60	36.50
SW 122 Ave	17.60	15.50	16.55
SW 127 Ave	33.90	37.80	35.85
AVERAGE	**21.70**	**18.60**	**20.15**

3.1.2 Static Time of Day (TOD) Factors or Peak Hour Spreading Distribution Factors

In order to conduct a traffic analysis that adequately considers peak-hour spreading, Time of Day Factors (TOD), based on historical counts and/or field counts, are developed. These TOD factors are used to expand the area-wide peak hour into 15 minute interval volumes which in turn are converted into hourly flow rates to be input into the simulation package. These factors are usually normalized in order to get area-wide TOD factors.

As previously mentioned, TOD factors are used to expand the area-wide peak hour volumes to the peak-period (two/three/four hours) to be analyzed. Also, these TOD factors are used to convert 24 – hour demand volumes obtained from travel demand forecasting volumes into peak-period volumes (to analyze future conditions scenario). The assumption behind this method is that the same travel patterns that exist in the present will persist in the future.

Developing these factors for freeway facilities is relatively simpler than for arterial roadways. Limited access facilities have restricted access points and no adjacent land uses that might generate/attract traffic to/from the facilities. Exit/entrance ramps are the only directional access points impacting traffic patterns along these roadways. However, traffic flow along arterials is affected by countless factors such as traffic control signals, major/minor intersections, driveways, median openings, land use, etc.

For instance, traffic flow along an arterial such as SW 8th Street gets impacted by traffic patterns along the crossing streets. Based on the turning movement counts at the intersection of SW 8th Street and SW 107th Avenue, the eastbound/westbound direction morning peak volume occurs between 7:15 and 8:15 (AM). However, if counts from the southbound/northbound directions are considered, the peak morning volume for the intersection as a whole occurs between 7:30 and 8:30 (AM) (fifteen minutes later).

Due to these fluctuations along the corridor, if a multi-hour analysis was to be conducted for the afternoon peak, the length of the analysis period would extend approximately from 3:00 PM to 7:00 PM in order to capture the entire build-up/length/dissipation of congestion. However, in order to expand the peak hour volumes into this four-hour analysis, peak-spreading distribution factors would need to be used. Peak-spreading distribution factors are used to convert the balanced peak hour volumes into 15 min. flow rates, then entered into the simulation package as an hourly volume (to produce an equivalent flow rate). When these factors were estimated and the coefficient of variation calculated (included in Attachment C), it was evident that the data had a great deal of variation with respect to the mean and therefore, expanded volumes could result in values higher or lower than the actual counts in the field (as much as 37 percent for the eastbound direction). *These higher/lower volumes would eventually cause the analysis to produce volumes that were not comparable to the existing volumes*. Moreover, traffic entering/exiting SW 8th Street via mid-block driveways or minor access points are currently considered as “Sink/Source” Nodes in the simulation model. Peak hour distribution factors for these mid-block volumes are not available, and if assumed, would provide an unrealistic condition along the corridor for analysis.

Therefore, based on statistical analysis (included in Attachment C) it was determined that a multi-hour analysis for the SW 8th Street Corridor using static TOD factors would not adequately represent current or future traffic analysis. In order to further corroborate this recommendation, traffic signal operation plans were also reviewed.

3.1.3 Traffic Signal Operation Plans

In order to have a clear understanding of the traffic operations along SW 8th Street, a key element that needs to be reviewed is the traffic signal operations plans. These traffic control devices will actually define and regulate the traffic flow along SW 8th Street.

Existing signal timing and phasing were downloaded from the Miami-Dade County Traffic Signal Division web page for the Advanced Traffic Management System (ATMS). The downloaded information included the actuated traffic signal timing sheet for Time of Day (TOD) Schedule Report. The signalized intersections within the study area are listed in Table 7.

Table 7 – Traffic Signals Overall Settings

Asset No.	Cross-Street	AM Peak Period Cycle	PM Peak Period Cycle	AM Cycle Length	PM Cycle Length	Notes
3730	SW 122 Avenue	6:30-9:30	4:30-7:30	180	150	
4239	SB Ramps from/to HEFT	6:30-9:30	4:30-7:30	180	150	
4238	NB Ramps from/to HEFT	6:30-9:30	4:30-7:30	180	135	
4974	SW 117 Avenue	6:30-9:30	4:00-7:00	180	180	
3879	SW 112 Avenue	6:30-9:30	4:00-7:00	180	180	
5430	SW 109 Avenue	6:30-9:30	4:00-7:00	180	180	
3709	SW 107 Avenue	6:30-9:30	4:00-7:00	180	180	
4510	SW 102 Avenue	6:30-9:30	4:00-7:00	180	180	
3743	SW 97 Avenue	6:30-9:30	4:00-7:00	180	180	
4563	SW 94 Avenue	6:30-9:30	4:00-7:00	180	180	
5164	SW 92 Avenue	6:30-9:30	4:00-7:00	180	180	
3362	SW 87 Avenue	6:30-9:30	4:00-7:00	180	180	
4565	SW 82 Avenue	6:30-9:30	4:00-7:00	180	180	
5425	SB Ramps from/to SR 826	6:00-9:30	3:30-7:00	180	180	
5424	NB Ramps from/to SR 826	6:00-9:30	3:30-7:00	180	180	
2135	SW 74 Court	6:00-9:30	3:30-7:00	180	90	Pedestrian Signal
2634	SW 74 Avenue	6:00-9:30	3:30-7:00	180	180	

Based on coordination with Miami-Dade County Traffic Signal Division, it was determined that the traffic signals along SW 8th Street operate under a semi-actuated/coordinated mode. The through movements along SW 8th Street are not provided with detection loops; therefore, these are the coordinated movements.

In addition, most of the minor crossing streets approaches operate under actuated mode. Phases could be skipped and unused green time is re-assigned to subsequent phases.

As depicted in Table 7, the traffic signal operating plan during the peak hours for SW 8th Street (7:30 AM to 8: 30 AM and 5:00 PM to 6:00 PM) have different durations, some extend from 4:30 PM to 7:30 PM while others last from 3:30 to 7:30 PM. If a multi-hour analysis (from 3:00 PM to 7:00 PM) was to be considered, the starting traffic signal operating plan would be different for all intersections. Then, at 4:30 PM a new signal timing plan would start for the western intersections and at 3:30 PM a new signal timing plan would start at the eastern intersections.

These signal operating plans differ in cycle lengths as well as in settings such as the phasing recall parameters (where phases can be skipped or serviced with the minimum/maximum green, etc.). All these factors impact traffic flow along the corridor and therefore, calibration of the model.

Research information provided by the Miami-Dade County Traffic Signal Division indicated that Traffic Signal Operations Engineers (at the Traffic Management center) may change the recall setting on any phase/movement/direction operating on recall (MIN or MAX) by time-of-day, depending on real-time field conditions in order to provide a better flow or coordination.

These changes in signal plan operations may impact the travel times along SW 8th Street. Based on the data collected during the travel time studies, it was noted that some total travel times (for a particular direction) varied during the morning peak hour as much as 57% from the average and as much as 36% from the average in the afternoon. These changes in travel times could be due to occasional changes in the recall parameters of a particular signal or the impact of mid-block traffic entering a particular segment of SW 8th Street (via a driveway or minor street approach).

Therefore, because there are many unknown traffic signal related variables that could impact the traffic flow along SW 8th Street in a multi-hour scenario; the recommendation for a one-hour period analysis (in order to minimize the assumptions) is further corroborated.

3.1.4 Current Guidelines and Software Package to be used

As previously mentioned, before recommending a multi-hour traffic analysis for a particular corridor many factors affecting the analysis need to be considered. In addition, an evaluation of how these factors might affect the results for the existing conditions analysis as well as future conditions analysis need to be taken into account.

From the preliminary analysis performed on the data collected for SW 8th Street, it has been determined that, for the reasons stated above, a multi-hour analysis is not suitable for this corridor. Not considering peak-hour spreading might influence the traffic operational analysis in two ways:

- No peak-spreading analysis will exaggerate the forecasted level of congestion
- Not considering peak contraction (due to the improvements) will understate the level of congestion.

In general, when no peak-spreading analysis is considered the comparison between the No-Build Alternative and Build Alternative might result in more optimistic results. Nonetheless, if results are carefully interpreted, an accurate estimation of future conditions can be obtained.

Therefore, since this arterial has a significant number of signals and varied land use characteristics, to adequately represent traffic conditions along this corridor, a Synchro Model is recommended. In order to simulate the conditions along this corridor, a SimTraffic simulation model is recommended to complement the results from Synchro. SimTraffic structure, algorithims, and functionality are very similar to Corsim. However, the benefits of SimTraffic for this analysis include the ability to optimize signals, replicate reaction times and vehicle movements along a multiaccessed arterial (vs. a limited access condition), and as research indicates, Simtraffic has the ability to most closely model field observed speeds and queues even when uncalibrated. Simtraffic therefore is recommended as more appropriate for analysis of this arterial with multiple signals and access. As discussed above, since a multi-hour analysis does not appear warranted, Simtraffic will be able to analyze the queues and spillbacks along the cross streets during a one hour period, which according to preliminary existing conditions analysis, appears to be the most severe conditions to analyze for future improvements.

3.2 Existing Conditions Analysis

3.2.1 Data Collection

A traffic data collection plan was prepared in order to gather all the necessary data to complete the traffic analysis for the SW 8th Street Corridor Study. The traffic data collection plan took place for two-weeks from March 11-13, 2014 and from March 18-20, 2014. The data collection effort was implemented as follows (Figure 3) graphically depicts the different counts locations):

Figure 3: Traffic Count Locations

72 Hour Bi-directional Classification Counts

1. SW 8th Street/Tamiami Trail west of NW 122nd Avenue
2. SW 8th Street/Tamiami Trail west of SW 109th Avenue
3. SW 8th Street/Tamiami Trail west of SW 82nd Avenue (about 1,300' east of NW 87th Avenue)

72 Hour Bi-directional ADT Counts

1. SW 8th Street/Tamiami Trail about 800' east of NW 122nd Avenue
2. SW 8th Street/Tamiami Trail west of SR 821/HEFT
3. SW 8th Street/Tamiami Trail east of SR 821/HEFT (between the EB and WB intersection from NB ramp from the HEFT)
4. SW 8th Street/Tamiami Trail west of SW 112th Avenue

5. SW 8th Street/Tamiami Trail west of SW 107th Avenue
6. SW 8th Street/Tamiami Trail west of SW 102nd Avenue (between SW 105th Avenue and SW 103rd Place)
7. SW 8th Street/Tamiami Trail west of SW 97th Avenue (about 760’ west of NW 97th Avenue)
8. SW 8th Street/Tamiami Trail west of SW 92nd Avenue (between NW 93rd Place and NW 93rd Avenue)
9. SW 8th Street/Tamiami Trail west of SW 87th Avenue (between SW 89th Avenue and SW 88th Avenue(
10. SW 8th Street/Tamiami Trail west of SR 826/Palmetto Expressway (about 250’ west of SW 79th Avenue)
11. SW 8th Street/Tamiami Trail east of SW 74th Avenue

72-Hour Cross-Street Counts

1. SW 87th Avenue north of SW 8th Street - Bi-Directional
2. SW 87th Avenue south of SW 8th Street – Bi-Directional
3. SW 92nd Avenue south of SW 8th Street – Bi-Directional
4. SW 97th Avenue north of SW 8th Street) – Bi-Directional
5. SW 107th Avenue north of SW 8th Street – Bi-Directional
6. SW 107th Avenue south of SW 8th Street – Bi-Directional
7. SW 109th Avenue south of SW 8th Street – Bi-Directional

Six Hour Turning Movements Counts

1. SW 8th Street/Tamiami Trail and SW 122nd Avenue
2. SW 8th Street/Tamiami Trail and SR 821/HEFT – Southbound ramps
3. SW 8th Street/Tamiami Trail and SR /HEFT – northbound ramps
4. SW 8th Street/Tamiami Trail and Snapper Creek Road
5. SW 8th Street/Tamiami Trail and SW 112th Avenue (FIU entrance)
6. SW 8th Street/Tamiami Trail and SW 109th Avenue (FIU entrance)
7. SW 8th Street/Tamiami Trail and SW 107th Avenue (two day counts)
8. SW 8th Street/Tamiami Trail and SW 102nd Avenue
9. SW 8th Street/Tamiami Trail and SW 99th Place (this intersection got affected by the Turbo-T at SW 102nd Avenue)
10. SW 8th Street/Tamiami Trail and SW 97th Avenue (two-day counts)
11. SW 8th Street/Tamiami Trail and SW 94th Avenue
12. SW 8th Street/Tamiami Trail and SW 92nd Avenue
13. SW 8th Street/Tamiami Trail and SW 87th Avenue (two-day counts)
14. SW 8th Street/Tamiami Trail and SW 82nd Avenue (for this intersection the U-turns should be considered when counting)
15. SW 8th Street/Tamiami Trail and SR 826/Palmetto Expressway – Southbound Ramps

16. SW 8th Street/Tamiami Trail and SR 826/Palmetto Expressway – Northbound Ramps
17. SW 8th Street/Tamiami Trail and Tamiami Canal Road
18. SW 8th Street/Tamiami Trail and Flagami Boulevard/SW 74th Court (ask Juan if this could be considered as one location)
19. SW 8th Street/Tamiami Trail and SW 74th Avenue

24 Travel Times Runs (6 per direction) during peak period (AM and PM)

The Travel Time Runs were conducted along SW 8th Street beginning at SW 67th Avenue and ending at SW 127*th* Avenue. Control points in between were as follows:

1. SW 122nd Avenue
2. SW 117th Avenue/Snapper Creek Canal Road
3. SW 112th Avenue
4. SW 109th Avenue
5. SW 107th Avenue
6. SW 102nd Avenue
7. SW 97th Avenue
8. SW 92nd Avenue
9. SW 87th Avenue
10. SW 82nd Avenue
11. SW 74th Avenue

Queue data was collected for six hours at major intersections for the major and minor approaches.

1. SW 8th Street/Tamiami Trail and SW 109th Avenue (FIU entrance)
2. SW 8th Street/Tamiami Trail and SW 107th Avenue
3. SW 8th Street/Tamiami Trail and SW 97th Avenue
4. SW 8th Street/Tamiami Trail and SW 87th Avenue

The Data collection was performed in such a way that it was relatively easy to estimate the midblock volumes from the 72-Hour Counts (sink nodes/source nodes).

3.2.2 Data Processing

Data processing was conducted by adjusting the raw traffic counts in order to account for seasonal variances and common issues associated with axle counting procedures during the data collection efforts. Therefore, 72 hour counts were converted into Average Annual Daily Traffic (AADTs), using the Axle Factors and Seasonal Factors and peak hour periods were determined.

Turning Movement Counts (TMCs) were adjusted using the seasonal factors only. Peak hour volumes were estimated using the turning movement counts at the intersections and the volumes recorded by the 72 hour counts.

In addition, from the turning movement counts, turning movement percentages at the various intersections were obtained.

Raw peak hour volumes were balanced in order to identify locations for Sink/Source nodes and have the data available to perform the traffic analysis.

Table 8 lists the traffic adjustment factors used to adjust the raw traffic counts. FDOT does not develop seasonal factors by roadway, they are developed and grouped in eight geographical categories (Miami-Dade North (arterials), Miami-Dade South (arterials), Miami-Dade North (Expressways), Miami-Dade South (Expressways), Miami-Dade I-195, Miami-Dade I-395, Miami-Dade I-75 and Miami-Dade I-95). SR 821/HEFT is considered a different FDOT District and has its own category. Therefore, factors are only listed for Miami-Dade South (arterials) and SR 821/HEFT.

Table 8 – Weekly Adjustment Factors

Roadway	Week of the Year	Axle Factor	Seasonal Factor
SR 90/US 41/SW 8 Street	03/11/2012-03/17/2012	0.99	NA
	03/18/2012-03/24/2012	0.99	NA
SR 973/SW 87 Avenue	03/11/2012-03/17/2012	0.97	NA
	03/18/2012-03/24/2012	0.97	NA
SR 985/SW 107 Avenue	03/11/2012-03/17/2012	0.99	NA
	03/18/2012-03/24/2012	0.99	NA
SR 826/Palmetto Expressway	03/11/2012-03/17/2012	0.99	NA
	03/18/2012-03/24/2012	0.99	NA
SR 826/Palmetto Expressway Ramps	03/11/2012-03/17/2012	0.96	NA
	03/18/2012-03/24/2012	0.96	NA
SR 821/HEFT	03/11/2012-03/17/2012	0.96	NA
	03/18/2012-03/24/2012	0.96	NA
Miami-Dade South	03/11/2012-03/17/2012	NA	0.97
	03/18/2012-03/24/2012	NA	0.98
SR 821/HEFT	03/11/2012-03/17/2012	NA	0.94
	03/18/2012-03/24/2012	NA	0.95

3.2.3 Peak Hour Factors (PHFs)

Based on the Highway Capacity Manual 2010 (HCM 2010), estimation of an average peak hour factor is recommended for the entire intersection. Table 9 lists the PHFs for the signalized intersections within the study area.

Table 9 – Estimated Peak Hour Factors

Number	Intersection	PHF (AM)	PHF (PM)
1	**SW 122 Ave**	0.956	0.994
2	**HEFT SB**	0.974	0.946
3	**HEFT NB**	0.964	0.980
4	**SW 117 Ave**	0.965	0.961
5	**SW 112 Ave**	0.955	0.929
6	**SW 109 Ave**	0.943	0.969
7	**SW 107 Ave**	0.926	0.973
8	**SW 102 Ave**	0.882	0.952
9	**SW 99 Pl**	0.900	0.979
10a	**SW 97 Ave**	0.954	0.969
11	**SW 94 Ave**	0.938	0.933
12	**SW 92 Ave**	0.949	0.909
13	**SW 87 Ave**	0.954	0.950
14	**SW 82 Ave**	0.929	0.954
15	**SR 826 SB**	0.974	0.967
16	**SR 826 NB**	0.938	0.934
17	**Tamiami Canal Rd**	0.923	0.927
18	**Flagami Blvd**	0.960	0.988
19	**SW 74 Ave**	0.977	0.929

3.2.4 Truck Factor

Classification counts were collected at three locations within the study limits:

1. SW 8th Street/Tamiami Trail west of NW 122nd Avenue
2. SW 8th Street/Tamiami Trail west of SW 109th Avenue
3. SW 8th Street/Tamiami Trail west of SW 82nd Avenue (about 1,300' east of NW 87th Avenue)

A daily truck factor (T_{24}) was estimated as listed in Table 10.

Table 10 – Truck Factors from Classification Counts

Location	Direction	T_{24}
SW 8 Street west of SW 122 Avenue	T-Daily EB	5%
	T-Daily WB	12%
	T-Daily Both	9%
SW 8 Street west of SW 109 Avenue	T-Daily EB	11%
	T-Daily WB	17%
	T-Daily Both	14%
SW 8 Street west of SW 82 Avenue	T-Daily EB	9%
	T-Daily WB	7%
	T-Daily Both	8%

In addition, historic truck factors were obtained from FDOT traffic count stations (five different count stations along SW 8th Street for years 2002 to 2012) and an analysis between the historic truck factors and the truck factors estimated for the 2012 feasibility study was performed. Based on this analysis, it was determined that the average of the historic truck factors seemed representative of the study area. Table 11 lists the average truck factors estimated from the FDOT historic truck counts.

Table 11 – FDOT Historic Truck Factor Average

Street/Location	T24	Tpeak
SR 821/HEFT	6.30%	3.00%
SR 826	6.30%	3.00%
SW 117 Avenue	16.00%	8.00%
SW 107 Avenue	5.33%	2.50%
SW 87 Avenue (NB)	4.89%	3.00%
SW 87 Avenue (SB)	2.94%	2.00%
SW 8 Street (Historic)	7.12%	3.06%

Based on the analysis of truck factor performed and the characteristics observed along SW 8th Street, the truck factors recommended to be used for this traffic analysis are listed in Table 12.

Table 12 – Recommended Truck Factors

Street/Location	Tpeak
SR 821/HEFT	3.00%
SR 826	3.00%
SW 117 Avenue	2.00%
SW 107 Avenue	2.50%
SW 87 Avenue (NB)	3.00%
SW 87 Avenue (SB)	2%*
SW 8 Street (from Data collected)	4%**
* Default by HCM and Field Review	
** Based on Collected Classification Counts	

3.2.5 Roadway Network

Information in reference to the different roadway configurations at the intersections and along SW 8th Street was gathered using aerial photographs and design plans for recently completed projects such as FDOT FM. No. 425145-1-52-01 (which considered resurfacing and some minor safety improvements along SW 8th Street).

3.2.6 Operational Analysis Procedures

A detailed operational analysis will be performed using Synchro/SimTraffic 8.0 for the AM and PM Peak Hours. Synchro will allow obtaining results based on the HCM 2000/2010 methodology and SimTraffic will allow the analysis of congested conditions, queues and spillbacks.

Input parameters for Synchro will be based on the existing peak hour volumes and traffic factors estimated in Section 3.2 of this report.

Development of Synchro/SimTraffic model will be developed following the guidelines outlined in the FDOT Traffic Analysis Handbook (a reference for Planning and Operations), Dated March 2014.

As recommend in the FDOT Traffic Analysis Handbook, the Synchro model will have all link terminals extended at least 1,000 feet from the last node and queue lengths tagged with “#” or “m” will be examined for extent of queuing problems.

In addition, the SimTraffic simulation analysis will be calibrated (as needed) using parameters such as:

- Headway Factor – this factor is used to calibrate saturation flow rates. It adjusts headways on a per movement basis. Careful attention needs to be paid to the turning speeds in order to realistically represent saturation flow rates.

- Speeds within the intersection – turning speeds through the intersection will be calibrated using the driver speed factor.

- Driver reaction time – this will be adjusted (if necessary) using the yellow and green reaction time in the driver behavior parameter of SimTraffic. This parameter will allow a representation of the level of aggressiveness that is commonly observed within Miami-Dade County.

- Lane usage – this parameter will be adjusted only if an unbalanced lane utilization is observed. In order to calibrate for lane usage, the Positioning/Mandatory Distance Parameter will be modified.

- Lost time factor will be adjusted (as needed) in order to replicate field observed queue lengths.

Table 13 (extracted from the FDOT Traffic Analysis Handbook) lists some of the calibration parameters as recommended by the developers of Synchro (Trafficware). This table contains a list of common traffic flow issues and the calibration parameter that might be adjusted. The parameters that could be adjusted are listed in order of preference (1,2,3 is the order of preference).

Table 13 – Guidance for Calibrating SimTraffic Model

Traffic Flow Issues in the Model	SimTraffic Calibration Parameters								
	Link-Based Parameters (Synchro Simulation Settings)				Global Parameters - Model (SimTraffic Drivers and Internal Settings)				
	Lane Alignment	Mand. & Pos. Dis.	Turning Speed	Headway Factor	Speed Factor (%) Alignment	Headway @ 1, 20, 50, & 8-mph	Gap Accpt.	Mand. & Pos. Dist Adjust (%)	PHF Adjust & Anti PHF Adjust
Vehicles too slow when making a left or right turn			1						
Queuing seems too short/long (assuming no upstream bottle-necks)	1						2		3
Travel time seems too low/high					1				
Lanes not utilized properly - unbalanced queues		1						2	
Volume simulated too low			1	2		3			

Mand. & Pos. Dist. = Mandatory and Positioning Distance
Gap Accpt. = Gap Acceptance

The Measures of Effectiveness (MOEs) to be used in the analysis will be processed vehicles, queue lengths and average speed. Processed vehicles through the intersection will be calibrated so that, simulated and measured link volumes for more than 85 percent of the links are:

- Within 100 vph for volumes less than 700 vph
- Within 15 percent for volumes between 700 vph and 2,700 vph
- Within 400 vph, for volumes greater than 2,700 vph

Calibration targets for queues and speeds will follow the guidance provided by Table 7-7 of the FDOT Traffic Analysis Handbook. A summary of the calibration items are listed in Table 14.

Table 14 – Classical Model Calibration Targets

Calibration Item	Calibration Target/Goal
Queue Length	Difference between simulated and observed queue lengths to be within 20%
Speed	Modeled average link speeds to be within ± 10 mph of the field measured speeds on at least 85% of all network links.

Average intersection delay will be obtained from the traffic analysis (in sec./veh.).

Each peak period will be run ten times and the MOEs will be extracted from the average of the ten runs.

It has to be noted that since the implementation of the HCM 2010, the signalized intersection analysis has become more standardized. For instance, if the signal timing plan implemented in the field deviates from the standard eight-phase NEMA controller operations, Synchro does not create an HCM 2010 report output. In order to overcome this limitation there are two options:

1. Slightly modify the geometry/movement or phases of the intersection in order to “represent” a standard NEMA controller phasing plan.
2. Analyze the specific intersection using the HCM 2000 methodology which is more flexible in regards to signalized intersection analysis.

3.2.7 Documentation

A report summarizing the existing conditions analysis will be prepared and supporting information will be included as appendices.

3.3 Future Conditions Analysis

For the future conditions analysis, two future years will be analyzed 2025 and 2045. In order to analyze future build alternatives with potential improvements along SW 8th Street, No-Build Scenarios for both years 2025 and 2045 will be developed.

The No-Build Scenarios will include all programmed projects scheduled to be built along SW 8th Street as part of the TIP and Miami-Dade Long Range Transportation Plan (LRTP 2035). For instance, in the 2014 TIP FDOT FM. No. 412479-3-52-01, which proposes the widening of SR 985/SW 107th Avenue from SW 1100th Block to SW 4th Street will be included as part of the existing roadway network.

The Build Scenarios (2025 and 2045) will include all programmed projects scheduled to be built along SW 8th Street as part of the TIP and LRTP and the potential improvements identified as part of the SW 8th Street Corridor Study. One composite Build Alternative will be analyzed and compared to the No-Build Scenarios.

The following sections describe in detail the analysis to be conducted in order to evaluate the proposed improvements as part of the SW 8th Street Corridor Study.

3.3.1 Traffic Volumes Projections

Traffic projections will be based on the information obtained from the Travel Demand Methodology. Peak hour volumes for 2025 and 2045 (No-Build and Build Scenarios) will be developed. In the case that AADT's from the SERPM models seem reasonable, the traditional K and D factors will be used to convert the models' projected AADT into peak hour volumes. Recommended K factors listed in FDOT Project Traffic Handbook 2014 will be compared to the K factors estimated for the FDOT Traffic Count Stations located along SW 8th Street. K factors from these two sources will be compared to the hourly volume to daily ratio obtained from the traffic counts collected (as part of the SW 8th Street Corridor Study). After this analysis is performed, the most reasonable factors will be used to perform the traffic projections for the study area.

Based on the 2014 FDOT Project Traffic Forecasting Handbook the K standard factors for this project will be as listed in Table 15.

Table 15 – FDOT Standard K Factors

Area	Facility Type	Standard K Factors* (%AADT)	Representative Time Period
Large Urbanized Areas with Core Freeways	Freeways	8.0-9.0***	Typical weekday peak period or hour
	Arterials	9.0**	Typical weekday peak hour
***Value is 8.0% for FDOT – designated urbanized core freeways and may be either 8.5% or 9.0% for non-core freeways. Values less than 9.0% essentially represent a multi-hour peak period rather than a peak hour.			
** Value is 7.5% in approved Multi-Modal Transportation Districts where automobile movements are deemphasized. Essentially, this lower value represents an extensive multi-hour peak period rather than a peak hour.			

Table 16 lists the average K and D factors for the last ten years (2002-2012). The average was obtained from the 2012 FDOT Traffic Information DVD ROM. As observed from this table, the K factor falls a little below the Standard K value recommended by FDOT. However, it is recommended to use this factor as it seems to be more in line with the conditions observed in the field.

Table 16 – FDOT Estimated K and D Factors by Roadway (Last 10 Years Average)

Roadways	Factors	
	K (%)	D (%)
SW 8th Street	8.22	63.39
SR 826 Ramps	9.80	1.00
SW 117th Avenue	9.00*	59.70*
HEFT Ramps	9.00*	1.00*
SW 107th Avenue	8.22	63.39
SW 97th Avenue	9.00*	59.70*
SW 87th Avenue	8.22	63.37
SW 82nd Avenue	9.00*	59.70*
SW 74th Avenue	9.00*	59.70*
Tamiami Boulevard	9.00*	59.70*
*only one year of data was available		

The field estimated K values range between 5.25 percent and 7.5 percent. Since these factors were estimated using the 72-Hour counts collected in the field and, as previously mentioned, 72-Hour machine counters could have under-counted volumes due to congestion, it is recommended to use the average of the last ten years listed as in Table 16.

It was mentioned in FDOT's SW 8th Street and SW 87th Avenue Intersection Improvements Concept and Feasibility Study (dated February 2012), that SERPM traffic projections resulted in large levels of growth (in excess of 60%). This level of growth contradicted the built-out characteristics of SW 8th Street which does not provide evidence for traffic volume growth at these large levels. Therefore, in both the SW 8th Street and SW 87th Avenue Intersection Improvements Concept and Feasibility Study (dated February 2012) and the SW 8th Street from HEFT to SR 826 Traffic Study (dated September 2007), growth along SW 8th Street was capped to one percent, as a reasonable growth for the area. For the purposes of this SW 8th Street corridor study, since the built-out characteristics remain, reasonable growth will also be capped at one percent.

Results from previous studies indicate that traffic projections may be based on an estimated capped growth factor applied to the existing peak hour volumes using straight line growth.

Consistent with built out conditions (land uses are existing and constant with minimal potential to change in the future), existing turning percentages at the intersections will be kept constant when distributing the future peak hour volumes at the intersections. However, a check of SERPM future turning movements will be conducted in the FIU areas and other development areas scheduled for future construction and a determination made as to whether changes in turning percentages need to be adjusted in those areas.

3.3.2 Synchro Models Development

Synchro/SimTraffic models developed and calibrated as part of the existing conditions analysis will be used as the basis for developing the future conditions analysis. Calibration parameters will be carried over to the future conditions scenarios.

As previously mentioned, the No-Build Scenarios will include all programmed projects to be implemented along SW 8th Street and 107th Avenue (included in the 2014 TIP and Miami-Dade 2035 LRTP). The roadway network in the Synchro model will be updated accordingly.

For the Build Scenarios, one composite alternative will be coded. The build alternative will include proposed improvements identified as part of the SW 8th Street Corridor Study in addition to the programmed improvements scheduled in the 2014 TIP and Miami-Dade LRTP.

All traffic parameters will be kept the same.

All models (No-Build and Build) will have signal optimization performed, based on intersection splits.

The same MOEs will be used for future conditions analysis: vehicles processed through the intersection, queue lengths, average speeds and average intersection delay. Each scenario will be run ten times and the average of the ten runs will be used to summarize the MOEs.

3.3.3 Documentation

A report summarizing the future conditions analysis will be prepared and supporting information will be included as appendices.

Attachment A - FSUTMS-Cube Framework Phase II, Model Calibration and Validation Standards: Model Validation Guidelines and Standards (2008)

Attachment B - Hourly Volumes vs. Time of Day Profiles (from 72-Hour Counts)

Attachment C - Peak-Spreading Distribution Factors Statistical Analysis

Attachment A - FSUTMS-Cube Framework Phase II, Model Calibration and Validation Standards: Model Validation Guidelines and Standards (2008)

Attachment B - Hourly Volumes vs. Time of Day Profiles (from 72-Hour Counts)

Attachment C - Peak-Spreading Distribution Factors Statistical Analysis

Appendix C – Technical Memorandum #3 - Design Traffic

SW 8TH STREET CORRIDOR STUDY - EXISTING CONDITIONS TECHNICAL MEMORANDUM #3

MIAMI-DADE METROPOLITAN PLANNING ORGANIZATION

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April 2015

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1.0 INTRODUCTION

The Miami-Dade Metropolitan Planning Organization (MPO) has retained HNTB to conduct a Corridor Study along SW 8th Street (also known as US 41/State Road 90) between SW 122nd Avenue and SW 74th Avenue. This analysis will assess existing conditions along this important arterial and identify various improvements that will alleviate congestion and improve traffic flow. Figure 1 shows the project location map and the limits of the Corridor Study.

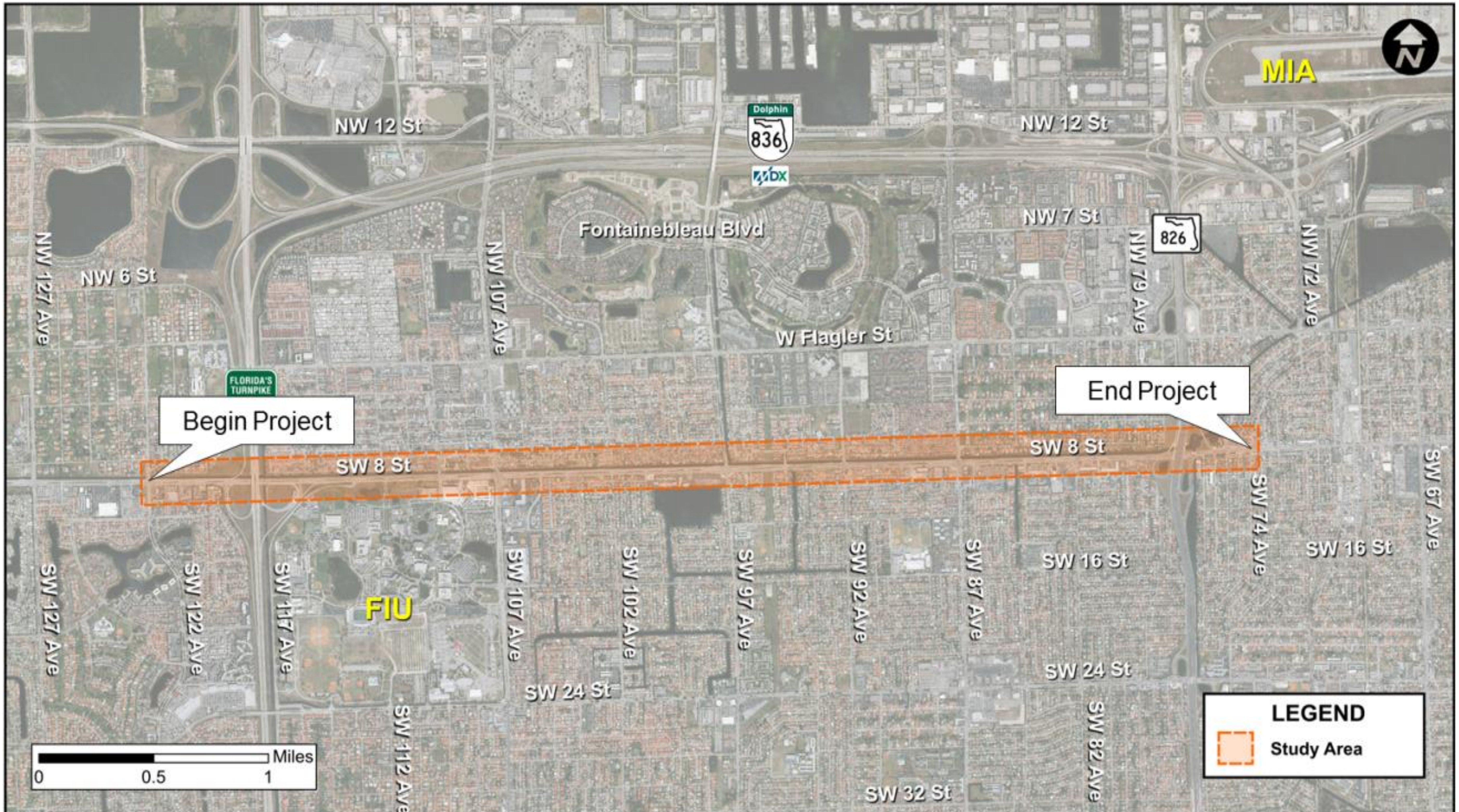
SW 8th Street is an essential element of the roadway network within Miami-Dade County. It connects the residential areas in the western part of the County to the downtown or Central Business District (CBD) and provides an alternative for overall east west travel in the County. It also provides connections to the major north-south expressway system in the County within the study area, at SR 826 and Florida's Turnpike.

Portions of SW 8th Street experience heavy congestion during the peak periods and the roadway has been the subject of several studies in order to identify improvements that will alleviate congestion and improve traffic flow. Recently, a major project improvement was completed by the Florida Department of Transportation (FDOT) within the study limits which helped to improve traffic flow.

The areas along SW 8th Street are mostly built-out. However, the major educational institution located within the study area, Florida International University (FIU), has experienced significant growth in the last few years and will continue to impact mobility along the corridor in the future. To respond to this growth, the FIU Campus Master plan provides the following emphasis:

- Complete Streets improvements
- On/off-campus ITS infrastructure
- Focused effort to reduce automobile trips to campus – ridesharing, non-motorized trips, increased transit service/use
- Student population is forecast to grow 55% in the next 20 years

Figure 1 – Project Location



1.1 Prior Efforts

SW 8th Street has been the subject of several studies in the last few years. In June 2005, the MPO conducted a comprehensive county wide Grade Separation Study. This study identified the intersections of SW 107th Avenue and SW 87th Avenue (along SW 8th Street) as candidates for grade separation improvements that would allow more efficient traffic operations.

Following the 2005 Grade Separation Study from the MPO, the FDOT completed a SW 8th Street Corridor Study from the Homestead Extension of the Florida Turnpike (HEFT) interchange to SR 826/Palmetto Expressway interchange (2007). This analysis indicated that some type of grade separation could improve operations of the intersections of SW 107th Avenue and SW 87th Avenue in order to provide more efficient mobility along SW 8th Street. In addition, this analysis also considered the implementation of a reversible lane system. However, this alternative was deemed difficult to implement, given the large number of intersections and left-turns in the corridor.

In June 2009, FDOT completed a Project Concept Study for the intersection of SW 87th Avenue and SW 8th Street. The analysis favored the implementation of widening of SW 87th Avenue between Flagler Street and SW 8th Street over the implementation of grade-separation of the intersection.

In 2012, FDOT completed a Feasibility Study for the intersection of SW 8th Street and SW 87th Avenue. In this Feasibility Study, various alternatives were developed and evaluated (including grade-separation improvements) which resulted in the grade-separation of SW 8th Street over SW 87th Avenue as the recommended alternative.

Based on the previous studies, various individual grade separation improvements have been identified. However, the main objective of this Corridor Study is to determine the system wide impacts of individual improvement projects on the subarea transportation network.

1.2 Overview of SW 8th Street

SW 8th Street is a segment of State Road 90 within Miami-Dade County that runs from West Miami-Dade County to Brickell Avenue in Downtown Miami. Within the study area, SW 8th Street is a two-way divided arterial running east-west. SW 8th Street has various cross sections along its limits.

1.2.1 Typical Sections

Table 1 lists the typical sections by segment and Figures 2 through 7 graphically depict the cross sections within the study area.

Table 1 – Typical Section by Segment

Segment	From	To	EB Lanes	WB Lanes	Total Lanes	Distance (miles)
A	SW 122 Ave	HEFT On-Ramp	4	4	8	0.33
B	HEFT On-Ramp	SW 112 Ave	3	3	6	0.70
C	SW 112 Ave	SW 107 Ave	4	3	7	0.49
D	SW 107 Ave	SW 88 Ave	4	4	8	1.89
E	SW 88 Ave	SR 826 (western) On-Ramp	3	3	6	0.93
F	SR 826 (western) On-Ramp	SR 826 (eastern) On-Ramp	3	2	5	0.21
G	SR 826 (eastern) On-Ramp	SW 74 Ave	2	2	4	0.25

Figure 2 – Typical Sections by Segment

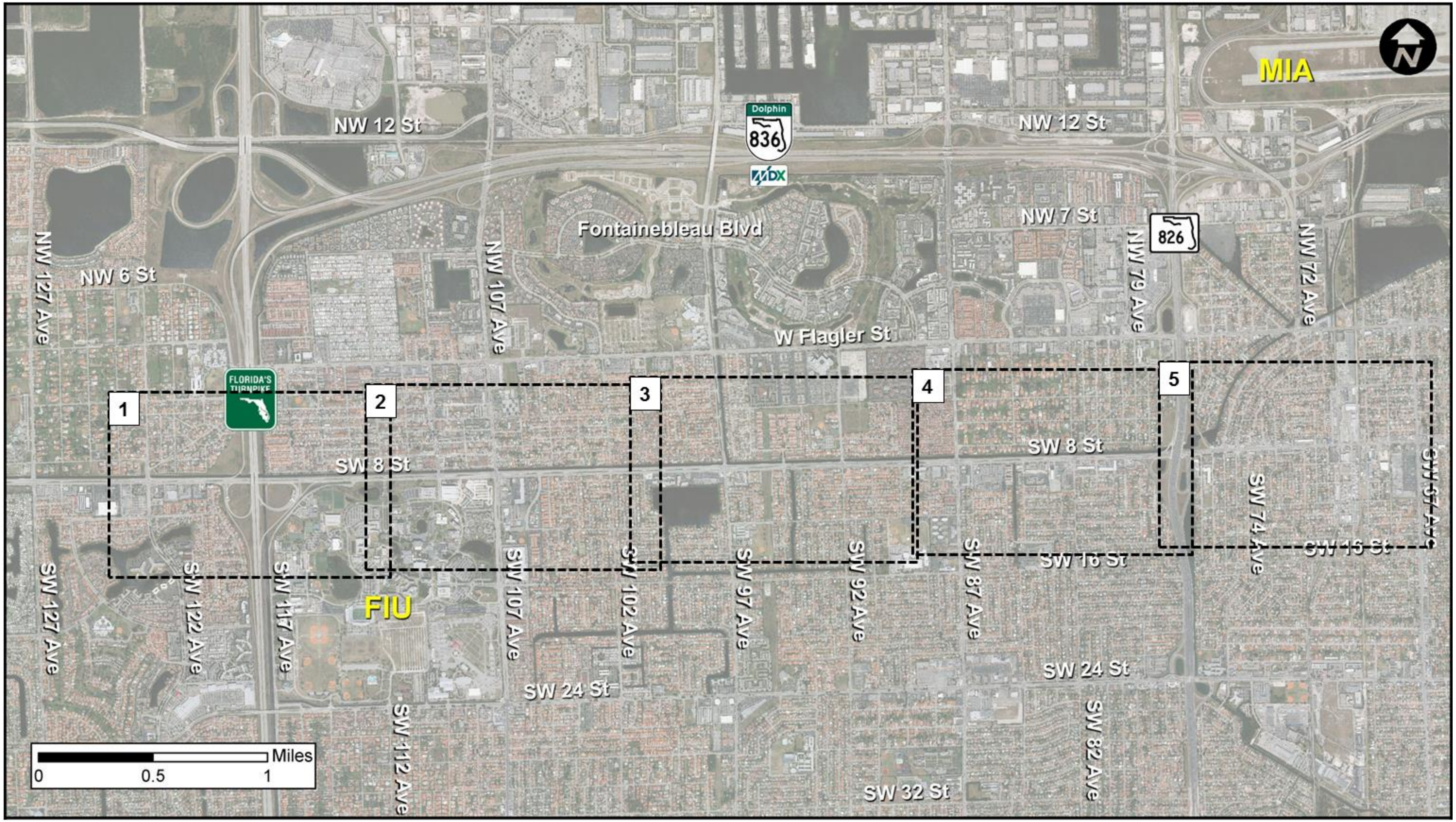


Figure 3 – Typical Sections – Segment 1

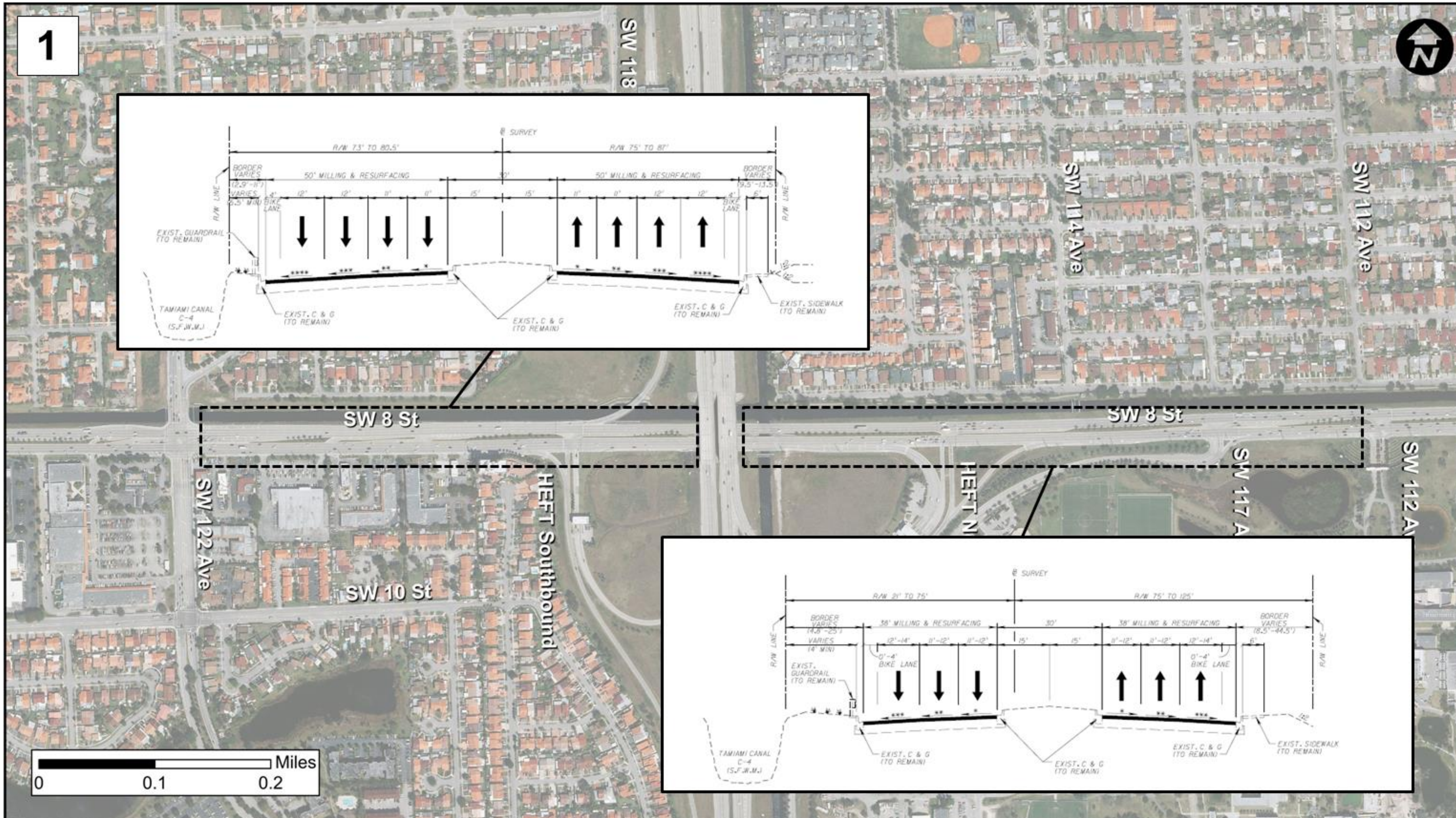


Figure 4 – Typical Sections – Segment 2

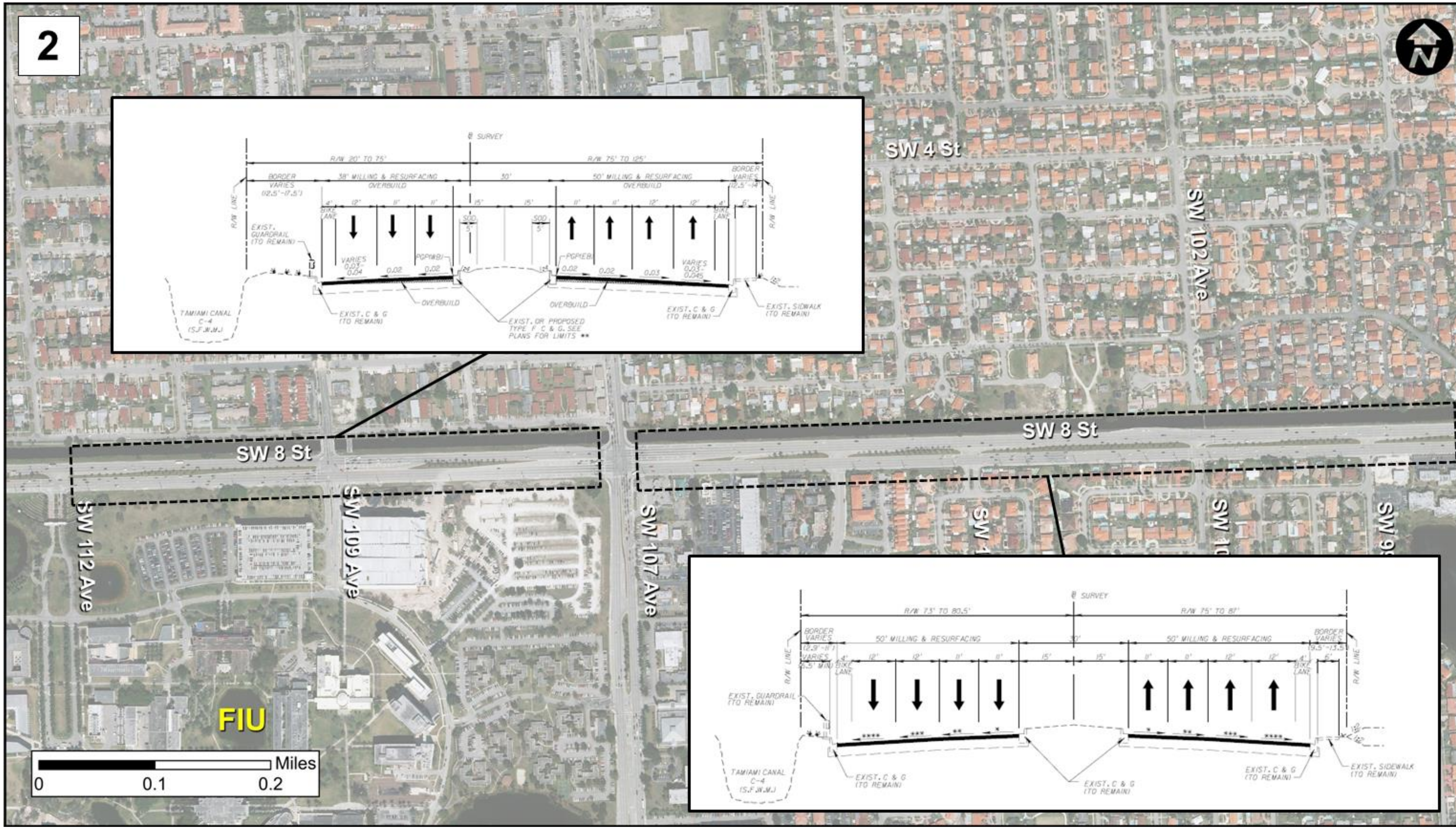


Figure 5 – Typical Sections – Segment 3

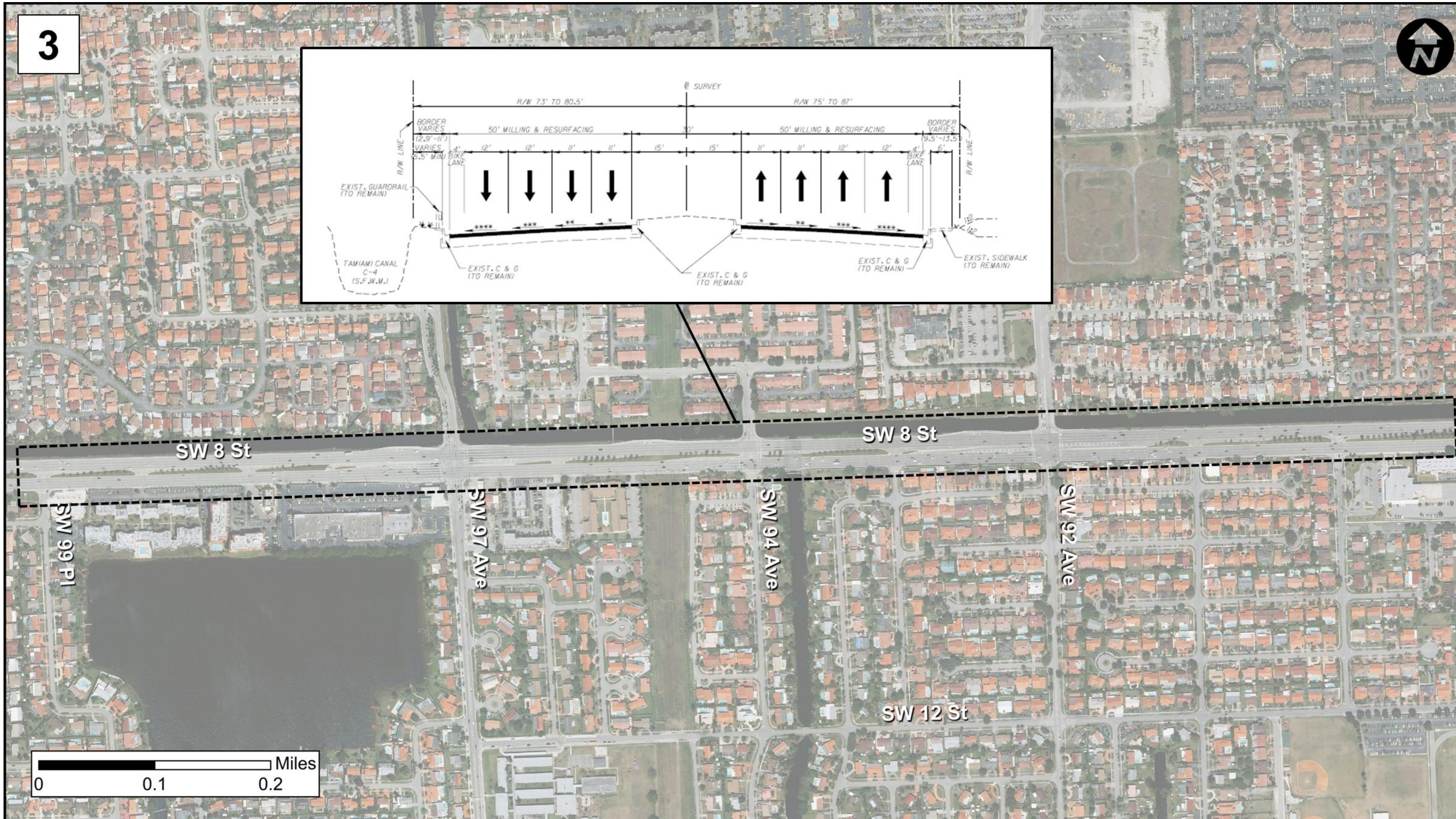


Figure 6 – Typical Sections – Segment 4

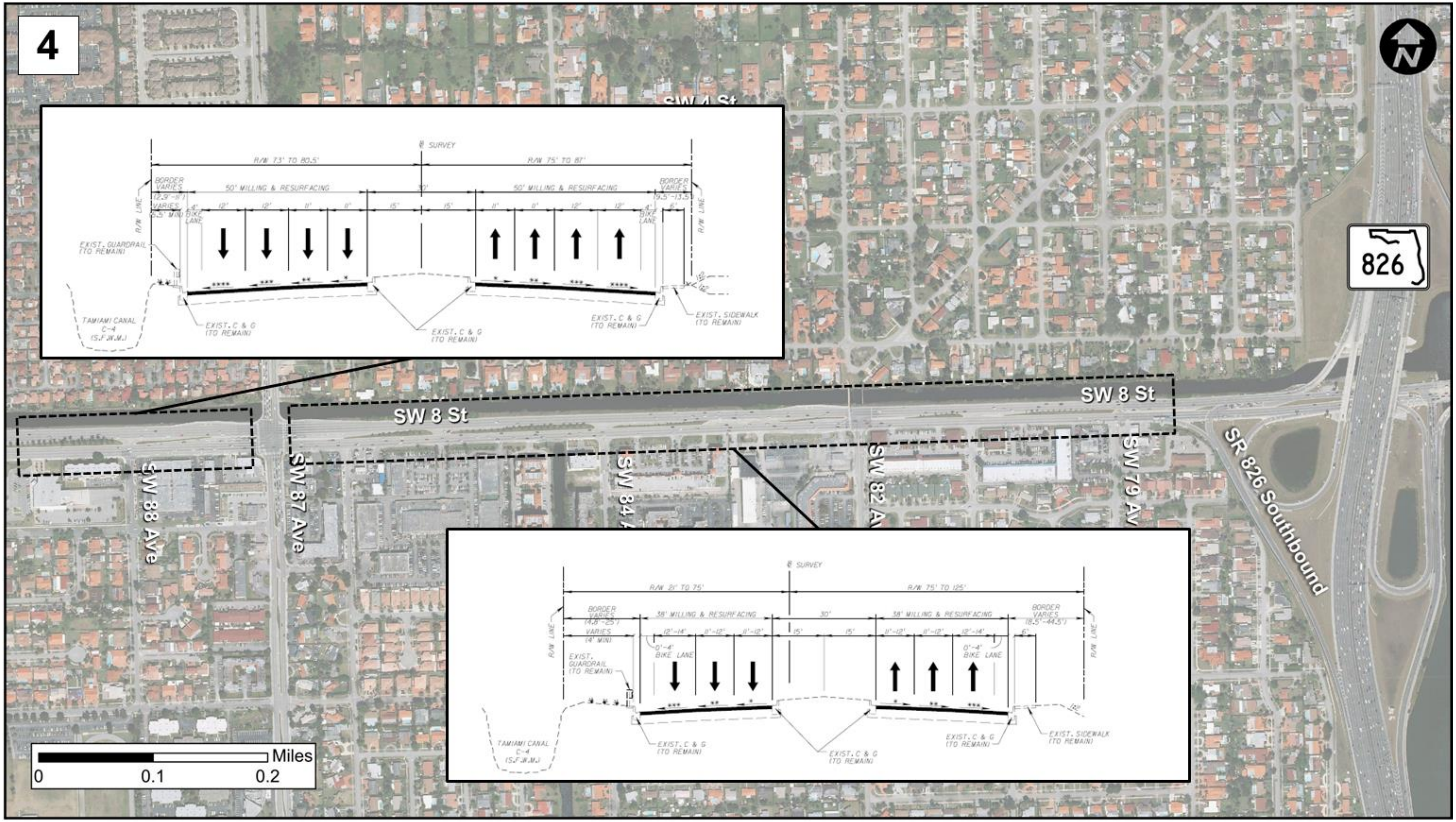
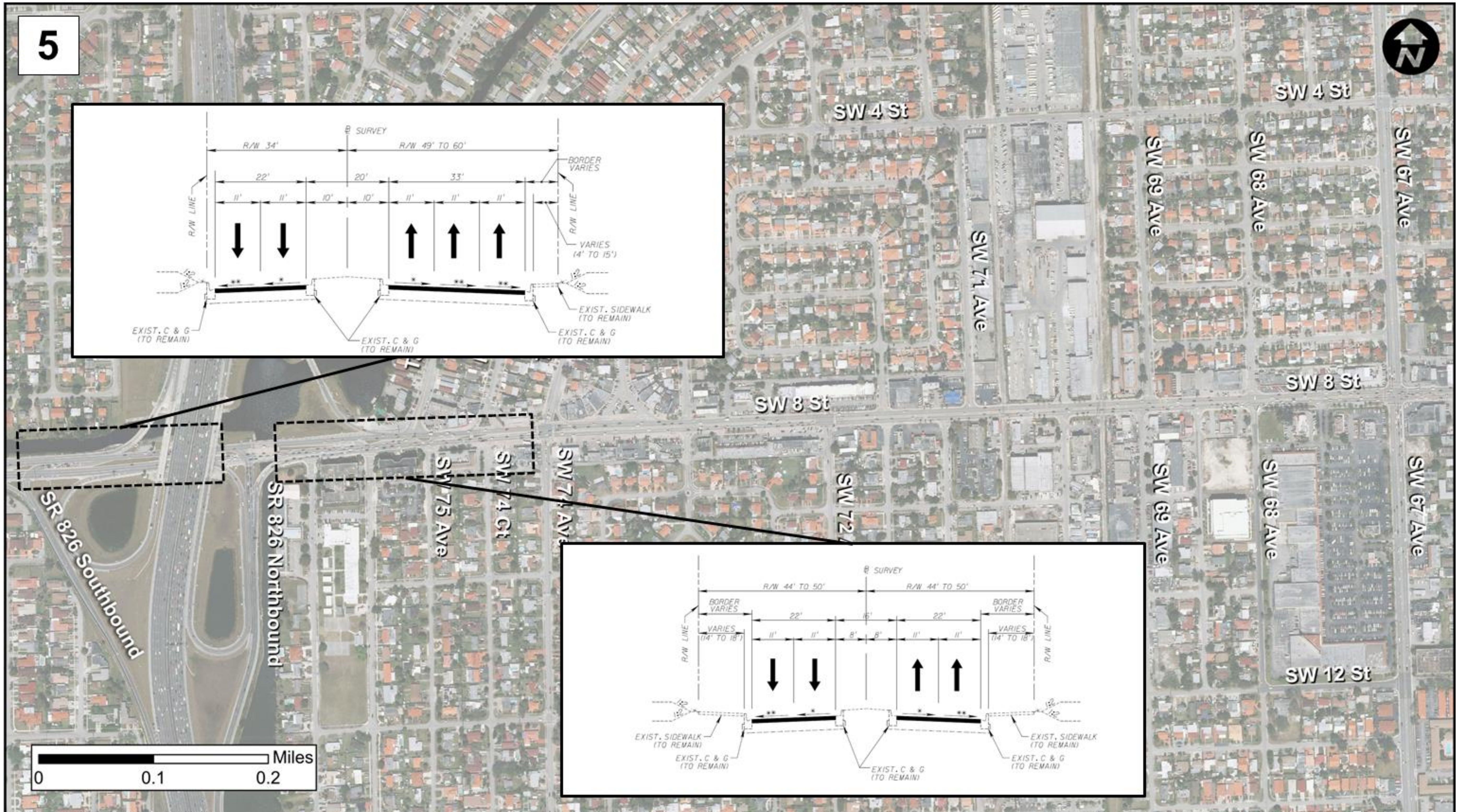


Figure 7 – Typical Sections – Segment 5

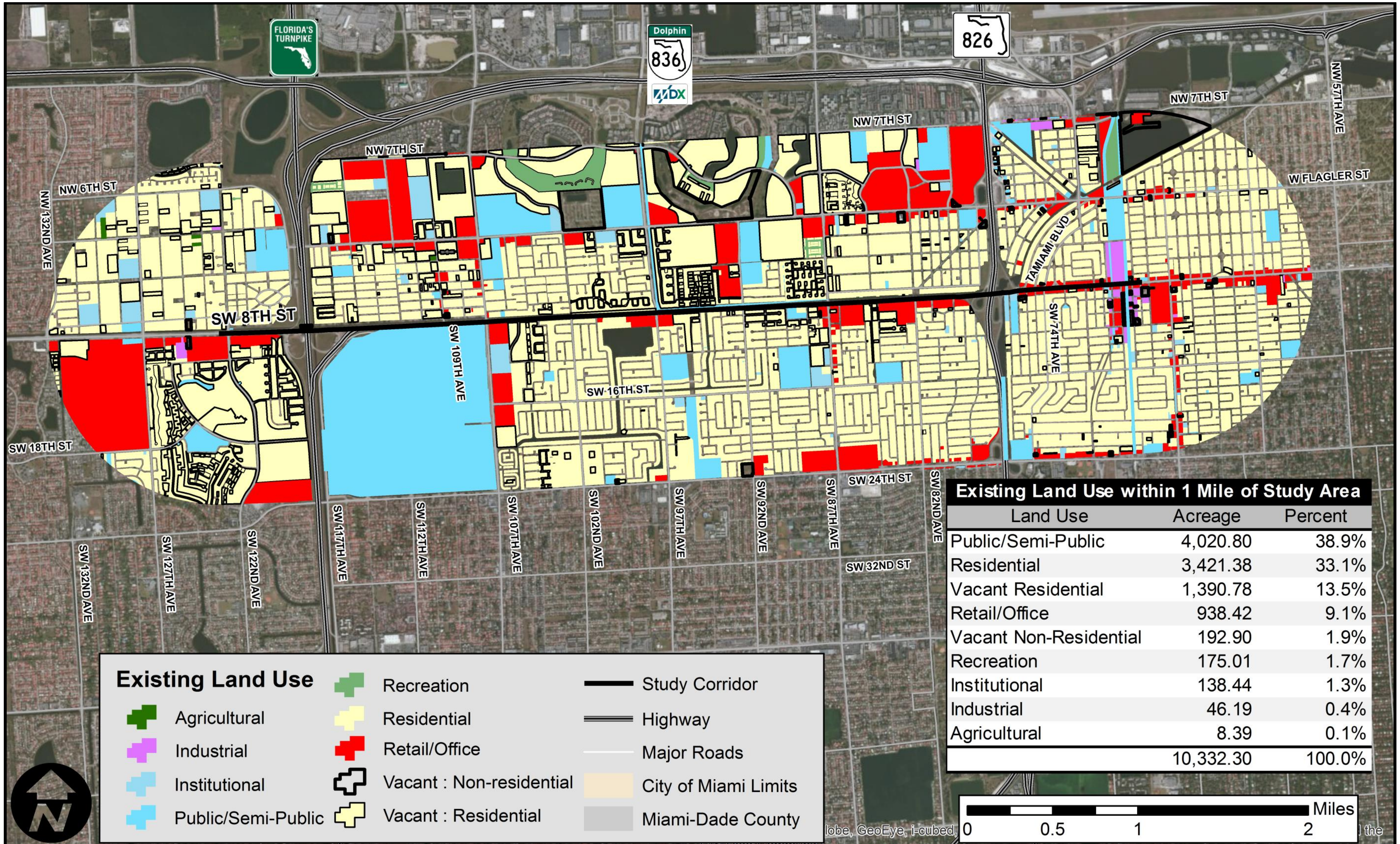


1.2.2 Study Area Land Use

Figure 8 shows the existing land use for the corridor as presented in the Miami–Dade County Comprehensive Development Management Plan (CDMP). The corridor consists of low-density residential development with strip-commercial along the major intersections. This segment of SW 8th Street is mostly built out with no vacant parcels and significant changes to the future land uses are not anticipated. SW 8th Street is unique in that the Tamiami Canal is adjacent to the north edge of the right-of-way. In fact, the northern right-of-way line for SW 8th Street is the southern bank of the canal. The location of the canal restricts development along the north side of the roadway and limits the number of local streets that intersect SW 8th Street from the north. Single family residential development backs onto the north side of the canal.

FIU represents the largest single land use in the study area bordered by SW 8th Street, SW 117th Avenue, SW 24th Street and SW 107th Avenue. The major entrance to the campus is at SW 8th Street and SW 112th Avenue. The area along SW 8th Street is predominantly used for parking garages.

Figure 8 – Existing Land Use



Existing Land Use within 1 Mile of Study Area

Land Use	Acreage	Percent
Public/Semi-Public	4,020.80	38.9%
Residential	3,421.38	33.1%
Vacant Residential	1,390.78	13.5%
Retail/Office	938.42	9.1%
Vacant Non-Residential	192.90	1.9%
Recreation	175.01	1.7%
Institutional	138.44	1.3%
Industrial	46.19	0.4%
Agricultural	8.39	0.1%
	10,332.30	100.0%

Source: Miami Dade County CDMP

1.2.3 Functional Classification

SW 8th Street has several functional classifications:

1. From SW 177th Avenue to SW 157th Avenue it is classified as Rural Principal Arterial
2. From SW 157th Avenue to Brickell Avenue it is classified as Urban Other Principal Arterial. The limits of the current SW 8th Street Corridor Study are within this last Functional Classification category.

1.2.4 Access Management

Table 2 lists the different classifications for Access Management along SW 8th Street. Table 3 lists the criteria for each of the Access Management Classification for SW 8th Street.

Table 2 – Access Management along SW 8th Street

Access Management Classification (Code)	Beginning Mile Post (M.P.)	End Mile Post (M.P.)
03	0.000 (SW 177th Avenue/Krome Avenue)	4.010 (SW 137th Avenue)
05	4.010 (SW 137th Avenue)	10.028 (SR 826/Palmetto Expressway) Interchange
07	10.028	18.147 (Brickell Avenue)

Table 3 – Access Management Criteria

Access Classification	Type of Median	Median Opening Spacing (feet)		Signal Spacing (feet)	Connection Spacing (feet)	
		Full	Directional		Posted Speed > 45 mph	Posted Speed of 45 mph or less
03	Restrictive	2,640	1,320	2,640	660	440
05	Restrictive	2,640 (Posted Speed > 45 mph) 1,320 (Posted Speed of 45 mph or Less)	660	2,640 (Posted Speed > 45 mph) 1,320 (Posted Speed of 45 mph or Less)	440	245
07	Both Median Types	660	330	1,320	125	125

Source: Florida Administrative Code Chapter 14-97.003 Access Control Classification System and Access Management Standards

The posted speed limit along SW 8th Street is as follows:

1. Between SW 177th Avenue and east of SW 157th Avenue is 55 mph
2. Between SW 157th Avenue and SW 79th Avenue is 45 mph
3. Between SW 79th Avenue and SW 72nd Avenue is 35 mph

Within the limits of this Corridor Study, and as depicted in Table 2, SW 8th Street is classified with an Access Management Class of 5 and 7.

The following Table 4 summarizes the access management analysis for SW 8 Street.

Table 4 – Access Management Analysis

Intersection	Signalized or Non-Signalized Intersection	Location (Milepost)	Opening Type	Distance from Previous Median Opening (feet)			Required Distance (feet)	
				Signal	Full	Direct-ional	Signal/ Full	Direct -ional
SW 122 Ave	Signalized	5.523	Full				1,320	660
SW 120 Ave	Non-signalized	5.629	Directional				1,320	660
SW 119 Ave	Non-signalized	5.672	Full				1,320	660
HEFT On-Ramp	Signalized	5.843	Full				1,320	660
HEFT On-Ramp	Signalized	6.151	Full				1,320	660
SW 117 Ave	Signalized	6.417	Full				1,320	660
SW 112 Ave	Signalized	6.558	Full	760			1,320	660
SW 109 Ave	Signalized	6.795	Full	1250			1,320	660
SW 107 Ave	Signalized	7.045	Full	1380			1,320	660
Between SW 107 Ave and SW 105 Ave	Non-signalized	7.109	Directional		530	455	1,320	660
SW 105 Ave	Non-signalized	7.232	Full		970		1,320	660
SW 103 Pl	Non-signalized	7.346	Full		600		1,320	660
SW 102 Ave	Signalized	7.544	Full		1040		1,320	660
SW 99 Pl	Non-signalized	7.69	Directional		780	450	1,320	660
Between SW 99 Pl and SW 97 Ave	Non-signalized	7.96	Full		450		1,320	660
Between SW 99 Pl and SW 97 Ave	Non-signalized		Full		520		1,320	660
SW 97 Ave	Signalized	8.045	Full	2640	950		1,320	660
Between SW 97 Ave and SW 94 Ave	Non-signalized	8.098	Full		480		1,320	660
SW 94 Ave	Signalized	8.3	Full	1350	880		1,320	660
SW 93 Ave	Non-signalized	8.43	Full		650		1,320	660
SW 92 Ave	Signalized	8.562	Full	1350	700		1,320	660
SW 90 Ave	Non-signalized	8.691	Full		770		1,320	660
SW 89 Ave	Non-signalized	8.806	Full		670		1,320	660
SW 88 Ave	Non-signalized	8.932	Full		660		1,320	660
SW 87 Ave	Signalized	9.058	Full	2640	680		1,320	660
Between SW 86 Ct and SW 84 Ave	Non-signalized	9.204	Full		450		1,320	660
SW 84 Ave	Non-signalized	9.346	Full		750		1,320	660
SW 82 Ave	Signalized	9.559	Full	2700	1200		1,320	660
SW 80 Ct	Non-signalized	9.687	Full		500		1,320	660
SW 79 Ave	Non-signalized	9.793	Directional			700	1,320	660

Table 4 – Access Management Analysis (continued)

Intersection	Signalized or Non-Signalized Intersection	Location (Milepost)	Opening Type	Distance from Previous Median Opening (feet)			Required Distance (feet)	
				Signal	Full	Direct-ional	Signal/ Full	Direct-ional
SR-826 Off-Ramp	Signalized	9.871	Directional				1,320	660
SR-826 On-Ramp	Signalized	10.07	Directional				660 / 1,320	330
SW 76 Ave	Non-signalized	10.175	Directional				660 / 1,320	330
SW 75 Ave	Non-signalized	10.224	Directional				660 / 1,320	330
Flagami Blvd	Signalized	10.264	Directional					
SW 74 Ave	Signalized	10.329	Full				660 / 1,320	330

1.2.5 Traffic Analysis

The traffic analysis conducted for this study included the development of an existing conditions network using Synchro version 8.0 for the operational analysis.

The traffic analysis included:

- Data Collection
- Data Processing
- Data Analysis
- Development of Existing Conditions Synchro Model
- Analysis of Existing Conditions using Synchro Model Results
- Development of Peak Traffic Volumes Projections using a Growth Rate Methodology
- Development of Future Conditions Synchro Model
- Analysis of Future Conditions Synchro Model Results

2.0 EXISTING CONDITIONS

The following is a description of the major roadways within the study area:

SW 122nd Avenue

This County owned road runs in a north-south direction and provides for a two-lane (one-lane in each direction) undivided urban typical section, north of SW 8th Street. North of SW 8th Street, SW 122nd Avenue provides access to residential neighborhoods. South of SW 8th Street it is a six-lane roadway (3 lanes in each direction) undivided arterial with left turn lanes in the northbound and southbound directions, extending from south of SW 8th Street to SW 10th Street. South of SW 10th Street, SW 122nd Avenue narrows down to a four-lane (2 lanes in each direction) divided arterial. The speed limit along SW 122nd Avenue is 30 miles per hour (mph). The Functional Classification is Major Urban Collector.

Homestead Extension of the Florida Turnpike (HEFT)

This expressway provides a nine-lane section in the vicinity of the interchange with SW 8th Street (four lanes in the northbound direction and five lanes in the southbound direction). It is categorized as a Principal Urban Arterial Freeway and Expressway based on the Functional Classification categories. The speed limit along the HEFT is 60 mph.

SW 117th Avenue

This County owned road is located only on the south segment of SW 8th Street. It is a two lane undivided road that provides access to the west side of the FIU campus. The speed limit on this road is 30 mph. The Functional Classification is Minor Urban Arterial. A school zone speed limit sign is located on the south leg of this intersection in the north/south directions.

SW 112th Avenue

This roadway intersects SW 8th Street in a T-configuration, from the south. It only provides for a three-leg intersection, there is not a north leg. It is a four-lane (two lanes in each direction) divided roadway and it also provides access to and from the FIU main campus. The speed limit along SW 112th Avenue is 25 mph. The Functional Classification is Urban Local Road.

SW 109th Avenue

The northern segment of this roadway is a two lane (one in each direction) undivided urban roadway including sections with a two-way left turn lane painted median. The southern segment is a five-lane divided road with two lanes in the southbound direction providing access to the FIU main campus and three lanes in the northbound direction with a left turn lane, shared left thru lane and a right turn lane. The speed limit along this roadway on the north section is 30 mph and on the south section is 20 mph.

SW 107th Avenue

This is a State Road (SR 985) that runs in a north-south direction. Geometrically, it provides a four-lane (two lanes in each direction) urban typical section with a raised median, south of SW 8th Street. North of SW 8th Street it provides a four-lane, undivided typical section with a reversible painted left-turn lane, separating both directions. The speed limit along SW 107th Avenue in proximity to SW 8th Street is 40 mph. This roadway is programmed to undergo a widening by 2016. The Functional Classification is Urban Minor Arterial. A school zone speed limit sign is located on the north leg of this intersection in the north/south directions.

SW 102nd Avenue

This roadway is only located on the south side of SW 8th Street and is a two lane (one in each direction) undivided urban roadway. The Functional Classification is Major Urban Collector. The speed limit for this road is 35 mph.

SW 97th Avenue

This roadway is a major urban collector roadway that provides a four lane (two lanes in each direction) typical section with a raised median on the northern segment. On the southern segment it provides a two-lane undivided typical section with a reversible painted left-turn lane, separating both directions. The speed limit along SW 97th Avenue is 35 mph. The Functional Classification is Urban Minor Arterial. A school zone speed limit sign is located on the south leg of this intersection in the north/south directions.

SW 94th Avenue

This roadway provides a two lane (one in each direction) typical section. The speed limit along SW 94th Avenue is 35 mph. The Functional Classification is Urban Local.

SW 92nd Avenue

This roadway is also a major urban collector roadway that provides an undivided four-lane (two lanes in each direction) typical section on the northern segment. On the southern segment it provides a two-lane undivided typical section. The speed limit on the northern end is 30 mph and the southern segment is 35 mph. This roadway does not continue north of West Flagler Street.

SW 87th Avenue

This roadway provides a divided four-lane (two lanes in each direction) typical section. Its Functional Classification is a Minor Urban Arterial. Its speed limit is 40 mph.

SR 826/Palmetto Expressway

This expressway is categorized as a Principal Urban Arterial Freeway and Expressway based on the Functional Classification categories. It provides a nine-lane section in the vicinity of the interchange with SW 8th Street (four lanes in the northbound direction and five lanes in the southbound direction). The speed limit is 55 mph.

SW 76th Avenue

This minor roadway provides a two-lane undivided typical section on the south side of SW 8th Street. A school zone speed limit sign is located in the north/south direction.

SW 74th Avenue

This roadway provides a two-lane undivided typical section. The Functional Classification is Major Urban Collector. The speed limit is 30 mph.

2.1 Data Collection

A traffic data collection plan was prepared in order to gather all the necessary data to complete the traffic analysis for the SW 8th Street Corridor Study. The traffic data collection plan took place for two-weeks from March 11-13, 2014 and from March 18-20, 2014. Figure 9 illustrates the locations and types of counts within the study area.

72 Hour Bi-directional Classification Counts

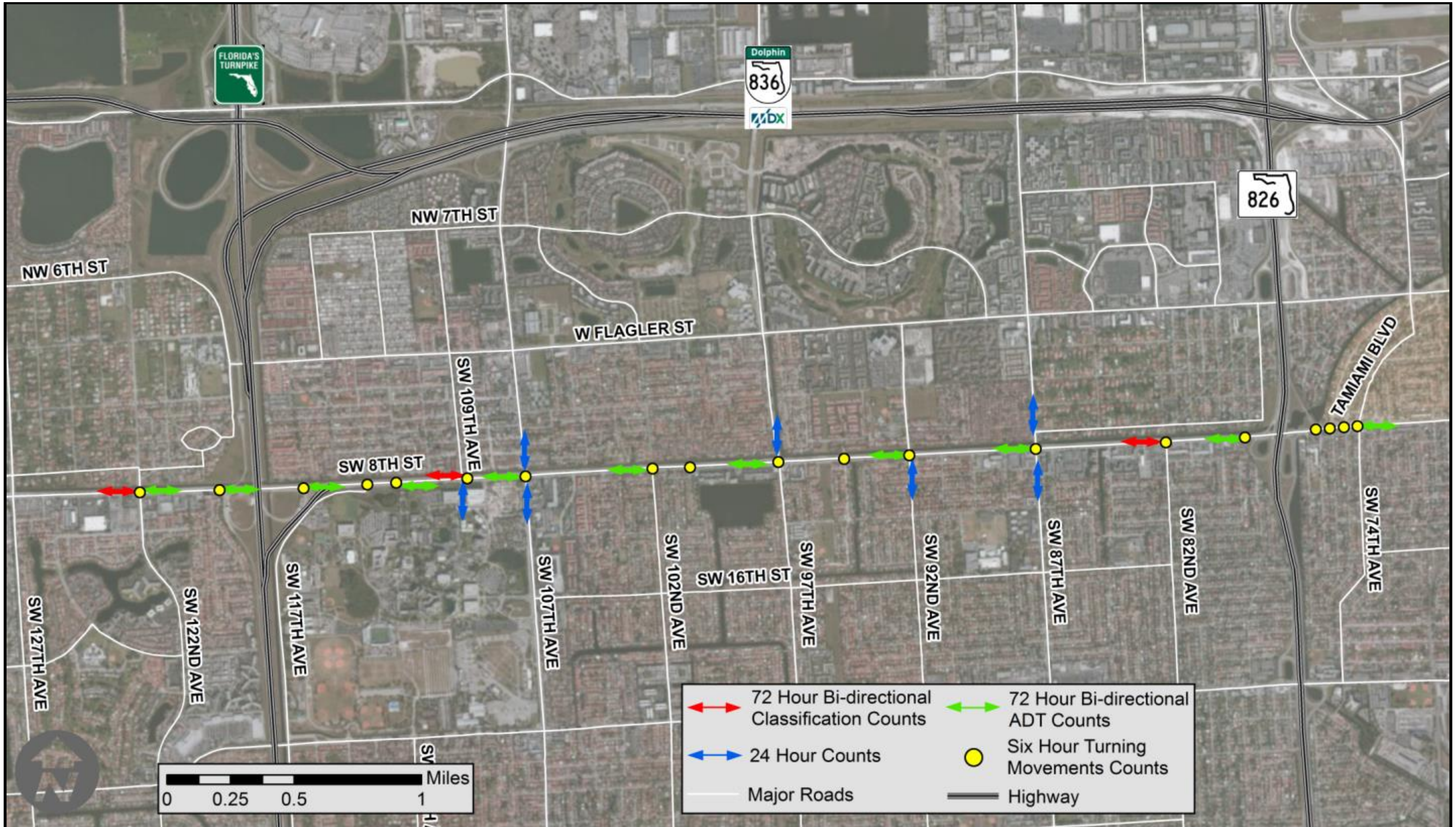
1. SW 8th Street/Tamiami Trail west of NW 122nd Avenue
2. SW 8th Street/Tamiami Trail west of SW 109th Avenue
3. SW 8th Street/Tamiami Trail west of SW 82nd Avenue (about 1,300 feet east of NW 87th Avenue)

72 Hour Bi-directional ADT Counts

1. SW 8th Street/Tamiami Trail about 800 feet east of NW 122nd Avenue
2. SW 8th Street/Tamiami Trail west of SR 821/HEFT
3. SW 8th Street/Tamiami Trail east of SR 821/HEFT (between the EB and WB intersection from NB ramp from the HEFT)
4. SW 8th Street/Tamiami Trail west of SW 112th Avenue
5. SW 8th Street/Tamiami Trail west of SW 107th Avenue
6. SW 8th Street/Tamiami Trail west of SW 102nd Avenue (between SW 105th Avenue and SW 103rd Place)
7. SW 8th Street/Tamiami Trail west of SW 97th Avenue (about 760 feet west of NW 97th Avenue)
8. SW 8th Street/Tamiami Trail west of SW 92nd Avenue (between NW 93rd Place and NW 93rd Avenue)
9. SW 8th Street/Tamiami Trail west of SW 87th Avenue (between SW 89th Avenue and SW 88th Avenue(
10. SW 8th Street/Tamiami Trail west of SR 826/Palmetto Expressway (about 250 feet west of SW 79th Avenue)
11. SW 8th Street/Tamiami Trail east of SW 74th Avenue

Appendix A includes the raw data for 72-Hour Classification and Regular Counts.

Figure 9 – Traffic Count Locations



72-Hour Cross-Street Counts

1. SW 87th Avenue north of SW 8th Street - Bi-Directional
2. SW 87th Avenue south of SW 8th Street – Bi-Directional
3. SW 92nd Avenue south of SW 8th Street – Bi-Directional
4. SW 97th Avenue north of SW 8th Street – Bi-Directional
5. SW 107th Avenue north of SW 8th Street – Bi-Directional
6. SW 107th Avenue south of SW 8th Street – Bi-Directional
7. SW 109th Avenue south of SW 8th Street – Bi-Directional

Appendix B includes the raw data for 72-Hour Counts for SW 8th Street and Cross Streets

Six Hour Turning Movements Counts

1. SW 8th Street/Tamiami Trail and SW 122nd Avenue
2. SW 8th Street/Tamiami Trail and SR 821/HEFT – Southbound ramps
3. SW 8th Street/Tamiami Trail and SR/HEFT – northbound ramps
4. SW 8th Street/Tamiami Trail and Snapper Creek Road
5. SW 8th Street/Tamiami Trail and SW 112th Avenue (FIU entrance)
6. SW 8th Street/Tamiami Trail and SW 109th Avenue (FIU entrance)
7. SW 8th Street/Tamiami Trail and SW 107th Avenue (two day counts)
8. SW 8th Street/Tamiami Trail and SW 102nd Avenue
9. SW 8th Street/Tamiami Trail and SW 99th Place
10. SW 8th Street/Tamiami Trail and SW 97th Avenue (two-day counts)
11. SW 8th Street/Tamiami Trail and SW 94th Avenue
12. SW 8th Street/Tamiami Trail and SW 92nd Avenue
13. SW 8th Street/Tamiami Trail and SW 87th Avenue (two-day counts)
14. SW 8th Street/Tamiami Trail and SW 82nd Avenue (for this intersection the U-turns should be considered when counting)
15. SW 8th Street/Tamiami Trail and SR 826/Palmetto Expressway – Southbound Ramps
16. SW 8th Street/Tamiami Trail and SR 826/Palmetto Expressway – Northbound Ramps
17. SW 8th Street/Tamiami Trail and Tamiami Canal Road
18. SW 8th Street/Tamiami Trail and Flagami Boulevard/SW 74th Court
19. SW 8th Street/Tamiami Trail and SW 74th Avenue

Appendix C includes the raw turning movement counts collected in the field.

24 Travel Times Runs (6 per direction) during peak period (AM and PM)

The Travel Time Runs were conducted along SW 8th Street beginning at SW 67th Avenue and ending at SW 127th Avenue. Control points in between were as follows:

1. SW 122nd Avenue
2. SW 117th Avenue/Snapper Creek Canal Road
3. SW 112th Avenue
4. SW 109th Avenue
5. SW 107th Avenue
6. SW 102nd Avenue
7. SW 97th Avenue
8. SW 92nd Avenue
9. SW 87th Avenue
10. SW 82nd Avenue
11. SW 74th Avenue

Appendix D includes the Travel Time Studies for SW 8th Street.

Queue data was collected for six hours at major intersections for the major and minor approaches.

1. SW 8th Street/Tamiami Trail and SW 109th Avenue (FIU entrance)
2. SW 8th Street/Tamiami Trail and SW 107th Avenue
3. SW 8th Street/Tamiami Trail and SW 97th Avenue
4. SW 8th Street/Tamiami Trail and SW 87th Avenue

Appendix E includes the queue data collected in the field

The data collection was performed in such a way that approximate midblock volumes (entering/exiting) SW 8th Street from adjacent land-uses, median openings and minor cross-streets could be estimated and included in the analysis as sink/source nodes.

2.2 Data Processing

Data processing was conducted by adjusting the raw traffic counts in order to account for seasonal variances and common issues associated with axle counting procedures during the data collection efforts. Therefore, 72 hour counts were converted into Average Annual Daily Traffic (AADTs), using the Axle Factors and Seasonal Factors and peak hour periods were determined.

Turning Movement Counts (TMCs) were adjusted using the seasonal factors only. Peak hour volumes were estimated using the turning movement counts at the intersections and the volumes recorded by the 72 hour counts.

In addition, from the turning movement counts, turning movement percentages at the various intersections were obtained.

Raw peak hour volumes were balanced in order to account for volume differences between intersections. Land uses (residential, commercial, etc.) adjacent to SW 8th Street attract/generate traffic. These attractors/generators cause volumes exiting one intersection to be different from the volumes entering the following intersection.

Therefore, balancing the raw volumes narrows this difference and at the same time allows determining the locations for Sink/Source nodes.

Table 5 and Table 6 lists the traffic adjustment factors used to adjust the raw traffic counts. FDOT does not develop seasonal factors by roadway; they are developed and grouped in eight geographical categories (Miami-Dade North (arterials), Miami-Dade South (arterials), Miami-Dade North (Expressways), Miami-Dade South (Expressways), Miami-Dade I-195, Miami-Dade I-395, Miami-Dade I-75 and Miami-Dade I-95). SR 821/HEFT is considered a different FDOT District and has its own category. Therefore, factors are only listed for Miami-Dade South (arterials) and SR 821/HEFT.

Table 5 – Weekly Axle Adjustment Factors

Roadway	Week of the Year	Axle Factor
SR 90/US 41/SW 8th Street	03/11/2012-03/17/2012	0.99
	03/18/2012-03/24/2012	0.99
SR 973/SW 87th Avenue	03/11/2012-03/17/2012	0.97
	03/18/2012-03/24/2012	0.97
SR 985/SW 107th Avenue	03/11/2012-03/17/2012	0.99
	03/18/2012-03/24/2012	0.99
SR 826/Palmetto Expressway	03/11/2012-03/17/2012	0.99
	03/18/2012-03/24/2012	0.99
SR 826/Palmetto Expressway Ramps	03/11/2012-03/17/2012	0.96
	03/18/2012-03/24/2012	0.96
SR 821/HEFT	03/11/2012-03/17/2012	0.96
	03/18/2012-03/24/2012	0.96

Table 6 – Weekly Seasonal Adjustment Factor

Roadway	Week of the Year	Seasonal Factor	Peak Seasonal Factor (PSCF)
Miami-Dade South Area	03/11/2012-03/17/2012	0.97	0.99
	03/18/2012-03/24/2012	0.98	1.00
SR 821/HEFT	03/11/2012-03/17/2012	0.94	0.97
	03/18/2012-03/24/2012	0.95	0.98

2.2.1 Average Annual Daily Traffic (AADT)

72- Hour counts and 72-Hour classification counts were converted into Average Annual Daily Traffic (AADTs), using the Axle Factors and Seasonal Factors and peak hour periods were determined. Time-of-day vs. volume profiles were developed, these are included in Appendix F.

Table 7 and Table 8 summarize the estimated AADTs from the data collection effort. Also, this table lists the peak hour volume and the time in which the peak hour volume was observed, based on the 72-Hr counts (regular and/or classification).

Table 7 – SW 8th Street Area-Wide Peak Hour Identification from the 72 - Hour Counts

Location	AADT (vpd) EB	AADT (vpd) WB	AADT (vpd) Both Directions	Peak Hour Volumes (vph) Direction		AM	PM
1) West of SW 122nd Avenue	22,177	24,598	46,775	EB	Volume	1,663	1,422
					Time	06:15 - 07:15	03:30 - 04:30
				WB	Volume	1,240	1,962
					Time	11:45 - 12:45	05:00 - 06:00
				Both	Volume	2,673	3,314
					Time	06:45 - 07:45	03:15 - 04:15
2) East of SW 122nd Avenue	34,660	32,609	67,269	EB	Volume	3,649	1,899
					Time	06:15 - 07:15	02:00 - 03:00
				WB	Volume	1,683	3,034
					Time	11:45 - 12:45	04:15 - 05:15
				Both	Volume	5,147	4,752
					Time	06:30 - 07:30	04:15 - 05:15
3) West of SR 821/HEFT	40,788	27,939	68,727	EB	Volume	4,111	2,468
					Time	06:30 - 07:30	03:15 - 04:15
				WB	Volume	1,458	2,262
					Time	06:45 - 07:45	03:45 - 04:45
				Both	Volume	5,478	4,644
					Time	06:45 - 07:45	03:45 - 04:45
4) East of SR 821/HEFT (between the EB and WB intersection from NB ramp from the HEFT)	32,305	32,631	64,936	EB	Volume	2,866	2,080
					Time	06:30 - 07:30	03:30 - 04:30
				WB	Volume	1,755	2,755
					Time	11:45 - 12:45	04:00 - 05:00
				Both	Volume	4,391	4,801
					Time	06:45 - 07:45	03:45 - 04:45
5) West of SW 112th Avenue	34,982	24,112	59,094	EB	Volume	3,190	2,072
					Time	06:45 - 07:45	03:30 - 04:30
				WB	Volume	1,677	2,578
					Time	11:45 - 12:45	04:15 - 05:15
				Both	Volume	3,892	4,610
					Time	06:45 - 07:45	03:45 - 04:45
6) West of SW 109th Avenue	29,458	27,022	56,480	EB	Volume	2,202	1,769
					Time	07:30 - 08:30	04:00 - 05:00
				WB	Volume	1,539	1,939
					Time	07:45 - 08:45	04:15 - 05:15
				Both	Volume	3,704	3,697
					Time	07:30 - 08:30	04:15 - 05:15

7) West of SW 107th Avenue	31,212	26,152	57,364	EB	Volume	2,280	2,009
					Time	06:15 - 07:15	03:45 - 04:45
				WB	Volume	1,622	1,826
					Time	06:45 - 07:45	05:00 - 06:00
				Both	Volume	3,839	3,816
					Time	06:30 - 07:30	03:45 - 04:45
8) West of SW 102nd Avenue (between SW 105th Avenue and SW 103rd Place)	26,076	18,762	44,838	EB	Volume	1,609	1,761
					Time	06:15 - 07:15	04:00 - 05:00
				WB	Volume	1,261	1,903
					Time	11:45 - 12:45	02:00 - 03:00
				Both	Volume	2,532	3,525
					Time	06:45 - 07:45	02:30 - 03:30
9) West of SW 97th Avenue (about 760' west of NW 97th Avenue)	32,209	28,183	60,392	EB	Volume	2,791	1,860
					Time	06:30 - 07:30	02:00 - 03:00
				WB	Volume	1,543	2,271
					Time	11:45 - 12:45	04:30 - 05:30
				Both	Volume	4,234	4,046
					Time	06:45 - 07:45	04:15 - 05:15
10) West of SW 92nd Avenue (between NW 93rd Place and NW 93rd Avenue)	28,463	27,715	56,178	EB	Volume	2,595	1,742
					Time	06:30 - 07:30	02:15 - 03:15
				WB	Volume	1,602	2,274
					Time	11:45 - 12:45	04:30 - 05:30
				Both	Volume	3,922	3,894
					Time	06:30 - 07:30	04:15 - 05:15
11) West of SW 87th Avenue (between SW 89th Avenue and SW 88th Avenue)	28,718	28,695	57,413	EB	Volume	2,624	1,730
					Time	06:15 - 07:15	02:00 - 03:00
				WB	Volume	1,688	2,360
					Time	11:45 - 12:45	04:45 - 05:45
				Both	Volume	3,936	3,981
					Time	06:30 - 07:30	04:15 - 05:15
12) West of SW 82nd Avenue (about 1,300' east of NW 87th Avenue)	25,969	34,517	60,486	EB	Volume	2,231	1,672
					Time	06:00 - 07:00	02:30 - 03:30
				WB	Volume	1,926	2,635
					Time	11:45 - 12:45	03:15 - 04:15
				Both	Volume	3,536	4,221
					Time	11:45 - 12:45	03:45 - 04:45
13) West of SR 826/Palmetto Expressway (about 250' west of SW 79th Avenue)	29,602	25,830	55,432	EB	Volume	2,550	1,851
					Time	06:15 - 07:15	02:30 - 03:30
				WB	Volume	1,573	2,075
					Time	11:45 - 12:45	04:15 - 05:15
				Both	Volume	3,557	3,826
					Time	06:15 - 07:15	04:15 - 05:15

14) East of SW 74th Avenue	20,789	25,359	46,148	EB	Volume	1,418	1,350
					Time	07:45 - 08:45	12:00 - 01:00
				WB	Volume	1,608	1,755
					Time	07:00 - 08:00	02:45 - 03:45
				Both	Volume	2,932	2,985
					Time	07:00 - 08:00	02:15 - 03:15

LEGEND	
AM	PM
06:15 - 07:15	02:15 - 03:15
06:30 - 07:30	02:30 - 03:30
06:45 - 07:45	03:45 - 04:45
07:00 - 08:00	04:15 - 05:15
07:30 - 08:30	
11:45 - 12:45	

Table 8 – SW 8th Street (Cross-Streets) Peak Hour Identification from the 72 – Hour Counts

Roadway	Location	AADT (vpd) NB	AADT (vpd) SB	AADT (vpd) Both Directions	Direction		Peak Hour Volumes (vph) AM	Peak Hour Volumes (vph) PM
SW 87th Avenue	North of SW 8th Street	29,528	15,474	45,000	NB	Volume	2,339	1,963
						Time	06:45 - 07:45	01:45 - 02:45
					SB	Volume	1,076	1,107
						Time	11:45 - 12:45	12:45 - 01:45
					Both	Volume	3,147	3,014
						Time	06:45 - 07:45	01:15 - 02:15
	South of SW 8th Street	16,443	16,777	33,220	NB	Volume	1,115	1,127
						Time	06:30 - 07:30	01:45 - 02:45
					SB	Volume	1,102	1,246
						Time	11:45 - 12:45	02:30 - 03:30
					Both	Volume	2,138	2,320
						Time	11:30 - 12:30	01:15 - 02:15
SW 92nd Avenue	South of SW 8th Street	4,858	4,787	9,645	NB	Volume	592	376
						Time	08:00 - 09:00	02:45 - 03:45
					SB	Volume	388	469
						Time	08:00 - 09:00	05:15 - 06:15
					Both	Volume	980	812
						Time	08:00 - 09:00	05:15 - 06:15
SW 97th Avenue	North of SW 8th Street	16,750	15,308	32,058	NB	Volume	1,242	1,378
						Time	06:30 - 07:30	04:30 - 05:30
					SB	Volume	967	1,496
						Time	06:45 - 07:45	04:00 - 05:00
					Both	Volume	2,185	2,848
						Time	06:45 - 07:45	04:15 - 05:15
SW 107th Avenue	North of SW 8th Street	20,685	17,364	38,049	NB	Volume	1,335	1,447
						Time	11:00 - 12:00	04:15 - 05:15
					SB	Volume	1,132	1,223
						Time	11:30 - 12:30	03:30 - 04:30
					Both	Volume	2,466	2,666
						Time	11:30 - 12:30	04:00 - 05:00
	South of SW 8th Street	23,875	23,868	47,743	NB	Volume	1,549	1,515
						Time	06:30 - 07:30	03:45 - 04:45
					SB	Volume	1,487	1,724
						Time	07:30 - 08:30	05:00 - 06:00
					Both	Volume	2,984	3,219
						Time	06:45 - 07:45	03:45 - 04:45

SW 109th Avenue	**South of SW 8th Street**	5,914	6,050	11,964	NB	Volume	429	569
						Time	11:45 - 12:45	02:30 - 03:30
					SB	Volume	906	437
						Time	08:00 - 09:00	03:30 - 04:30
					Both	Volume	1,092	957
						Time	08:00 - 09:00	03:30 -04:30

LEGEND	
AM	**PM**
06:45 - 07:45	01:15 - 02:15
08:00 - 09:00	03:30 - 04:30
11:30 - 12:30	03:45 - 04:45
	04:00 - 05:00
	04:15 - 05:15
	05:15 - 06:15

The 72-Hour Counts were collected using the traditional pneumatic tube machines. This technology is known to relatively under estimate volumes as speeds are reduced at a particular location. Therefore, turning movement counts at the intersections were also compared against the approach counts calculated from the 72-Hour Counts. Turning movement volumes resulted to be slightly higher than the approach hourly count obtained from the 72-Hour count (along SW 8th Street).

2.2.2 Turning Movement Counts

Turning Movement Counts (TMCs) were adjusted using the seasonal factors only. Peak hour volumes were estimated using the turning movement counts at the intersections and the volumes recorded by the 72 hour counts.

In addition, from the turning movement counts, turning movement percentages at the various intersections were obtained. Appendix G includes the processed Turning Movement Counts.

From the turning movement count information, it was determined that peak hour volumes were occurring at a relatively later time that the ones identified from the 72-Hour counts. For most of the locations, the 72-Hour counts determined a bi-directional peak hour occurring from 6:45 AM to 7:45 AM during the morning peak, while the turning movement counts identified that the majority of the intersections were peaking between 7:30 AM to 8:30 AM (as listed in Table 9). Two factors should be considered when comparing the peak hours from these two different types of counts. One factor is that pneumatic tubes might have under-counted the approach volume; while the actual intersection was processing slightly higher volumes due to shorter spacing between vehicles, which can often be attributed to aggressive driving. The second factor is that the crossing-streets have different peaking times and therefore, peak hour volumes at the intersection peak at a different time than mid-block volumes. Peak hours identified in Table 9 consider volumes entering the intersections from all of the approaches.

Table 9 – Turning Movement Volumes Peak Times

#	Intersection	AM Peak Hour	PM Peak Hour
1	SW 122 Ave	7:30 to 8:30	5:00 to 6:00
2	HEFT SB	7:30 to 8:30	4:30 to 5:30
3	HEFT NB	7:30 to 8:30	4:30 to 5:30
4	SW 117 Ave	7:30 to 8:30	4:30 to 5:30
5	SW 112 Ave	7:30 to 8:30	4:15 to 5:15
6	SW 109 Ave	7:30 to 8:30	4:30 to 5:30
7	SW 107 Ave	7:30 to 8:30	5:00 to 6:00
8	SW 102 Ave	7:00 to 8:00	5:00 to 6:00
9	SW 99 Pl	7:15 to 8:15	3:15 to 4:15
10	SW 97 Ave	7:30 to 8:30	5:00 to 6:00
11	SW 94 Ave	7:15 to 8:15	4:45 to 5:45
12	SW 92 Ave	7:15 to 8:15	5:00 to 6:00
13	SW 87 Ave	7:30 to 8:30	3:00 to 4:00
14	SW 82 Ave	7:00 to 8:00	3:15 to 4:15
15	SR 826 SB	7:30 to 8:30	4:45 to 5:45
16	SR 826 NB	7:15 to 8:15	5:00 to 6:00
17	Tamiami Canal Rd	7:30 to 8:30	4:15 to 5:15
18	Flagami Blvd	7:45 to 8:45	4:30 to 5:30
19	SW 74 Ave	7:45 to 8:45	4:45 to 5:45

A similar situation was observed when the peak hour volumes from the 72-Hour counts were compared to the turning movement counts for the afternoon peak. Peak hour volumes from the turning movement counts were slightly higher than the ones obtained from the 72-Hour counts and the identified peak hours were also different - 4:00 PM to 5:00 PM (from the 72-Hour counts) vs. 5:00 PM to 6:00 PM (from the turning movement count).

In addition, when analyzing the peak hour flow (based on the turning movement counts) it was determined that SW 8th Street actually peaks at different times depending on the roadway segment. For instance, the western end of the project shows peak hour volumes between 7:30 AM to 8:30 AM; while locations near SW 87th Avenue show peak hour volumes occurring between 7:00 AM and 8:00AM (half-an hour earlier).

In summary, after carefully examining the extensive data collected, it was determined that the prevalent times for which peak volumes were observed were between 7:30 AM and 8:30 AM (during the morning) and between 5:00 PM and 6:00 PM (in the afternoon). Therefore, these are the peak hours to be used for this corridor study analysis.

Balanced Peak Hour Volumes were developed for the AM and PM peak hours. A summary of these volumes are included in Appendix H.

2.2.3 Travel Times Studies

In order to identify the level of congestion that the corridor experiences, average speeds collected in the field were reviewed. Since the eastbound direction represents the predominant direction in the morning peak and the westbound direction represents the peak direction in the afternoon, the review concentrated on the predominant direction according to the peak hour (eastbound AM and westbound PM). As listed in Tables 10 and 11, the average speed in the eastbound direction is about 15 mph in the morning. Only the segments in the vicinity of SW 107th Avenue and east of SW 87th Avenue (approaching SR 826) experience speeds lower than 10 mph. Based on a preliminary arterial analysis, the majority of the segments along SW 8th Street operate at LOS between A and E, except for the segments listed above which operate at LOS F. Therefore, most of the segments along SW 8th Street do not appear to be operating at over-saturated conditions.

In the afternoon, the average peak hour speed in the westbound direction is approximately 20 mph. Only the segment in the vicinity of SW 107th Avenue is operating at an average speed lower than 10 mph. Similar to the morning peak direction, it appears that most of the segments along SW 8th Street are not operating at over-saturated conditions.

Since most of the segments are not operating at over-saturated conditions, it does not appear that peak-spreading conditions are occurring, and therefore, a detailed analysis for peak-spreading was not conducted. Based on the analysis of the data, and significant field observations, the flat continuous volume across several hours depicted in the time-of-day vs. hourly volume profile does not seem to be associated to the peak-hour spreading phenomenon. Based on field observations, no major spillbacks are present within the limits of the corridor analysis. No queues from one intersection affect the operations of the upstream intersection. Traffic along SW 8th Street seems to be entering steadily for several hours, without exceeding capacity. Therefore, based on the traffic data collected and observed field conditions, a multi-hour analysis was not warranted.

Table 10 – Eastbound AM – Peak Hour Average Speeds

Node Name	Week 1 (mph)	Week 2 (mph)	Average (Week 1 and 2) (mph)
SW 127 Ave			
SW 122 Ave	20.90	12.70	16.80
FL Turnpike West Ramps	33.60	32.80	33.20
FL Turnpike East Ramps	39.10	28.50	33.80
SW 117 Ave	27.70	20.80	24.25
SW 112 Ave	34.00	31.90	32.95
SW 109 Ave	35.60	20.60	28.10
SW 107 Ave	10.40	7.90	9.15
SW 102 Ave	29.30	31.50	30.40
SW 99 Pl	38.60	38.60	38.60
SW 97 Ave	20.00	26.30	23.15
SW 94 Ave	35.20	36.10	35.65
SW 92 Ave	34.40	35.30	34.85
SW 87 Ave	9.00	19.20	14.10
SW 82 Ave	4.90	11.30	8.10
Palmetto West Ramps	6.30	12.30	9.30
Palmetto East Ramps	6.00	6.80	6.40
Tamiami Canal Rd	9.70	7.20	8.45
Flagami Blvd/ SW 74 Ct	6.20	11.30	8.75
SW 74 Ave	18.30	12.40	15.35
SW 67 Ave	22.50	18.50	20.50
AVERAGE	**13.80**	**16.70**	**15.25**

Table 11 – Westbound PM – Peak Hour Average Speeds

Node Name	Week 1 (mph)	Week 2 (mph)	Average (Week 1 and 2) (mph)
SW 67 Ave			
SW 74 Av/Tamiami Blvd	13.30	14.20	13.75
Flagami Blvd/SW 74 Ave	18.20	22.20	20.20
Tamiami Canal Rd	25.90	14.90	20.40
Palmetto East Ramps	19.30	16.10	17.70
Palmetto West Ramps	31.00	26.50	28.75
SW 82 Ave	19.20	23.30	21.25
SW 87 Ave	23.30	24.30	23.80
SW 92 Ave	24.70	18.60	21.65
SW 94 Ave	37.60	35.90	36.75
SW 97 Ave	29.30	21.60	25.45
SW 99 Pl	38.90	37.70	38.30
SW 102 Ave	39.00	39.40	39.20
SW 107 Ave	10.90	6.50	8.70
SW 109 Ave	33.70	15.80	24.75
SW 112 Ave	38.00	35.30	36.65
SW 117 Ave	27.40	26.60	27.00
FL Turnpike East Ramps	26.30	28.50	27.40
FL Turnpike West Ramps	35.40	37.60	36.50
SW 122 Ave	17.60	15.50	16.55
SW 127 Ave	33.90	37.80	35.85
AVERAGE	**21.70**	**18.60**	**20.15**

2.2.4 Peak Hour Factors (PHFs)

Based on the Highway Capacity Manual 2010 (HCM 2010), estimation of an average peak hour factor is recommended for the entire intersection. Table 12 lists the PHFs for the signalized intersections within the study area.

Table 12 – Estimated Peak Hour Factors

#	Intersection	PHF (AM)	PHF (PM)
1	**SW 122 Ave**	0.956	0.994
2	**HEFT Southbound (SB)**	0.974	0.946
3	**HEFT Northbound (NB)**	0.964	0.980
4	**SW 117 Ave**	0.965	0.961
5	**SW 112 Ave**	0.955	0.929
6	**SW 109 Ave**	0.943	0.969
7	**SW 107 Ave**	0.926	0.973
8	**SW 102 Ave**	0.882	0.952
9	**SW 99 Pl**	0.900	0.979
10	**SW 97 Ave**	0.948	0.982
11	**SW 94 Ave**	0.938	0.933
12	**SW 92 Ave**	0.949	0.909
13	**SW 87 Ave**	0.954	0.950
14	**SW 82 Ave**	0.929	0.954
15	**SR 826 Southbound (SB)**	0.974	0.967
16	**SR 826 Northbound (NB)**	0.938	0.934
17	**Tamiami Canal Rd**	0.923	0.927
18	**Flagami Blvd**	0.960	0.988
19	**SW 74 Ave**	0.977	0.929

2.2.5 Truck Factor (T-Factor), Directional Distribution Factor (D-Factor), and Peak Hour to AADT Ratio (K-Factor)

In order to determine the truck factors, the directional factors and the peak hour factors to be used for this analysis, different sources were reviewed.

To estimate the truck factor three different sources of information were used. The first source was the classification counts collected in the field as part of this study. The second source was the historic information included in the 2012 FDOT Traffic Information DVD-ROM. The third source was previous studies performed along the SW 8th Street Corridor.

Field classification counts were collected as part of the SW 8th Street Corridor Study, at three different locations. These locations were as follows:

- SW 8th Street/Tamiami Trail, west of SW 122nd Avenue
- SW 8th Street/Tamiami Trail, west of SW 109th Avenue
- SW 8th Street/Tamiami Trail, west of SW 82nd Avenue

Truck factors obtained from the field counts resulted in relatively high values; therefore, the historic truck factors listed in the 2012 Traffic Information DVD-ROM were reviewed. Historic truck factors were obtained from FDOT traffic count stations (five different count stations along SW 8th Street for years 2002 to 2012) and an analysis between the historic truck factors and the truck factors estimated for the 2012 feasibility study was performed. From this analysis it was determined that the average of the 10-year FDOT historic truck factors were representatives of the study area. Recommended truck factors are listed in Table 13.

Table 13 – Recommended Truck Factors

Count Location	T-Peak
SR 821/HEFT	3.00%
SR 826	3.00%
SW 117 Avenue	2.00%
SW 107 Avenue	2.50%
SW 87 Avenue (NB)	3.00%
SW 87 Avenue (SB)	2.00%
SW 8 Street	4.00%
Other Roadways	2.00%

An analysis of the last 10 years (2002-2012) of historic K and D factors for the FDOT traffic count stations was performed and the average was obtained from the 2012 FDOT Traffic Information DVD ROM.

The peak hour to daily volume ratio was also estimated from the 72-Hour field counts. This ratio resulted in a value that fell below the lower limit of the FDOT Standard K-Factor. The field estimated K values range between 5.25 percent and 7.5 percent. Since these factors were estimated using the 72-Hour counts collected in the field and, as previously mentioned, 72-Hour machine counters could have under-counted volumes due to congestion, it is recommended to use the average of the last ten years as listed in Table 14.

In addition, directional factors were calculated from the field counts and compared to the FDOT Average D-factors for the last ten years (2002-2012). From this comparison it was determined that the value obtained from the field counts were close to the values reported by FDOT; therefore, it was decided to use the average values reported by FDOT during the last ten years.

Table 14 lists the recommended K and D factors to be used later in this traffic analysis for evaluation of future conditions.

Table 14 – Recommended Traffic Factors (K and D)

Location	D-Factor	K-Factor
SR 821/HEFT (Ramps)	100.00%	9.00%
SR 826 (Ramps)	100.00%	9.80%
SW 117 Avenue	59.70%	9.00%
SW 107 Avenue	63.39%	8.22%
SW 97 Avenue	59.70%	9.00%
SW 87 Avenue	63.37%	8.22%
SW 82 Avenue	59.70%	9.00%
SW 74 Avenue	59.70%	9.00%
Tamiami Boulevard	59.70%	9.00%
SW 8 Street	63.39%	8.22%
Other Roadways	59.70%	9.00%

2.2.6 Existing Signal Timing and Phasing

In order to have a clear understanding of the traffic operations along SW 8th Street, the traffic signal operations plans were reviewed. These traffic control devices define and regulate the traffic flow along SW 8th Street.

Existing signal timing and phasing plans were downloaded from the Miami-Dade County Traffic Signal Division web page for the Advanced Traffic Management System (ATMS). The signal timing for each signalized intersection along the SW 8th Street Study Corridor can be found in Appendix I. The downloaded information included the actuated traffic signal timing sheet for Time of Day (TOD) Schedule Report. The signalized intersections within the study area are listed in Table 15.

Table 15 – Traffic Signals Overall Settings

Asset No.	Cross-Street	AM Peak Period Cycle	PM Peak Period Cycle	AM Cycle Length	PM Cycle Length	Notes
3730	SW 122nd Avenue	6:30-9:30	4:30-7:30	180	150	
4239	SB Ramps from/to HEFT	6:30-9:30	4:30-7:30	180	150	
4238	NB Ramps from/to HEFT	6:30-9:30	4:30-7:30	180	135	
4974	SW 117th Avenue	6:30-9:30	4:00-7:00	180	180	
3879	SW 112nd Avenue	6:30-9:30	4:00-7:00	180	180	
5430	SW 109th Avenue	6:30-9:30	4:00-7:00	180	180	
3709	SW 107th Avenue	6:30-9:30	4:00-7:00	180	180	
4510	SW 102nd Avenue	6:30-9:30	4:00-7:00	180	180	
3743	SW 97th Avenue	6:30-9:30	4:00-7:00	180	180	
4563	SW 94th Avenue	6:30-9:30	4:00-7:00	180	180	
5164	SW 92nd Avenue	6:30-9:30	4:00-7:00	180	180	
3362	SW 87th Avenue	6:30-9:30	4:00-7:00	180	180	
4565	SW 82nd Avenue	6:30-9:30	4:00-7:00	180	180	
5425	SB Ramps from/to SR 826	6:00-9:30	3:30-7:00	180	180	
5424	NB Ramps from/to SR 826	6:00-9:30	3:30-7:00	180	180	
2135	SW 74th Court	6:00-9:30	3:30-7:00	180	90	Pedestrian Signal
2634	SW 74th Avenue	6:00-9:30	3:30-7:00	180	180	

Based on coordination with Miami-Dade County Traffic Signal Division, it was determined that the traffic signals along SW 8th Street operate under a semi-actuated/coordinated mode. The through movements along SW 8th Street are not provided with detection loops; therefore, these are the coordinated movements.

In addition, most of the minor crossing streets approaches operate under actuated mode. Phases could be skipped and unused green time is re-assigned to subsequent phases.

As depicted in Table 15, the traffic signal operating plan during the peak hours for SW 8th Street (7:30 AM to 8:30 AM and 5:00 PM to 6:00 PM) have different durations, some extend from 4:30 PM to 7:30 PM while others last from 3:30 PM to 7:30 PM. If a multi-hour analysis (from 3:00 PM to 7:00 PM) was to be considered, the starting traffic signal operating plan would be different for all intersections. Then, at 4:30 PM a new signal timing plan would start for the western intersections and at 3:30 PM a new signal timing plan would start at the eastern intersections.

These signal operating plans differ in cycle lengths as well as in settings such as the phasing recall parameters (where phases can be skipped or serviced with the minimum/maximum green, etc.). All these factors impact traffic flow along the corridor.

Research information provided by the Miami-Dade County Traffic Signal Division indicated that Traffic Signal Operations Engineers (at the center) may change the recall setting on any phase/movement/direction operating on recall (MIN or MAX) by time-of-day, depending on real-time field conditions in order to provide a better flow or coordination.

2.2.7 Overall Observations

Field observations confirmed the findings from the traffic data collected for this study. The 72-Hour counts revealed that the morning peak hour was very well defined in the eastbound direction, while the westbound direction did not show any significant peak volumes during the morning hours. However for the afternoon peak, traffic volumes were more disperse depicting a continuous volume of traffic over the course of several hours.

The turning movement counts suggested that the peak hour volumes were occurring later than what the 72-hour counts suggested. For most locations, the bi-directional peak hour occurred between 6:45 AM and 7:45 AM according to the 72-hour counts, while the turning movement counts suggested the peak hour to occur between 7:30 AM to 8:30 AM for most locations.

The peak hour volumes at intersections may vary from the peak hour volumes at mid-block locations, in part because of the varying peak hour volumes for individual cross-streets. Peak hour volumes differed depending on which segment of SW 8th Street was being analyzed. *In summary, it was determined and confirmed in the field that the prevalent times for high volumes for the morning was between 7:30 AM and 8:30 AM, while the afternoon saw its highest volumes between 5:00 PM and 6:00 PM.*

During the morning peak hour, high levels of congestion and bottlenecking were observed along SW 8th Street in the eastbound direction near the SR 826 ramps where there are only four travel lanes (two in each direction). This congestion extended approximately from SW 87th Avenue to the off-ramp from northbound SR 826. According to field observations, this queue started minimizing just after 8:30 AM.

From the morning field observations, it was also identified that the eastbound approach at the intersection with SW 107th Avenue showed some congestion. This was mostly caused by the traffic signal at this location. Field observations revealed that (on some occasions), the eastbound vehicles turning northbound at SW 107th Avenue blocked the vehicles traveling westbound at the intersection. This was due to the slow speeds associated with the school zones in the SW 107th Avenue northbound direction. These turning vehicles would block the intersection for westbound crossing traffic since they had not cleared the intersection by the time the signal green time commenced. The same condition was observed at the intersection of SW 87th Avenue, where the eastbound to northbound vehicles blocked (sometimes) the flow of the westbound vehicles. However, no school zone is located along SW 87th Avenue. Nevertheless, this roadway experiences heavy volumes as it offers access to SR 836/Dolphin Expressway.

In addition, the northbound approaches at the majority of the intersections (major/minor cross-streets) experienced queues of about 16 vehicles (400' or more) during the red-light phase. Southbound approaches did not show significant queues in the am peak.

Field reviews during the afternoon peak hour confirmed that most of the segments along SW 8th Street in the westbound direction (peak direction) are operating at average speeds ranging from 14 mph to 37 mph (as determined from the travel time studies). Only the segment in the vicinity of SW 107th Avenue is operating at an average speed of nine (9) mph. On some occasions it took about two signal cycles to cross this intersection. Westbound queues extend back to SW 105th Avenue (about 900 feet). Rarely did the spillback extend beyond this upstream intersection. No major spillbacks are occurring at any other locations along SW 8th Street in the afternoon peak.

Southbound approaches at major/minor streets experience heavy volumes. The SW 87th Avenue queue length extends back to approximately SW 4th Street (approximately 1,500 from the SW 8th Street intersection). A similar situation is observed at SW 107th Avenue and SW 97th Avenue. Northbound approaches do not experience such a heavy demand in the afternoon peak.

The intersection of SW 8th Street and SW 74th Avenue experiences heavy volumes in the northbound and southbound approaches during the afternoon peak hour, with the northbound approach being the most critical one.

3.0 EXISTING CONDITIONS TRAFFIC ANALYSIS

In order to analyze the traffic operations within the study limits, Synchro models for the AM and PM (for the weekdays) peak hours were developed. These models were developed using Synchro version 8.0, build 805.

3.1 Length of the Analysis Period

As described in Technical Memorandum No. 2 (Traffic Methodology Technical Memorandum), an extensive analysis was conducted in order to determine if peak-hour spreading (multi-hour) analysis was necessary for this corridor study.

Based on the information collected from the 72-Hour counts, Travel Time Studies and field visits, it was determined that traffic flow along SW 8th Street does not experience heavy congestion. Average travel speeds during peak hours, along the entire limits of the study, range between 15 mph (during the AM peak hour) to 20 mph (during the PM peak hour). Some segments within the corridor experience average travel speeds as high as 40 mph. Therefore, critical congestion is not observed within the limits of SW 8th Street being analyzed.

Average travel speeds along SW 8th Street revealed that this roadway does not experience over-saturated conditions except for the segment between SR 826/Palmetto Expressway and east of SW 87th Avenue during the morning peak hour.

Since most of the segments are not operating at over-saturated conditions a peak-spreading analysis was not necessary. The flat continuous volume across several hours depicted in the time-of-day vs. hourly volume profile does not seem to be associated to the peak-hour spreading phenomenon. Based on field observations, no major spillbacks are present within the limits of the corridor analysis. No queues from one intersection affect the operations of the upstream intersection. Traffic along SW 8th Street seems to be entering steadily for several hours, without exceeding capacity. Therefore, based on the traffic data collected and observed field conditions, a multi-hour analysis was not warranted.

3.2 Development of Synchro Models

Synchro/SimTraffic models for the morning and afternoon peak hours were developed and calibrated as part of the existing conditions analysis. These calibrated models will be used as the basis for developing the future conditions operational analysis. Calibration parameters will be carried over to the future conditions scenarios.

A detailed operational analysis was performed using Synchro/SimTraffic 8.0 for the AM and PM Peak Hours. Synchro will allow obtaining results based on the HCM 2000/2010 methodology and SimTraffic will allow the analysis of congested conditions, queues and spillbacks.

Input parameters for Synchro were based on the existing peak hour volumes and traffic factors estimated in Section 2.2 of this report.

Synchro/SimTraffic models were developed following the guidelines outlined in the FDOT Traffic Analysis Handbook (a reference for Planning and Operations), Dated March 2014.

As recommend in the FDOT Traffic Analysis Handbook, the Synchro model had all link terminals extended at least 1,000 feet from the last node and queue lengths tagged with “#” or “m” will be examined for extent of queuing problems.

3.2.1 Network Development

Geometric Roadway Data – Roadway geometric data were assembled using aerial photography, design plans and field reconnaissance. Initial roadway number of lanes and configurations were obtained from aerial photographs. The roadway features were field verified and revised as needed and entered into the existing conditions network.

Traffic Control Data – Miami-Dade County provided the existing traffic signal timing plans for each intersection within the study area. Traffic and sign control features were field verified, along with roadway operating speeds.

Traffic Flow Data – Existing six-hour turning movement counts for the project intersections were collected and used to develop existing AM and PM peak hour traffic conditions within the study area. The raw volume data gathered along the cross streets were balanced to provide a reasonable representation of existing AM and PM peak hour traffic flows for the study area. The resulting traffic volumes are shown in Appendix H.

Travel Time Runs – Multiple travel time runs were conducted in each direction along the SW 8th Street corridor for the existing conditions. The travel time runs were conducted on weekdays during the AM and PM peak periods using the “Floating Car” technique, where drivers traveled with the prevailing traffic. The breakpoints were at signalized intersections and the data points were recorded at the downstream end of the intersection. Link length, travel time, delay and average speed information was collected to calibrate the traffic simulation network used in the analysis of traffic operations for the existing conditions.

Field reconnaissance was performed on the roadway characteristics to confirm the number of lanes, geometry, median type, traffic control, existing local signal timings, operating speed, etc. for the intersections along the SW 8th Street study corridor. Field observations confirmed areas of existing traffic congestion, queuing and delays.

3.2.2 Model Calibration

The calibration of key parameters was developed as part of an iterative process. The simulation and MOEs results based on the default parameters were reviewed to determine the reasons causing traffic to behave in the manner which it did. The

SimTraffic model normally applies turn movement percentages to all vehicles entering a link, regardless of their previous path. Link OD Volumes were used within Synchro to prevent vehicles from making a series of unrealistic turn movements and define discharge percentages that are conditioned on the basis of entry movement. In addition, default parameters at both the local link and global network levels were adjusted within Synchro and SimTraffic so that the AM and PM models adequately matched field observations. In some cases, a combination of two or three parameters was adjusted to reflect field conditions.

The following adjustments were made to the Synchro model to develop a calibrated model that matched closely with the existing traffic conditions:

- Entered **link OD volumes**/conditional turn movement values at the SR 821 and SR 826 interchanges.
- Adjusted the **mandatory/positioning distances** on individual links where appropriate to improve lane usage.
- Adjusted the **lane alignment parameter** on individual links where appropriate to match traffic queues with existing field conditions.
- Adjusted the link **turning speeds** for vehicles making a left or right turn at large intersections to improve capacity.
- Adjusted the **headway factor** for individual movements where appropriate to meet traffic volumes, queuing and saturated flow rates with existing field conditions.
- Increased the **seed interval** within SimTraffic to fill the network with traffic.
- Performed visual checks of the model within SimTraffic to simulate existing geometric and field conditions.

The final calibration parameters were incorporated into both the AM and PM peak period models. A model validation was performed for the operational analysis of the existing conditions. The link volumes were compared to the balanced count data. The results of the model validation of link volumes showed that the processed vehicles through the intersections were within acceptable ranges of the input volumes based on calibration standards from the FDOT Traffic Analysis Handbook (described in the Traffic Methodology Technical Memorandum). The results represent a strong model correlation to existing count data and an acceptable model validation for use in this project.

The SimTraffic volume and speed calibration results for the AM and PM peak hours are provided in Appendix J.

3.3 Analysis of Results

The existing traffic Level of Service (LOS) analysis was conducted using Synchro Version 8.0 traffic software. The AM and PM peak time periods were analyzed.

Two types of analysis were conducted in order to fully understand the traffic operations along SW 8th Street and to account for any over-saturated conditions that could be present in the corridor. Synchro version 8.0 was used to conduct the traffic analysis based on the Highway Capacity Manual 2010 (HCM 2010) methodology. In addition, a SimTraffic model was developed in order to complement the results obtained from the Synchro analysis.

As stated in the FDOT Traffic Analysis Handbook (March 2014), Synchro does not accurately analyze oversaturated conditions; therefore, the use of other analysis tools such as SimTraffic is needed to account for the proper analysis of any segment and/or intersection that might be experiencing heavy traffic volumes.

The following sections describe in detail the results of the analysis using these two different methodologies.

3.3.1 Synchro and HCM 2010 Analysis

Tables 16 and 17 show the HCM 2010 criteria for signalized and unsignalized intersections, respectively. Tables 18 and 19 show the summary results of the Intersection LOS analysis for the SW 8th Street corridor for the AM and PM peak hour, respectively.

Table 16 – Level of Service Criteria for Signalized Intersections

Description	Avg. Control Delay (Seconds/vehicle)	Level of Service v/c ≤ 1.0	Level of Service v/c ≥ 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	< 10.0	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.1 to 80.0	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80.0	F	F

Source: Highway Capacity Manual (HCM) 2010

Table 17 – Level of Service Criteria for Unsignalized Intersections

Description	Average Stopped Delay (Seconds/vehicle)	Level of Service v/c ≤ 10	Level of Service v/c ≥ 10
Little or no delays	< 10	A	F
Short traffic delays	10.1 to 15.0	B	F
Average traffic delays	15.1 to 25.0	C	F
Long traffic delays	25.1 to 35.0	D	F
Very long traffic delays	35.1 to 50.0	E	F
Extreme traffic delays with intersection capacity exceeded	> 50.0	F	F

Source: Highway Capacity Manual (HCM) operation methodology, 2010.
The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

Morning Peak Hour Analysis

As depicted in Table 18, most of the intersections are operating at an acceptable LOS during the morning peak. Out of the 19 intersections analyzed, only one resulted in an overall LOS F (SW 8th Street and SW 122nd Avenue). Eight intersections resulted in LOS D and one intersection resulted in LOS E. The rest of the intersections operate at LOS A through C.

These results correlate with the conditions found in the field, except for the intersections of SW 8th Street with SW 82nd Avenue and SW 8th Street with SR 826 SB ramps. For these two intersections, the overall LOS resulted in D and A, respectively. However, field observations revealed that the eastbound approach at these two intersections experience heavy delays. When the approach delay for the eastbound direction (based on the HCM 2010 methodology) was reviewed, it reported values of 22.2 sec./veh. and 1.3 sec./veh. These delays did not correlate with what was found in the field. A detailed evaluation of the characteristics of these two intersections was performed in order to determine what was causing the discrepancy between the intersection LOS analysis and the field conditions. After carefully evaluating different factors such as: roadway geometry, traffic signal timings and volume, it was determined that the capacity of SW 8th Street between east of SW 87th Avenue and SR 826/Palmetto Expressway is constrained by the narrower typical section east of SR 826/Palmetto Expressway.

Queues formed in the vicinity of the SR 826/Palmetto Expressway ramps spillback and limited the number of vehicles that are able to cross the intersection at SW 82nd Avenue. Therefore, the volumes counted are significantly lower than the actual capacity of SW 8th Street. Since the HCM 2010 methodology is based on the comparison of the traffic demand vs. the capacity (of the actual intersection and it does not consider impacts of downstream and upstream conditions), the analysis erroneously resulted in an acceptable LOS for the eastbound approach. Therefore, the HCM 2010 LOS analysis was complemented with the results from the SimTraffic model which corresponded more closely with the conditions found in the field.

Table 18 also shows that, although the overall intersection delays result in acceptable LOS for most of the intersections, the northbound/southbound approaches experience heavy delays. Most of the northbound/southbound approaches at crossing streets results in LOS F. Field visits revealed that although SW 8th Street experiences adequate traffic flow, cross-streets experience heavy queuing in the northbound/southbound approaches. One example is the intersection of SW 8th Street with the SR 821/HEFT SB to EB ramp. This loop ramp experiences a back-up that reaches the HEFT SB mainline.

SW 107th Avenue also experiences heavy queuing in the northbound and southbound approaches. A detailed field review revealed that traffic flow along SW 107th Avenue (north of SW 8th Street) is affected by several factors. The north leg has a school zone, which reduces the southbound/northbound speed to 15 mph, during the morning peak hour. In addition, since this roadway has several closely-spaced signalized intersections, signal timings are lifted and school patrols control traffic flow along this segment of SW 107th Avenue (south of West Flagler Street), which causes friction in the traffic flow.

Field visits revealed that the low speeds, north of SW 8th Street, impact the traffic flow for the vehicles turning eastbound to northbound at this intersection. As these vehicles perform the desired movement, they are not able to effectively enter SW 107th Avenue (due to the slow-speed traffic) during the green time allocated to them; thereby at times blocking the middle of the intersection and negatively impacting the vehicles traveling in the westbound direction.

The northbound approach (south leg of the SW 107th Avenue intersection) also experiences heavy delays. High volumes (approaching the intersection of SW 8th Street) together with school zone speeds (previously described) cause northbound vehicles to experience delays at this intersection. In addition, the left-turn movement shows volumes in the range of 330 vph with only one exclusive left-turn lane to serve this movement which then contributed to the recurrent queues observed, resulting in LOS F. The northbound through movement and right turn lane results in LOS D and E, respectively. Based on Exhibit 10-13 of HCM 2000, double left-turn lanes should be considered when the turning volume reaches 300 vph. This guideline is also included in the FHWA Signalized Intersections: Informational Guide (August 2004).

The intersection of SW 8th Street and SW 87th Avenue experiences similar queuing conditions. The eastbound/westbound approaches experiences relatively low delays, but the northbound approach experiences high delays. The through movement results in LOS F while the left-turn movement experiences LOS D. The northbound direction along SW 87th Avenue is heavily demanded since this roadway offers access to SR 836/Dolphin Expressway and also provides an opportunity to by-pass the toll facility along SR 836/Dolphin located in the vicinity of SW 97th Avenue.

Overall, the cross-streets along SW 8th Street experience higher delays that the eastbound/westbound approaches along SW 8th Street.

Table 18 – AM Existing Level of Service 2014 (HCM 2010)

Intersection	Approach	Existing Weekday AM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
SW 8 Street and SW 122 Avenue	EB	3032	3158	73.6	E
	WB	1535	1599	54.5	D
	NB	1612	682	133	F
	SB	812	845	171.3	F
	Overall	**6991**	**6284**	**88.3**	**F**
SW 8 Street and HEFT SB to EB Off-Ramp and SB On-Ramp[1]	EB	4132	3408	5.3	A
	WB	1361	1403	13.8	B
	NB	784	808	385	F
	SB	800	825	1.2	A
	Overall	**6293**	**5636**	**48.5**	**D**
SW 8 Street and HEFT NB Off-Ramp to EB/WB and NB On-Ramp	EB	4109	2776	54.6	D
	WB	1540	1604	35.5	D
	NB	708	174	164.8	F
	Overall	**6357**	**4554**	**52.1**	**D**
SW 8 Street and SW 117 Avenue[2]	EB	3207	3289	23.1	C
	WB	1636	1704	16.1	B
	NB	601	154	86.5	F
	Overall	**5444**	**5147**	**22.6**	**C**
SW 8 Street and SW 112 Avenue	EB	3238	2761	0.1	A
	WB	1729	1820	3.1	A
	NB	124	58	99	F
	Overall	**5091**	**4639**	**2.5**	**A**
SW 8 Street and SW 109 Avenue[3]	EB	2692	2864	14.3	B
	WB	1491	1586	12.2	B
	NB	134	154	90.5	F
	SB	690	457	254.4	F
	Overall	**5007**	**5061**	**48.5**	**D**
SW 8 Street and SW 107 Avenue[4]	EB	2021	2173	52.2	D
	WB	1612	1734	44.9	D
	NB	1650	1774	96.5	F
	SB	1029	1107	97.7	F
	Overall	**6312**	**6788**	**62.7**	**E**

Table 18 – AM Existing Level of Service 2014 (HCM 2010) (continued)

Intersection	Approach	Existing Weekday AM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
SW 8 Street and SW 102 Avenue	EB	2187	2486	19.8	B
	WB	390	443	26.2	C
	WB (Free-flow)	1495	NA	0	A
	NB	565	642	192.6	F
	Overall	**3142**	**3571**	**51.7**	**D**
SW 8 Street and SW 99 Place (Unsignalized)[5]	EB	2525	2805	**0**	
	WB	415	415	**1.3**	
	WB (Free-flow)	1495	NA	**0**	
	NB	127	141	**10.1**	**B**
	Overall	**3067**	**3361**		
SW 8 Street and SW 97 Avenue	EB	2370	2495	49.7	D
	WB	1633	1719	14.2	B
	NB	830	874	90.6	F
	SB	1035	1089	79.2	E
	Overall	**5868**	**6177**	**50.8**	**D**
SW 8 Street and SW 94 Avenue	EB	2827	3008	0.9	A
	WB	1812	1927	0.4	A
	NB	127	134	71.1	E
	SB	197	209	70.5	E
	Overall	**4963**	**5278**	**5.3**	**A**
SW 8 Street and SW 92 Avenue	EB	2493	2625	13.8	B
	WB	1600	1685	30.8	C
	NB	741	780	115.8	F
	SB	525	553	80.9	F
	Overall	**5359**	**5643**	**39.5**	**D**
SW 8 Street and SW 87 Avenue	EB	2940	2848	29.2	C
	WB	1352	1211	53.2	D
	NB	1282	1288	102.8	F
	SB	770	811	58.3	E
	Overall	**6344**	**6158**	**53.2**	**D**
***SW 8 Street and SW 82 Avenue**[6]	EB	2691	2890	22.2	C
	WB	1960	2108	11.9	B
	NB	605	647	240.2	F
	Overall	**5256**	**5645**	**43.4**	**D**

Table 18 – AM Existing Level of Service 2014 (HCM 2010) (continued)

Intersection	Approach	Existing Weekday AM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
*SW 8 Street (EB/WB) and SB On-Ramp to SR 826[7]	EB	2529	2607	1.3	A
	WB	2647	2729	11.2	B
	Overall	**5176**	**5336**	**6.4**	**A**
*SW 8 Street and SR 826 NB Off-Ramp	EB	2538	1951	0.3	A
	WB	1291	1373	0.5	A
	NB	274	0	0	0
	Overall	**4103**	**3324**	**0.4**	**A**
SW 8 Street and SW 75 Avenue/Tamiami Canal Road (Unsignalized)	EB	2550	2771	0	NA
	WB	1784	1939	0.7	NA
	NB	29	32	31.3	D
	SB	92	99	32.10	F
	Overall	**4455**	**NA**		
SW 8 Street and SW 74 Court[8] (Ped-Signal Only)	EB	2273	2368	5	A
	WB	1663	1733	3.9	A
	NB	20	21	0	A
	SB	138	144	0.1	A
	Overall	**4094**	**4266**	**4.3**	**A**
SW 8 Street and SW 74 Avenue	EB	2270	2317	4.5	A
	WB	1361	1377	16.8	B
	NB	492	502	151.5	F
	SB	262	268	70.5	E
	Overall	**4385**	**4464**	**28.8**	**C**

Notes: Results based on HCM 2000 Methodology
Results based on variations of the 2010 HCM Methodology. Intersection configuration/signal timings do not follow standard geometry/signal operations.

[1]The intersection of SW 8 Street and SR 821/HEFT SB Ramps signal timing does not follow the strict NEMA phasing. Therefore, 2010 HCM Results cannot be obtained.

[2]The intersection of SW 8 Street and SW 117 Avenue has an eastbound u-turn. For the purpose of producing HCM 2010 the u-turn was not considered.

[3]The intersection of SW 8 Street and SW 109 Avenue has shared/through lanes. HCM 2010 needs a special algorithm to analyze this configuration.

[4]The intersection of SW 8 Street and SW 107 Avenue has a school speed zone (15 mph) during the morning peak hour in the northbound/southbound direction. 2010 HCM methodology does not support analysis of speeds lower than 25 mph.

[5]The intersection of SW 8 Street and SW 99 Place is an unsignalized intersection. However, the 2010 HCM methodology does not support more than 3 lanes on major street approach.

[6]The intersection of SW 8 Street and SW 82 Avenue has an eastbound u-turn. For the purpose of producing HCM 2010 the u-turn was not considered.

[7]The intersection of SW 8 Street and SR 826 SB Ramps does not follow the strict NEMA phasing. Therefore, the 2010 HCM Results cannot be obtained.

[8]The intersection of SW 8 Street and SW 74 Court provides for an exclusive pedestrian signal. The HCM 2010 methodology does not support pedestrian or hold phases.
$ - Delay in critical lane exceeds the 300 sec./veh.
*Based on the 2010 HCM Level of Service analysis conducted, it was determined that the eastbound direction along SW 8 Street, east of SW 82 Avenue needs to be carefully interpreted. The HCM 2010 methodology is based on the capacity of the intersection itself. When this capacity is compared to the actual volume traversing through the segment, satisfactory level of service is obtained. However, the operational performance of this segment is controlled by the reduction in the number of lanes along the eastbound direction, east of SR 826. In addition, the friction among the vehicles accessing SR 826/Palmetto Expressway as well as the vehicles entering SW 8 Street via SR 826/Palmetto Expressway limits the capacity of this segment. This is observed from the results of the simulation analysis.

Afternoon Peak Hour Analysis

As seen in Table 19 there are three intersections operating at LOS F during the PM peak hour along SW 8th Street. These intersections are: SW 8th Street and SW 122nd Avenue, SW 8th Street and SW 109th Avenue and SW 8th Street and SW 107th Avenue.

When analyzing the conditions for these three intersections, it was determined that the northbound/southbound approaches experience significant delays (similar to the morning peak). At the intersection of SW 8th Street and SW 122nd Avenue, the eastbound/westbound approaches also experience high delays. This is mostly due to the heavy through volume heading westbound and the eastbound left-turn that experiences relatively high volumes (303 vph). The northbound/southbound approaches also experience moderate queues (southbound queues are more pronounced that the northbound queues) that contribute to the overall LOS F.

The intersection of SW 8th Street and SW 109th Avenue also experiences overall LOS F. The westbound approach experiences relatively low delays, but eastbound left-turns experience relatively high volumes (over 300 vph). This high number of eastbound left-turners contributes to higher delays in the eastbound approach resulting in an approach LOS D. However, no critical queues were observed during the afternoon field visits. The left-turn storage seems sufficient for the high demand of vehicles. The northbound/southbound approaches experience high delays for all the movements on these approaches.

The intersection of SW 8th Street and SW 107th Avenue also experiences an overall LOS F. At this intersection almost all of the approaches experience LOS F. Similar to the conditions found in the field, the westbound and southbound approaches experience the highest delays at this intersection. During the field visits it was observed how westbound queues extended from SW 107th Avenue about 900 feet east of this intersection (to approximately SW 105th Avenue). In the southbound approach, queues extended from SW 8th Street to approximately SW 4th Street (about 1,000 feet north of this intersection).

Four intersections resulted in LOS E. These intersections include: SW 8th Street with SW 97th Avenue, SW 8th Street with SW 92nd Avenue, SW 8th Street with SW 87th Avenue and SW 8th Street with SW 74th Avenue.

From these four intersections, the only one that showed higher delays in the eastbound and westbound approach was the intersection with SW 87th Avenue. All of the other intersections experience acceptable LOS in the eastbound/westbound approaches (between A and D) and LOS F in the northbound/southbound approaches.

Two intersections resulted in LOS D: SW 8th Street with the loop ramp from SB SR 821/HEFT and SW 8th Street with SW 102nd Avenue. The approach experiencing the highest delay at the intersection of SW 8th Street with the southbound loop ramp from SR 821/HEFT is the northbound approach. The northbound approach at this intersection only serves the northbound to eastbound movement. The northbound SR 821/HEFT to eastbound ramp experiences high delays in the morning and afternoon peak hours.

The results for the intersection of SW 8th Street and SW 102nd Avenue should be carefully interpreted since this intersection actually provides three lanes in the westbound direction where no delay is experienced. The Turbo-T configuration at this intersection allows for the three lanes in the westbound direction to free-flow, while only one through lane and the westbound to southbound left-turn lane are signalized. The delay for the westbound signalized lanes results in approximately 48 sec./veh, resulting in a LOS D. Therefore, the overall LOS for this intersection only considers the westbound signalized lanes, the eastbound approach, and the northbound approach. Similar to all other intersections, the eastbound/westbound approaches experience moderate delays while the northbound approach results in LOS F.

The intersection of SW 8th Street with SW 74th Avenue also results in an overall LOS E. The northbound/southbound approaches are the ones experiencing the highest delays. The eastbound and westbound approaches result in LOS A and C.

All other intersections within the network being analyzed result in LOS A through C. The analysis confirmed that, for the most part, the eastbound/westbound approaches of SW 8th Street intersections do not experience excessive delays; however, some of the intersections that are operating at satisfactory overall LOS are experiencing relatively high delays in the northbound/southbound approaches.

Table 19 – PM Existing Level of Service 2014 (HCM 2010)

Intersection	Approach	Existing Weekday PM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
*SW 8 Street and SW 122 Avenue	EB	1760	1777	101.9	F
	WB	3782	3820	113.4	F
	NB	1048	616	63.6	E
	SB	1214	1226	253	F
	Overall	**7804**	**7439**	**129.5**	**F**
SW 8 Street and HEFT SB to EB Off-Ramp and SB On-Ramp[1]	EB	2029	1727	2	A
	WB	2383	2508	11.9	B
	NB	912	960	267	F
	SB	1389	1462	9.8	A
	Overall	**5801**	**5697**	**43.1**	**D**
SW 8 Street and HEFT NB Off-Ramp to EB/WB and NB On-Ramp	EB	2553	2084	30.7	C
	WB	2987	3048	19.4	B
	NB	456	211	63.8	E
	Overall	**5996**	**5343**	**25.6**	**C**
SW 8 Street and SW 117 Avenue[2]	EB	2292	2363	13.5	B
	WB	2939	3061	5.4	A
	NB	542	280	84.8	F
	Overall	**5773**	**5704**	**12.7**	**B**
SW 8 Street and SW 112 Avenue	EB	2175	2034	1	A
	WB	2713	2917	1.7	A
	NB	622	413	74.4	E
	Overall	**5510**	**5364**	**7**	**A**
SW 8 Street and SW 109 Avenue[3]	EB	2130	2196	45.2	D
	WB	1996	2058	6	A
	NB	1000	1015	247.6	F
	SB	616	345	265.2	F
	Overall	**5742**	**5614**	**89.6**	**F**
SW 8 Street and SW 107 Avenue	EB	1957	1393	46.3	D
	WB	2201	2269	130.6	F
	NB	1757	1303	94.9	F
	SB	1942	2002	184	F
	Overall	**7857**	**6967**	**122.4**	**F**

Table 19 – PM Existing Level of Service 2014 (HCM 2010) (continued)

Intersection	Approach	Existing Weekday PM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
SW 8 Street and SW 102 Avenue	EB	2199	2314	28.2	C
	WB	753	792	47.9	D
	WB (Free-flow)	2194	NA	0	A
	NB	352	371	104.2	F
	Overall	**5498**	**3477**	**40.8**	**D**
SW 8 Street and SW 99 Place (Unsignalized)[4]	EB	2286	2332	**0**	
	WB	863	863	**1.9**	
	WB (Free-flow)	2194	NA	**0**	
	NB	35	36	**9.6**	**A**
	Overall	**5378**	**3231**		
SW 8 Street and SW 97 Avenue	EB	2360	2432	51.7	D
	WB	2915	3006	19.1	B
	NB	780	805	149.3	F
	SB	1554	1602	166.6	F
	Overall	**7609**	**7845**	**72.7**	**E**
SW 8 Street and SW 94 Avenue	EB	2482	2669	2.5	A
	WB	3357	3610	0.4	A
	NB	43	46	66.9	E
	SB	225	242	76.8	E
	Overall	**6107**	**6567**	**4.5**	**A**
SW 8 Street and SW 92 Avenue	EB	1884	2070	18.5	B
	WB	2853	3136	10.8	B
	NB	482	531	200.8	F
	SB	1033	1135	286.1	F
	Overall	**6252**	**6872**	**73.2**	**E**
SW 8 Street and SW 87 Avenue	EB	2344	2295	50.3	D
	WB	2733	2660	57.1	E
	NB	1270	1223	110.2	F
	SB	1078	1135	97.5	F
	Overall	**7425**	**7313**	**70.1**	**E**
***SW 8 Street and SW 82 Avenue[5]**	EB	2209	2253	18.9	B
	WB	3319	3494	15.4	B
	NB	348	367	92.6	F
	Overall	**5876**	**6114**	**21.3**	**C**

Table 19 – PM Existing Level of Service 2014 (HCM 2010) (continued)

Intersection	Approach	Existing Weekday PM Peak Hour			
		Volume (vph)	Adj Flow Volume (vph)	Delay (sec./veh.)	LOS
SW 8 Street (EB/WB) and SB On-Ramp to SR 826[6]	EB	2254	2324	7.5	A
	WB	4467	4605	7.9	A
	Overall	**6721**	**6929**	**7.8**	**A**
SW 8 Street and SR 826 NB Off-Ramp	EB	2098	1670	0.3	A
	WB	2344	2520	1.8	A
	NB	875	0	0	0
	Overall	**5317**	**4190**	**1.2**	**A**
SW 8 Street and SW 75 Avenue/Tamiami Canal Road (Unsignalized)	EB	1931	2077	0	NA
	WB	2303	2477	0.2	NA
	NB	20	22	20.7	C
	SB	392	415	$737.40	F
	Overall	**4646**	**NA**		
SW 8 Street and SW 74 Court (Ped-Signal Only)[7]	EB	1797	1815	7.6	A
	WB	2071	2092	16.5	B
	NB	13	13	0	A
	SB	236	238	0.2	A
	Overall	**4117**	**4158**	**11.6**	**B**
SW 8 Street and SW 74 Avenue	EB	1487	1599	4.5	A
	WB	1569	1684	26.1	C
	NB	263	282	96.5	F
	SB	660	710	344.4	F
	Overall	**3979**	**4275**	**75.5**	**E**

Notes: Results based on HCM 2000 Methodology

Results based on variations of the 2010 HCM Methodology. Intersection configuration/signal timings do not follow standard geometry/signal operations.

[1]The intersection of SW 8 Street and SR 821/HEFT SB Ramps signal timing does not follow the strict NEMA phasing. Therefore, 2010 HCM Results cannot be obtained.

[2]The intersection of SW 8 Street and SW 117 Avenue has an eastbound u-turn. For the purpose of producing HCM 2010 the u-turn was not considered.

[3]The intersection of SW 8 Street and SW 109 Avenue has shared/through lanes. HCM 2010 needs a special algorithm to analyze this configuration.

[4]The intersection of SW 8 Street and SW 99 Place is a signalized intersection. However, the 2010 HCM methodology does not support more than 3 lanes on major street approach.

[5]The intersection of SW 8 Street and SW 82 Avenue has an eastbound u-turn. For the purpose of producing HCM 2010 the u-turn was not considered.

[6]The intersection of SW 8 Street and SR 826 SB Ramps does not follow the strict NEMA phasing. Therefore, the 2010 HCM Results cannot be obtained.

[7]The intersection of SW 8 Street and SW 74 Court provides for an exclusive pedestrian signal. The HCM 2010 methodology does not support pedestrian or hold phases.

$ Delay in critical lane exceeds the 300 sec./veh.

3.3.2 SimTraffic (Micro-simulation) Analysis

As mentioned in Section 3.2.2 of this technical memorandum, a SimTraffic Model was developed and calibrated in order to complement the analysis from the HCM 2010 module. Appendix J includes the tables used to perform the calibration for the SimTraffic model (for volumes and average speeds). Tables included in Appendix J include the information for the AM and PM peak hours. Volumes were calibrated following the methodology described in Technical Memorandum # 2 and each model (AM and PM) was run ten times in order to minimize the impact of the stochastic nature of the model on the results.

Processed vehicles through the intersection were calibrated so that, simulated and measured link volumes for more than 85 percent of the links have a Geoffrey E. Havers (GEH) statistic value of five or less. As indicated in the table summarizing the calibration results for the AM scenario, more than 85 percent of the links show a GEH Statistic of less than five. Only two links show values higher than five. These links are: the northbound approach at the intersection of SW 8th Street and the SR 821/HEFT southbound ramps and the other link is the northbound approach at the intersection of SW 8th Street and SW 74th Avenue.

For the PM peak hour, five links (out of 72) are not processing volumes with GEH statistics values of less than five. This translates into approximately 93 percent of the total links processing volumes with GEH values of less than five. These links are: the northbound approach at the intersection of SW 8th Street and SW 97th Avenue, the northbound approach at the intersection of SW 8th Street and SW 92nd Avenue, the eastbound and southbound approaches at the intersection of SW 8th Street and SW 87th Avenue and the southbound approach at the intersection of SW 8th Street with SW 75th Avenue. Four links (out of the five) reporting GEH values higher than five do not exceed GEH values of six. Only one link reports a GEH value of 7.949 (the northbound approach at the intersection of SW 8th Street with SW 75th Avenue), which means that processed volumes are close to the calibration target.

Appendix J also includes the graphs showing the calibration process for the average speeds along SW 8th Street. The peak direction of travel in the morning is eastbound and in the afternoon is westbound.

As depicted on the graphs included in Appendix J the average AM speeds (by link) reported by the SimTraffic model are within the 10 mph difference from the field collected speeds. Only three links reported speeds in the AM with differences (from the field reported speeds) slightly higher than ± 10 mph; however, 85 percent of the links are resulting is AM speeds within ± 10 mph range. Although the westbound direction is the off-peak direction, the calibration process also included it. For the westbound direction only, one link reported speeds with a difference slightly higher than ± 10 mph. Since the SimTraffic model met the calibration targets for volume and speeds, the model was considered calibrated.

The same process described for calibrating the AM peak hour SimTraffic model was followed for the PM peak hour speeds. As previously mentioned, the westbound direction represents the peak direction during the afternoon peak hour. From the calibration results, only one link in the westbound direction does not reach the calibration target of a difference of ± 10 mph with respect to the field collected data. This represents 95 percent of the links meeting the calibration target. In the eastbound direction (off-peak direction) all the links met the calibration target. Therefore, the PM SimTraffic model was considered calibrated.

Results from the calibrated SimTraffic model were used in order to identify segment locations, intersections and/or movements that were not operating efficiently and therefore, may need of improvements identified.

Tables 16 and 17 show the LOS criteria, provided by the HCM 2010, in order to determine operating conditions at signalized/unsignalized intersections. It is usually not recommended to correlate the LOS threshold provided by the HCM 2010 to the Measure of Effectives (MOEs) obtained from the output of a micro-simulation model such as SimTraffic. However, sometimes it is hard to correlate a numerical value such as delay per vehicle with a particular level of operation. Therefore, the LOS criteria provided by the HCM 2010 will also be used in order to assist in describing traffic condition results along SW 8th Street from the SimTraffic analysis.

Tables 20 and 21 show the summary of the AM and PM peak hour intersection analysis performed using SimTraffic.

3.3.2.1 AM Peak Hour Analysis

Table 20 summarizes the results for the morning peak hour analysis. Results from this table correlate with the results listed in Table 18 of this report.

- **SW 8th Street and SW 122nd Avenue Intersection**

For instance, the intersection of SW 8th Street and SW 122nd Avenue experiences higher delays in the eastbound direction than in the westbound direction. In addition, the southbound approach experiences higher delays than the northbound approach. The eastbound direction was determined to be the peak direction during the morning peak, this correlates with the higher delays obtained for this approach.

Eastbound peak hour volumes are approximately twice the volume in the westbound direction (peak hour). Although eastbound volumes are significantly higher than the westbound volumes, the number of left-turning vehicles is almost the same in both directions. Both, eastbound/westbound left-turn drivers experience delays higher than 100 seconds/vehicles. However, the westbound through traffic experiences lower delays; and therefore, the whole approach results in delays of approximately 27 seconds/vehicle (sec./veh.).

All of the movements in the eastbound direction experience delay higher than 100 sec./veh. This relates to the average speeds collected in the field which result in an average value of 17 mph.

For the northbound/southbound approach, most of the movements experience delays higher than 55 sec./veh, resulting in a LOS between E and F (delay > 55 sec./veh. is LOS E). The through movements in the northbound/southbound direction are the ones experiencing the highest delays.

Table 20 – SimTraffic – Queuing and Delay Summary– AM Peak Hour

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.)
SW 8 Street and SW 122 Avenue	EB	L	3032	209	246	126.5
		T		1236	1847	
		R		67	350	
	WB	L	1535	132	224	27
		T		176	344	
		R		72	179	
	NB	L	1612	213	357	31.8
		T		185	308	
		R		2	48	
	SB	L	812	176	296	84.2
		T		254	451	
		TR		240	396	
	Overall		**6991**			**76**
SW 8 Street and HEFT SB	EB	T	4132	277	1298	22.5
		R		182	325	
	WB[1]	L	1361	90	187	12.2
	NB	R	784	1291	1337	318.7
	SB[2]	Free-Flow SB to WB Right	800	Free-flow	Free-Flow	4.1
	Overall		**7077**			**98.9**
SW 8 Street and HEFT NB	EB	T	4109	440	734	23
	WB	L	1540	183	298	22.3
		T		17	90	
	NB	LR	708	243	682	31.3
	Overall		**6357**			**26.7**
SW 8 Street and SW 117 Avenue	EB	U	3207	58	247	13.7
		T		673	1190	
		TR		368	418	
	WB	L	1636	161	330	21.9
		T		83	321	
	NB	L	601	76	149	20.4
		R		8	106	
	Overall		**5444**			**17**

Table 20 – SimTraffic – Queuing and Delay Summary– AM Peak Hour (continued)

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.)
SW 8 Street and SW 112 Avenue	EB	T	3238	190	606	13.7
		R		225	692	
	WB	L	1729	121	270	10.8
		T		55	199	
	NB[3]	L	124	64	141	39.2
	Overall		**5091**			**13.3**
SW 8 Street and SW 109 Avenue	EB	L	2692	292	497	50.6
		T		290	898	
		TR		672	1064	
	WB	L	1491	112	248	30
		T		128	253	
		TR		92	170	
	NB	L	134	69	139	59.9
		LT		49	119	
		R		28	65	
	SB	L	690	153	299	44.9
		LT		298	690	
		R		142	150	
	Overall		**5007**			**44**
SW 8 Street and SW 107 Avenue	EB	L	2021	96	165	37.9
		T		202	329	
	WB	L	1612	235	340	41.4
		T		149	525	
		R		54	139	
	NB	L	1650	323	325	110.7
		T		907	978	
		R		556	923	
	SB	L	1029	242	250	107.1
		T		602	873	
		TR		559	821	
	Overall		**6312**			**67.5**

Table 20 – SimTraffic – Queuing and Delay Summary– AM Peak Hour (continued)

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.)
SW 8 Street and SW 102 Avenue	EB	T	2187	161	315	12.3
		TR		137	277	
	WB	L (and Turbo)	390	74	174	13.2
		T (Free-flow)	1495	28	97	
	NB	L	186	246	543	46.3
		R	379	161	200	
	Overall		**4637**			**18.7**
SW 8 Street and SW 99 Place (Unsignalized)	EB	T	2525	0	6	2.6
		TR		0	2	
	WB	L (and Turbo)	415	17	60	1.4
		T (Free-flow)	1495	0	0	
	NB	R	127	19	100	2.5
	Overall		**4562**			**2.5**
SW 8 Street and SW 97 Avenue	EB	L	2370	167	281	28.2
		T		237	364	
		R		39	247	
	WB	L	1633	89	270	48.5
		T		289	426	
		R		135	285	
	NB	L	830	224	230	87.4
		T		817	983	
		TR		318	332	
	SB	L	1035	236	250	78.8
		T		524	795	
		TR		457	751	
	Overall		**5868**			**50.6**

Table 20 – SimTraffic – Queuing and Delay Summary– AM Peak Hour (continued)

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.) LOS
SW 8 Street and SW 94 Avenue	EB	L	2827	57	137	5.6
		T		42	183	
		TR		35	90	
	WB	L	1812	14	54	8.5
		T		33	152	
		TR		27	111	
	NB	L	127	75	204	65.4
		TR		62	154	
	SB	L	197	68	161	48.9
		TR		75	204	
	Overall		**4963**			**10**
SW 8 Street and SW 92 Avenue	EB	L	2493	182	290	27.9
		T		141	288	
		TR		111	242	
	WB	L	1600	31	96	64.6
		T		313	487	
		R		163	260	
	NB	L	741	277	325	109.2
		TR		684	952	
	SB	L	525	107	272	69.2
		TR		357	631	
	Overall		**5359**			**53.5**
SW 8 Street and SW 87 Avenue	EB	L	2940	323	431	93.1
		T		629	1423	
		R		271	878	
	WB	L	1352	69	152	36.5
		T		141	271	
		R		40	203	
	NB	L	1282	138	300	86
		T		583	834	
		R		52	250	
	SB	L	770	115	256	62.8
		T		267	509	
		TR		271	534	
	Overall		**6344**			**76.1**

Table 20 – SimTraffic – Queuing and Delay Summary– AM Peak Hour (continued)

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.)
SW 8 Street and SW 82 Avenue	EB	U	2691	7	122	112.7
		T		846	1552	
		TR		860	1512	
	WB	L	1960	90	238	8.4
		T		100	271	
	NB	LR	605	935	988	254.4
		R		208	225	
	Overall		**5256**			**84.3**
SW 8 Street and SR 826 SB	EB	T	2529	710	1501	66.9
		TR		739	1443	
	WB	L	2647	190	265	17.6
		T		89	377	
	NB	T	433	0	0	0
	SB	(Free-flow)	1082	0	0	0
	Overall		**6691**			**43.2**
SW 8 Street and SR 826 NB	EB	T	2538	531	800	33.7
		TR		298	442	
	WB	T	1291	89	301	4.9
	NB	L	274	180	323	124.6
		R	715	0	0	0
	Overall		**4818**			**30.3**
SW 8 Street and SW 75 Avenue/Tamiami Canal Road (Ped-Signal Only)	EB	L	2550	119	131	18.3
		T		166	305	
		TR		23	82	
	WB	L	1784	48	120	7.9
		T		30	260	
		TR		5	47	
	NB	R	29	39	115	100.4
	SB	L	92	6	72	31
		R		37	108	
	Overall		**4455**			**15.5**

Table 20 – SimTraffic – Queuing and Delay Summary– AM Peak Hour (continued)

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.)
SW 8 Street and SW 74 Court (Unsignalized)	EB	T	2273	117	259	5.6
		TR		129	238	
	WB	T	1663	58	200	4.5
		TR		60	209	
	NB	R	20	13	53	25.2
	SB	R	138	6	85	5
	Overall		**4094**			**5.2**
SW 8 Street and SW 74 Avenue	EB	L	2270	134	222	10.4
		T		136	309	
		TR		133	308	
	WB	L	1361	6	49	16.5
		T		229	596	
		R		2	46	
	NB	L	492	163	170	369.6
		TR		970	999	
	SB	L	262	37	126	55.7
		T		142	283	
		R		54	192	
	Overall		**4385**			**51.2**

Notes:
[1]WB queue only considers left-turns. Through lanes are free-flow
[2]Southbound ramp is free-flow
[3]Queue based on left-turn lane only.

- **SW 8th Street and SR 821/HEFT SB Ramps Intersection**

For the intersection of SW 8th Street with the SR 821/HEFT SB Ramps, the only approach experiencing heavy delays is the northbound. The northbound approach corresponds to the southbound SR 821/HEFT ramp to eastbound SW 8th Street. From the field review as well as from the simulation analysis conducted, it appears that the green time is insufficient to process the demand for this movement.

- **SW 8th Street and SR 821/HEFT NB Ramps Intersection**

For the intersection of SW 8th Street and SR 821/HEFT NB ramps, no major traffic operations concerns were identified.

- **SW 8th Street and SW 117th Avenue Intersection**

SW 8th Street and SW 117th Avenue only experiences heavy delays in the westbound and northbound left-turn movements. The westbound to southbound movement shows a volume of approximately 294 vph. This volume is effectively processed by the signal. However, the length of the cycle seems to be influencing the high delays for this movement. Vehicles have to wait a significant amount of time for the light to turn green and this seems to be the cause of the high delays. Only the left-turn in the westbound approach is resulting in high delays, all the other movements in this approach are operating satisfactorily. Similar to the westbound to southbound movement, the northbound to westbound movement seems to be resulting in high delays due to the length of the cycle length. Despite the relative high delays at the left-turn movements, this intersection results in an overall satisfactory LOS (based on the HCM 2010 thresholds).

- **SW 8th Street and SW 112th Avenue Intersection**

The intersection of SW 8th Street and SW 112th Avenue does not present any significant concerns from the traffic operations perspective during the morning peak hour.

- **SW 8th Street and SW 109th Avenue Intersection**

The intersection of SW 8th Street and SW 109th Avenue experiences moderate delays in the eastbound and northbound approaches. In the eastbound approach, the movement that experiences the highest delay is the eastbound left-turn (about 80 sec./veh.). In the northbound approach, the movements that experience the highest delays are the left-turn and the through (approximately 78.8 sec./veh. and 80.9 sec./veh., respectively). The eastbound to northbound movement reported a high demand during the morning peak (volume of 377 vph). The exclusive left-turn lane is approximately 500 feet long and vehicles use the entire storage length (as per field observations); however, this lane rarely produces spillbacks. The length of the cycle for the signal seems to be influencing the high delays for this movement. Since this movement is served by a single-exclusive left-turn lane, the permissive phase of the traffic signal allows for vehicles to make the desired movement out of the permitted phase (freeing the capacity for this movement).

The northbound approach of the intersection of SW 8th Street and SW 109th Avenue also experiences moderate delays in the left-turn and through movements. The traffic signal at this intersection operates with a split phase for the northbound and southbound approaches. Signals operating with split-phases usually result in higher delays for all other approaches.

Although the westbound approach results in relatively low delays (as a whole), the left-turn movement results in delays in the range of 80 sec./veh (LOS E). During the morning peak, students are entering the FIU campus, so the westbound to southbound movement experiences a high demand. However, since this movement is served by dual left-turn lanes, and no permissive phase is allowed, the westbound to southbound movement results in higher delays than the eastbound to northbound movement.

- **SW 8th Street and SW 107th Avenue Intersection**

The intersection of SW 8th Street and SW 107th Avenue is considered one of the major intersections along this corridor. SW 107th Avenue is one of the few roadways that provide access across the Tamiami Canal. The approach experiencing the heaviest delay at this intersection is the southbound. All of the movements from this approach result in delays between 200 sec./veh. and 60 sec./veh. These high delays are primarily due to the school zone previously described in this report. Speeds on the north leg of this intersection are reduced to 15 mph (in both directions). However, the northbound direction (of the north leg) is not considered for the delay calculations. Nevertheless, these low speeds influence the traffic operations along SW 8th Street. For instance, the movement that experiences the highest delays in the eastbound approach is the left-turns. The eastbound to northbound movement experiences a delay of approximately 100 sec./veh and the overall delay for the eastbound approach is approximately 38 sec./veh. (LOS D). Left-turning vehicles in the northbound and southbound approaches also experience delays higher than 100 sec./veh.

- **SW 8th Street and SW 102nd Avenue Intersection**

The intersections of SW 8th Street with SW 102nd Avenue and SW 8th Street with SW 99th Place do not experience any significant concerns from the traffic operations perspective.

- **SW 8th Street and SW 97th Avenue Intersection**

For the intersection of SW 8th Street and SW 97th Avenue, the eastbound/westbound directions do not present any major concern. The left-turn movement (for both directions) experience delays in the range of 80 sec./veh. and 140 sec./veh. The high delays in the eastbound/westbound approaches are mostly due to the traffic signal operating plan (cycle length). For the northbound/southbound approaches, the left-turns are the movements experiencing the highest delays (higher than 100 sec./veh.). All other movements experience delays in the range of 40 sec./veh. to 70 sec./veh.

- **SW 8th Street and SW 94th Avenue Intersection**

For the intersection of SW 8th Street and SW 94th Avenue, the only movements experiencing moderate delays are the northbound and southbound left-turns. These movements experience delays in the range of 80 sec./veh.

- **SW 8th Street and SW 92nd Avenue Intersection**

The SW 8th Street and SW 92nd Avenue intersection experiences some significant delays in the left-turn movements for the eastbound and westbound approaches. All other movements at these approaches experience minimal delays. The northbound approach is the one experiencing an overall delay higher than 100 sec./veh. All of the movements at this approach experience high delays. The northbound approach for this intersection is a one-lane approach that opens up to an exclusive left-turn lane and shared through/right. Therefore, the signal timing plan and the demand of conflicting movements have an influence on this approach. The exclusive northbound/southbound left-turn phases are concurrent for both directions; however, the demand for the northbound left-turn movement is approximately double of the southbound volume. Therefore, when the permissive phase is active, the northbound left-turns have the conflict of the southbound through volume and the operating conditions of the northbound to westbound movement result in an unacceptable LOS.

- **SW 8th Street and SW 87th Avenue Intersection**

The SW 8th Street and SW 87th Avenue intersection experiences relatively high delays in the eastbound and northbound approaches. The eastbound approach is influenced by the congestion found downstream of this intersection. There are instances that the congestion from the vicinity of SR 826/Palmetto Expressway reaches the intersection at SW 87th Avenue. In addition, the eastbound to northbound movement at this intersection is heavy when compared to other intersections such as SW 107th Avenue. From the field visits it seemed that drivers were using SW 87th Avenue to reach SR 836/Dolphin Expressway. SW 87th Avenue provides access to SR 836/Dolphin Expressway, east of the toll plaza located at SW 97th Avenue; therefore, drivers heading eastbound along SR 836/Dolphin Expressway have an opportunity to by-pass the toll plaza at SW 97th Avenue. Because of the conditions described above, the eastbound left-turn and through movements experience delays higher than 90 sec./veh. The eastbound to northbound turning movement at this intersection sometimes block the westbound through traffic. These turning vehicles are slowed down by the heavy volumes along the SW 87th Avenue northbound direction, north of SW 8th Street. Slow traffic along SW 87th Avenue northbound does not let the turning vehicles efficiently enter SW 87th Avenue. So, when the westbound green light turns on, some turning vehicles are still in the middle of the intersection, blocking the westbound through traffic.

The northbound approach experiences heavy delays for the left-turn and through movements. High demand volume for these movements and the signal operating plan seem to be influencing the high delays experienced at this approach.

- **SW 8th Street and SW 82nd Avenue Intersection**

Traffic operations at the intersection of SW 8th Street and SW 82nd Avenue are affected by the congestion formed in the eastbound direction (at the vicinity of SR 826/Palmetto Expressway). This congestion extends back, west of SW 82nd Avenue. Two major factors impact traffic operations downstream of SW 82nd Avenue: a) the reduction in number of lanes along SW 8th Street, east of SR 826/Palmetto Expressway and b) the friction created by the entrance/exit ramps to and from SR 826/Palmetto Expressway. The congestion present in this area causes vehicles traveling eastbound that "cross" the intersection of SW 82nd Avenue to block the northbound vehicles from SW 82nd Avenue. Therefore, these northbound vehicles do not find enough gaps within the traffic stream to enter the eastbound direction along SW 8th Street. Thus, the northbound approach experiences excessive delays.

As described above, the eastbound direction experiences excessive delays (approximately 100 sec./veh.) as well. Average speeds east of SW 87th Avenue drop down to approximately eight mph (based on field data). This drop in speed causes vehicles to back-up. As listed in Table 20, the maximum queue reported by the SimTraffic model (in the eastbound direction) is approximately 1,550 feet long. The average queue is approximately 800 feet long. This data correlates with the conditions found in the field.

The westbound approach at the intersection of SW 8th Street and SW 82nd Avenue does not present any major concerns from the traffic operations perspective.

- **SW 8th Street and SR 826/Palmetto Expressway SB Ramps Intersection**

The signalized intersection of SW 8th Street with the southbound ramps from/to SR 826/Palmetto Expressway is affected by the same factors described at the intersection of SW 8th Street and SW 82nd Avenue (reduction in number of lanes and friction from the entrance/exit ramps from/to SR 826/Palmetto Expressway). The eastbound direction experiences delays of approximately 67 sec./veh. Queues in the eastbound approach at this particular intersection also show values of approximately 1,500 feet. This translates into a queue that extends approximately 3,000 feet west of this particular intersection. In other words, the queue that forms at the intersection of SW 8th Street with SB ramps from/to SR 826/Palmetto Expressway extends back to approximately 200-300 feet west of SW 84th Avenue. The rest of the approaches at this intersection do not experience any major concerns. In fact, in the eastbound approach, the through movement is free-flow. The only movement controlled by the signal in the eastbound approach is the left-turn.

- **SW 8th Street and SR 826/Palmetto Expressway NB Ramps Intersection**

For the intersection of SW 8th Street and SR 826/Palmetto Expressways northbound ramps the conditions in the eastbound direction lightly improve (with respect to delay). However, queues in the eastbound direction still range between 500 and 800 feet on the through lane. One factor that "favors" the operation of this ramp is the presence of the on-ramp to SR 826/Palmetto Expressway northbound. This ramp actually serves approximately 700 vph that exit eastbound SW 8th Street to enter northbound SR 826/Palmetto Expressway. This ramp is free-flow and is not controlled by the traffic signal. As vehicles enter the ramp, they speed-up and free some capacity along SW 8th Street. However, this "extra" capacity is immediately filled by the vehicles entering SW 8th Street eastbound via the northbound off-ramp from SR 826/Palmetto Expressway (also approximately 700 vph). Therefore, the eastbound direction is always carrying almost the same volume of traffic and thus, the reduction in speeds as vehicles enter the narrower section of SW 8th Street. The northbound direction at this intersection experienced heavy delays, primarily due to the timing of the phase assigned to the eastbound/westbound directions. Vehicles trying to access SW 8th Street westbound from the northbound off-ramp from SR 826/Palmetto Expressway have to wait an average of 130 seconds for the light to turn green. In addition, since the queue formed along SW 8th Street eastbound sometimes blocks the intersection of SW 8th Street with the northbound ramp from SR 826/Palmetto Expressway, this movement experiences extra delays.

- **SW 8th Street/SW 75th Avenue and SW 8th Street/SW 74th Court Intersections**

The intersections of SW 8th Street, east of SR 826/Palmetto Expressway are spaced closed together. This adds extra friction to the eastbound traffic stream. The intersection of SW 8th Street with SW 75th Avenue/Tamiami Canal Road is unsignalized and the northbound/southbound approaches are staggered. The intersection of SW 8th Street and SW 74th Court is also unsignalized. However, this intersection provides a pedestrian signal to allow pedestrians to safely cross SW 8th Street. During the field visits in the morning peak hour, it was observed that this pedestrian signal was activated relatively often by pedestrians trying to cross SW 8th Street to reach a school located on the south side of SW 8th Street.

- **SW 8th Street/SW 74th Avenue**

The intersection of SW 8th Street and SW 74th Avenue experiences heavy delays in the northbound/southbound approaches. Signals along SW 8th Street tend to favor the traffic flow along SW 8th Street more than the crossing streets. Therefore, vehicles at these approaches experience higher delays than the ones traveling along SW 8th Street. From the field visits, it was observed that as traffic keeps traveling eastbound, average speeds along SW 8th Street tend to increase and traffic flow normalizes once the interchange with SR 826/Palmetto Expressway is crossed.

- **SW 8th Street Overall Traffic Operations Observations**

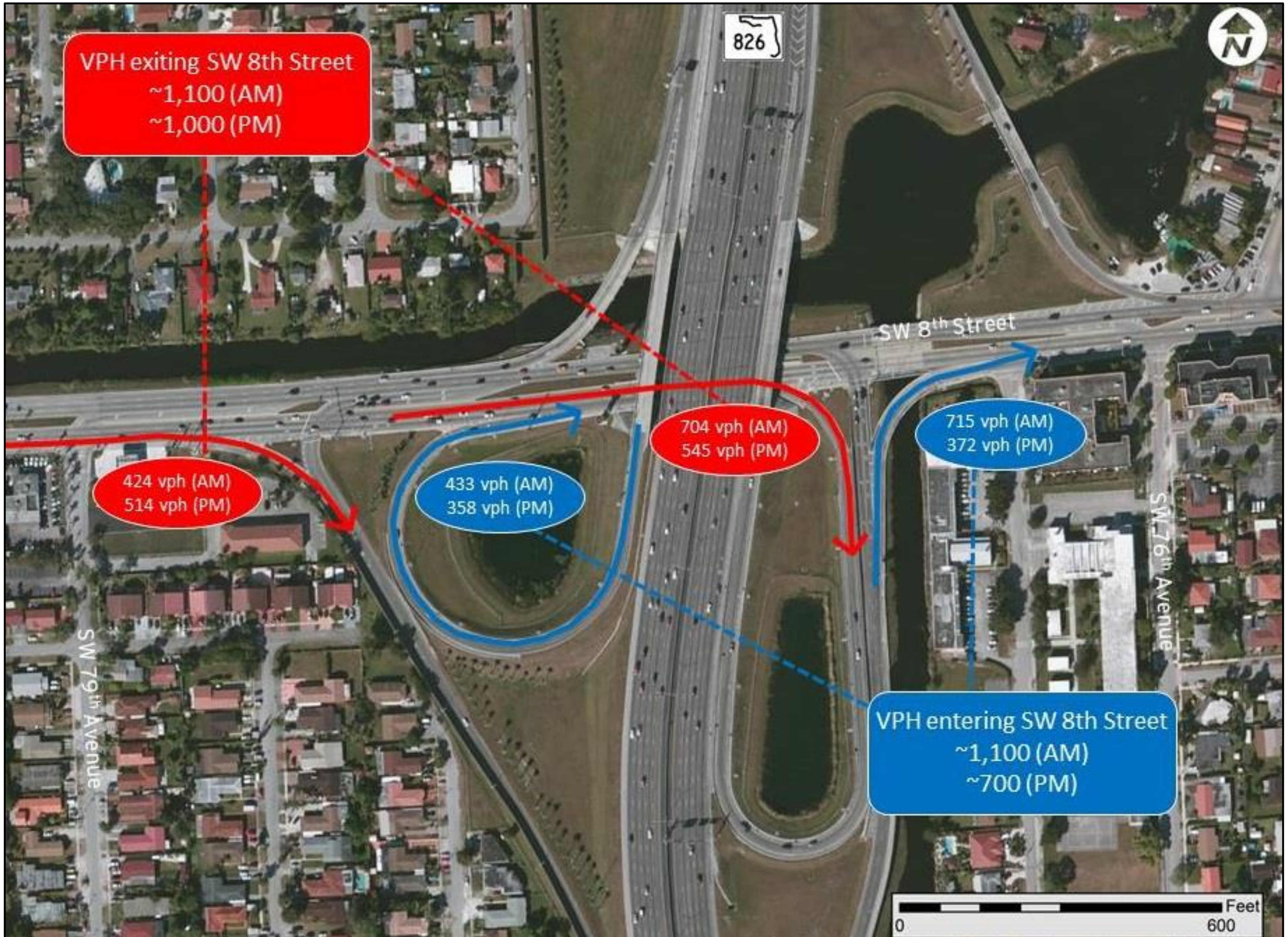
A detailed analysis of the eastbound traffic volumes accessing SR 826/Palmetto Expressway from SW 8th Street and the traffic volumes entering SW 8th Street eastbound via the SR 826/Palmetto Expressway ramps, revealed that almost the same amount of traffic exiting SW 8th Street (via the southbound/northbound ramps) enters SW 8th Street, during the morning peak hour. Based on turning movement data collected, approximately 400 vph and 700 vph exit SW 8th Street via the southbound/northbound ramps from SR 826/Palmetto Expressway (for the AM peak hour). These volumes add up to a total of 1,100 vph. When the volumes entering eastbound SW 8th Street via the southbound/northbound ramps from SR 826/Palmetto Expressway is compared, a total of approximately 1,100 vph is also obtained (approximately 400 vph entering via the southbound ramp and 700 vph entering via the northbound ramp). Assuming that no vehicles entering from SR 826/Palmetto Expressway get back on, about 44 percent of the vehicles approaching SR 826/Palmetto Expressway are trying to change lanes to position themselves on the right lane to reach their final destination. As these vehicles position themselves to leave SW 8th Street, another 1,100 (44 percent of the vehicles counted along SW 8th Street) are also positioning themselves in the right lane in order to continue to travel eastbound along SW 8th Street. This lane-changing behavior definitely impacts traffic operations along this segment, slowing down speeds and causing congestion in this segment.

During the afternoon peak hour this condition is not observed since the volumes exiting SW 8th Street via the ramps to/from SR 826/Palmetto Expressway are higher than the volumes entering. Approximately, one thousand vehicles exit SW 8th Street via SR 826/Palmetto Expressway while 700 vph enter via SR 826/Palmetto Expressway. In the afternoon, vehicles exiting SW 8th Street free-up some capacity for the vehicles that enter; however, since fewer vehicles enter SW 8th Street there is more capacity and the bottleneck condition does not occur.

Figure 10 graphically depicts the eastbound volumes entering and exiting SW 8th Street via SR 826/Palmetto Expressway for the AM and PM peak hour.

Based on the results from this analysis, SW 8th Street does not experience major concerns along the limits of the study area, except for the segment between east of SW 87th Avenue and SR 826/Palmetto Expressway.

Figure 10 – SW 8th Street eastbound traffic entering/exiting via SR 826/Palmetto Expressway



3.3.2.2 PM Peak Hour Analysis

Table 21 lists the results of the micro-simulation analysis performed for the PM peak hour.

A brief comparison of the overall average delay per intersection was performed. From this analysis it was determined that about 10 intersections experience an overall similar delay to the AM peak hour conditions. In others words, the average delay of the intersection as a whole resulted in similar values when the AM and PM peak hour results were compared. The intersections with comparable overall delays in the morning and afternoon peak hour are as follows:

1. SW 8th Street and SR 821/HEFT NB ramps
2. SW 8th Street and SW 117th Avenue
3. SW 8th Street and SW 112th Avenue
4. SW 8th Street and SW 109th Avenue
5. SW 8th Street and SW 102nd Avenue
6. SW 8th Street and SW 99th Place
7. SW 8th Street and SW 97th Avenue
8. SW 8th Street and SW 94th Avenue
9. SW 8th Street and SW 74th Court
10. SW 8th Street and SW 74th Avenue

However, for some other intersections the afternoon operations differ from the morning operations.

- **SW 8th Street and SW 109th Avenue Intersection**

For the intersection of SW 8th Street and SW 109th Avenue some differences were found in the actual approach delays contributing to the overall delay. For instance, during the morning peak hour, the intersection of SW 8th Street and SW 109th Avenue shows all of the approaches contributing almost equally to the overall delay of 44 sec./veh. However, during the afternoon peak, it was determined that the northbound approach experiences excessive delays (approximately 126 sec./veh.), while the eastbound, westbound and southbound approaches experience delays between 27 sec./veh. and 72 sec./veh. Therefore, the overall delay at this intersection results in approximately 55 sec./veh.

From this comparison of the morning and afternoon overall delay, it was determined that five intersections experience higher delays in the morning than in the afternoon. These five intersections are:

1. SW 8th Street and SW 122nd Avenue

2. SW 8th Street and SR 821/HEFT SB Ramp

3. SW 8th Street and SW 82nd Avenue

4. SW 8th Street and SR 826/Palmetto Expressway SB Ramps

5. SW 8th Street and SR 826/Palmetto Expressway NB Ramps

Out of these five intersections, four resulted in delays more equitable among all of the approaches.

- **SW 8th Street and SW 122nd Avenue Intersection**

The intersection of SW 8th Street and SW 122nd Avenue resulted in an overall delay of 76 sec./veh., during the morning peak hour. However, the average approach delay ranged from 27 sec./veh. to approximately 127 sec./veh. During the afternoon peak, this intersection resulted in an overall delay of approximately 56 sec./veh. Nevertheless, the delay for the approaches ranged between 34 sec./veh. and 73 sec/veh. These results seem to indicate that, during the afternoon peak hour, the demand and the signal timing at the intersection is being more effectively distributed among the traffic volumes wanting to use the intersection.

- **SW 8th Street with SW 82nd Avenue and SR 826/Palmetto Expressway NB-SB Ramps Intersections**

In the case of the intersections of SW 8th Street with SW 82nd Avenue, SW 8th Street with SR 826/Palmetto Expressways SB ramps and SW 8th Street with SR 826/Palmetto Expressway NB ramps, the delay at the different approaches is not only more equitably distributed; but also the overall delay at the intersections is significantly lower than during the morning peak hour (approximately 70 to 40 percent lower, depending on the intersection). During the afternoon peak hour, these intersections are operating at LOS B (based on the HCM 2010 delay criteria). These intersections do not present major concerns during the afternoon peak hour.

- **SW 8th Street and SR 821/HEFT NB Ramps**

For the intersection of SW 8th Street and the SR 821/HEFT NB ramps, almost the same pattern as in the morning was observed. The eastbound/westbound directions at this intersection experience relatively low delays; while the northbound approach experience excessive delays, in the 200 veh./sec, range.

Only four intersections experience a worse level of service operations in the afternoon peak than during the morning peak hour. These intersections are:

1. SW 8th Street and SW 107th Avenue

2. SW 8th Street and SW 92nd Avenue

3. SW 8th Street and SW 87th Avenue

4. SW 8th Street and SW 75th Avenue

- **SW 8th Street and SW 107th Avenue Intersection**

During the afternoon peak hour, the intersection of SW 8th Street and SW 107th Avenue experiences an overall average delay of approximately 100 sec./veh. (compared to an average overall delay of approximately 68 sec./veh in the morning). The approach that experiences the highest delays at this intersection is the southbound (approximately 145 sec./veh.). The approach that experiences the second highest delay at this intersection is the westbound (approximately 122 sec./veh). During the field visits, it was observed that the westbound queue at this intersection extended back to approximately SW 105th Avenue (approximately 1,000 east of this intersection). These two approaches show similar volumes, competing for green time at the traffic signal in order to provide the adequate capacity.

The northbound approach at the intersection of SW 8th Street and SW 107th Avenue also experiences relatively high delays (approximately 95.5 sec./veh.). The eastbound approach does not present any major concerns during the afternoon peak. At the three approaches that experience high delays, the left-turns are the movements contributing the most to these high delays. The eastbound/westbound left-turns at this intersection provide dual left-turn movements; therefore, the permissive phases at these two approaches are prohibited. Westbound the left-turns have to wait for a new cycle length in order to perform the desired movement. In the case of the northbound/southbound approaches, single lanes are provided for the left-turns. However, through movements at these two approaches are relatively high (southbound higher than northbound); therefore, vehicles trying to perform the left-turn under the permitted phase, find it difficult to perform the desired movement, as they do not find adequate gaps within the opposing traffic stream in order to safely complete the movement. Thus, left-turns at the northbound/southbound approaches result in high delays.

- **SW 8th Street and SW 92nd Avenue Intersection**

For the intersection of SW 8th Street and SW 92nd Avenue, during the afternoon peak hour, the overall intersection delay is 44 percent higher than in the morning. During the PM peak, the northbound/southbound direction experiences delays that range from 145 sec./veh to 379 sec./veh. (southbound and northbound, respectively). During the morning hours, only the northbound direction experiences delays in excess of 100 sec./veh. Traffic volumes at these two approaches were evaluated and it was determined that the southbound approach volume almost doubles from the AM peak hour. In addition, the southbound left-turn was almost four times the morning volumes (132 vph (AM) and 408 vph (PM)). For the northbound approach, although the volume is lower during the PM peak than for the AM peak, the heavy volume in the southbound direction does not allow the left-turning vehicles to complete the desired movement during the permitted phase, resulting in excessive delays for this particular movement. The southbound delays, although heavy, are lower than in the northbound approach, since the conflicting/opposing movement is lower. This condition, in turn, allows for more adequate gaps within the incoming traffic stream in order to complete the desired southbound to eastbound movement.

The eastbound/westbound directions at this particular intersection do not experience any major concerns.

- **SW 8th Street and SW 87th Avenue Intersection**

For the intersection of SW 8th Street and SW 87th Avenue, the approaches experiencing the heaviest delays are the northbound/southbound approaches. At these approaches the left-turns and through movements are experiencing heavy delays at the intersection. Queues (in both approaches) extend beyond 1,000 feet (from field observations). Heavy volumes and competing demand are the main reason for these high delays. The eastbound direction is also experiencing some delays, but it is mostly due to the left-turning vehicles waiting for the green time to perform the desired movement.

In the case of SW 8th Street and SW 75th Avenue, this is an unsignalized intersection. Heavy delays are reported for the southbound approach. Finding adequate gaps within the westbound traffic stream (traveling along SW 8th Street) is difficult since volumes are traveling free-flow from the intersection at SW 74th Avenue.

In general, the PM peak hour traffic analysis revealed that SW 8th Street is not experiencing major concerns during the afternoon peak. However, there are specific intersections such as SW 8th Street with SW 107th Avenue, SW 8th Street with SW 92nd Avenue, SW 8th Street with SW 87th Avenue and SW 8th Street with SW 75th Avenue that are experiencing heavy delays, mostly along the crossing streets.

Table 21 – SimTraffic – Queuing and Delay Summary – PM – Peak Hour

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.)
SW 8 Street and SW 122 Avenue	EB	L	1760	212	246	72.3
		T		395	659	
		R		168	350	
	WB	L	3782	353	460	47.3
		T		613	1404	
		R		145	1072	
	NB	L	1048	175	326	34
		T		153	265	
		R		0	0	
	SB	L	1241	146	269	73.4
		T		497	929	
		TR		400	470	
	Overall		**7831**			**55.4**
SW 8 Street and HEFT SB	EB	T	2029	18	219	8.1
		R		0	0	
	WB[1]	L	2383	156	275	14.2
	NB	R	912	1295	1340	225
	SB[2]	T	1389	76	184	3.7
	Overall		**6713**			**84.2**
SW 8 Street and HEFT NB	EB	T	2553	306	518	23.5
	WB	L	2987	277	442	18.1
		T		114	288	
	NB	LR	456	176	379	28.2
	Overall		**5996**			**24**
SW 8 Street and SW 117 Avenue	EB	U	2292	23	162	12.5
		T		222	798	
		TR		243	410	
	WB	L	2939	162	310	12.5
		T		79	261	
	NB	L	542	78	156	37.6
		R		0	0	
	Overall		**5773**			**15**

Table 21 – SimTraffic – Queuing and Delay Summary – PM – Peak Hour (continued)

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.)
SW 8 Street and SW 112 Avenue	EB	T	2175	176	472	15.4
		R		23	338	
	WB	L	2713	120	364	16.1
		T		234	472	
	NB[3]	L	622	348	577	42.5
	Overall		**5510**			**19**
SW 8 Street and SW 109 Avenue	EB	L	2130	407	582	41.1
		T		172	722	
		TR		221	595	
	WB	L	1996	78	195	27
		T		179	299	
		TR		150	247	
	NB	L	1000	68	133	126.9
		LT		420	540	
		R		27	69	
	SB	L	616	196	300	72
		LT		400	832	
		R		142	150	
	Overall		**5742**			**54.7**
SW 8 Street and SW 107 Avenue	EB	L	1957	158	256	40.3
		T		237	379	
	WB	L	2201	495	633	122.2
		T		626	1075	
		R		170	428	
	NB	L	1757	322	325	95.5
		T		856	963	
		R		48	814	
	SB	L	1942	420	460	144.5
		T		940	966	
		TR		923	957	
	Overall		**7857**			**100.3**

Table 21 – SimTraffic – Queuing and Delay Summary – PM – Peak Hour (continued)

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.) LOS
SW 8 Street and SW 102 Avenue	EB	T	2199	227	504	15.4
		TR		227	498	
	WB	L (and Turbo)	753	174	387	16.6
		T (Free-flow)	2194	66	210	
	NB	L	144	151	316	42.6
		R	208	99	200	
	Overall		**5498**			**18.7**
SW 8 Street and SW 99 Place (Unsignalized)	EB	T	2286	2	67	5.1
		TR		1	17	
	WB	L (and Turbo)	863	43	112	2.2
		T (Free-flow)	2194	0	0	
	NB	R	35	0	11	1.3
	Overall		**5378**			**4.3**
SW 8 Street and SW 97 Avenue	EB	L	2360	224	355	42.9
		T		232	432	
		R		34	249	
	WB	L	2915	112	249	21.8
		T		189	396	
		R		65	234	
	NB	L	780	405	426	142.3
		T		634	901	
		TR		173	368	
	SB	L	1554	225	250	81.8
		T		718	919	
		TR		708	912	
	Overall		**7609**			**50**

Table 21 – SimTraffic – Queuing and Delay Summary – PM – Peak Hour (continued)

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.) LOS
SW 8 Street and SW 94 Avenue	EB	L	2482	63	163	8
		T		52	156	
		TR		57	173	
	WB	L	3357	17	55	6.9
		T		35	153	
		TR		39	268	
	NB	L	43	19	78	57.8
		TR		26	75	
	SB	L	225	36	93	49.4
		TR		135	288	
	Overall		**6107**			**9.4**
SW 8 Street and SW 92 Avenue	EB	L	2397	125	308	36.5
		T		319	514	
		TR		300	496	
	WB	L	2853	224	354	42.5
		T		273	514	
		R		85	260	
	NB	L	482	322	325	379.5
		TR		934	971	
	SB	L	1033	751	933	145.5
		TR		892	945	
	Overall		**6765**			**78**
SW 8 Street and SW 87 Avenue	EB	L	2344	425	435	175.1
		T		1273	1927	
		R		21	279	
	WB	L	2733	107	180	28.7
		T		252	341	
		R		61	269	
	NB	L	1270	291	300	185.9
		T		888	980	
		R		100	250	
	SB	L	1078	425	425	219.3
		T		935	971	
		TR		864	953	
	Overall		**7425**			**128.2**

Table 21 – SimTraffic – Queuing and Delay Summary – PM – Peak Hour (continued)

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.) LOS
SW 8 Street and SW 82 Avenue	EB	U	2141	95	210	33.6
		T		378	685	
		TR		451	747	
	WB	L	3319	115	324	12.7
		T		254	457	
	NB	LR	348	250	462	63.7
		R		147	225	
	Overall		**5808**			**22.8**
SW 8 Street and SR 826 SB	EB	T	2254	128	950	13.4
		TR		146	1094	
	WB	L[4]	4467	202	263	8.5
		T		53	305	
	NB	T	358	0	0	0
	SB	(Free-flow)	805	0	0	0
	Overall		**7884**			**10.1**
SW 8 Street and SR 826 NB	EB	T	2098	181	486	6.6
		TR		42	364	
	WB	T	2344	352	534	11.9
	NB	L	875	354	428	61
		R	372	0	0	0
	Overall		**5689**			**18.4**
SW 8 Street and SW 75 Avenue/Tamiami Canal Road (Ped-Signal Only)	EB	L	1925	67	119	7
		T		43	266	
		TR		45	127	
	WB	L	2303	17	67	5
		T		2	41	
		TR		2	41	
	NB	R	20	18	66	44.4
	SB	L	392	957	991	494.2
		R		165	165	
	Overall		**4640**			**39.4**

Table 21 – SimTraffic – Queuing and Delay Summary – PM – Peak Hour (continued)

Intersection	Approach	Movement	Existing Weekday AM Peak Hour			
			Volume (vph)	Average Queue (feet)	Maximum Queue (feet)	Delay (sec./veh.) LOS
SW 8 Street and SW 74 Court (Unsignalized)	EB	T	1797	187	293	12.1
		TR		228	304	
	WB	T	2071	229	331	9.2
		TR		218	334	
	NB	R	13	5	38	10.4
	SB	R	236	3	64	1.8
	Overall		**4117**			**10**
SW 8 Street and SW 74 Avenue	EB	L	1487	134	223	19.4
		T		243	313	
		TR		251	314	
	WB	L	1569	26	175	25.8
		T		326	565	
		R		0	0	
	NB	L	263	115	140	114.7
		TR		232	487	
	SB	L	660	73	246	97
		T		505	840	
		R		236	250	
	Overall		**3979**			**41.6**

Notes:
[1]WB queue only considers left-turns. Through lanes are free-flow
[2]Southbound ramp is free-flow
[3]Queue based on left-turn lane only.
[4]Only the left-turn movement is signalized (783 vph). Through movement is free-flow

3.4 Traffic Analysis - Summary of Findings

From the traffic analysis conducted for the SW 8th Street Corridor, it was determined that during the morning peak hour, the reduction in number of lanes provided by SW 8th Street, east of SR 826/Palmetto Expressway, is causing a bottleneck that translates into high delays, low speeds and heavy friction for the traffic traveling eastbound between east of SW 87th Avenue and SR 826/Palmetto Expressway.

In addition, from the SimTraffic analysis it was determined that some major intersections such as the intersection of SW 8th Street with SW 122nd Avenue, SW 8th Street with the SR 821/HEFT SB ramps, SW 8th Street with SW 107th Avenue and SW 8th Street with SW 87th Avenue, are experiencing heavy delays in the cross-streets, while traffic along SW 8th Street (eastbound/westbound) is operating at relative lower delays. This seems to indicate that these intersections might benefit from a detailed traffic signal retiming study. Some of the cross-streets may also benefit from the signal re-timing study, as these crossing roadways are experiencing overall high delays in the northbound/southbound directions.

The traffic analysis revealed that, during the afternoon peak, the same pattern exists (as in the morning peak) of the cross-street approaches experiencing heavy delays while the approaches along SW 8th Street are operating relatively satisfactory. However, for the afternoon peak, no segments with major congestion were identified along SW 8th Street. The only segment (in the westbound direction) that reported low speeds was the westbound approach at the intersection of SW 8th Street and SW 107th Avenue.

Similar to the morning peak hour analysis, the afternoon peak hour analysis determined that the intersections of SW 8th Street with SW 107th Avenue and the intersection of SW 8th Street with SW 87th Avenue are experiencing heavy delays in the northbound/southbound approaches. Signal re-timing at these two intersections may improve traffic conditions along these two major cross-streets.

4.0 EXISTING CONDITIONS SAFETY ANALYSIS

A safety analysis was conducted for SW 8th Street between SW 122nd Avenue and SW 74th Avenue. Although the limits of the analysis are the study limits, crash information provided by FDOT include crashes that occurred approximately 250 feet east and west of the intersections previously mentioned. The years analyzed included from 2007 to 2012 (six years of data). Two types of safety analysis were conducted: segment crash analysis and intersection crash analysis.

4.1 Segment Crash Analysis

SW 8th Street was divided into five different segments based on the FDOT AADT traffic breaks limit. This was done in order to analyze segments with relatively the same exposure (same probability) for crash occurrences. The five segments in which SW 8th Street was divided were as follows:

1. From west of SW 122nd Avenue (M.P. 5.523) to SR 821/HEFT (M.P. 5.982)
2. From SR 821/HEFT (M.P. 5.982) to SW 107th Avenue (M.P. 7.045)
3. From SW 107th Avenue (M.P. 7.045) to SW 87th Avenue (M.P. 9.056)
4. From SW 87th Avenue (M.P. 9.056) to SR 826/Palmetto Expressway (M.P. 10.002)
5. From SR 826/Palmetto Expressway (M.P. 10.029) to SW 74th Avenue (M.P. 10.329)

It needs to be pointed that an area of influence of 250 feet west and east of the western and eastern limits were considered in order to perform the crash analysis. Therefore, the limits extended 250 feet west of the intersection of SW 122nd Avenue and 250 feet east of SW 74th Avenue (which corresponded to SW 73rd Court intersection).

Appendix K includes the detailed safety analysis performed for each of the segments listed above. Based on the results summarized in Table 22, four of the five segments have had safety ratios with values higher than one (for one or more years). Any roadway segment or intersection with a safety ratio of one or higher and a confidence level of 99.9499% is considered a high crash segment or location.

The first segment from west of SW 122nd Avenue to the SR 821/HEFT Overpass had safety ratios higher than one for five years (2008 – 2012). The confidence level for this segment resulted in a value of 99.999% for the years with safety ratios higher than one. This confidence level confirms that the segment is experiencing an abnormally high crash rate when compared to similar locations statewide.

The second segment (between the SR 821/HEFT Overpass and SW 107th Avenue) experienced safety ratios higher than one for the years: 2010 – 2012. However, based on the confidence level, only two years (2010 and 2011) can be categorized as segments with abnormal high crash rates. A roadway segment with a confidence level value lower than 99.95 percent cannot be categorized as experiencing an abnormally high crash rate. Therefore, for year 2012, this segment is not considered a high crash segment.

The third segment (between SW 107th Avenue and SW 87th Avenue) was not identified as a high crash segment for any of the years being analyzed.

The segment between SW 87th Avenue and SR 826/Palmetto Expressway (Overpass) resulted in only one year (2010) identified as a high crash segment. All the other years resulted in safety ratios lower than one. Since the safety ratio higher than one was only present for only one year, it appears that the high number of crashes that occurred during that year may have been due to temporary conditions along the roadway (construction, inadequate signal timing, etc.) that no longer exists.

The fifth segment (between SR 826/Palmetto Expressway (Overpass) and SW 73rd Court) resulted in safety ratios higher than one in all of the years that were analyzed. In addition, based on the confidence levels calculated for each year, it appears that the segment is experiencing an abnormally high crash rate when compared to similar roadways across the state. This result from the safety analysis correlates with the results of the existing conditions analysis where, during the morning peak hour, SW 8th Street experiences heavy congestion in the vicinity of SR 826/Palmetto Expressway Interchange. Moreover, the reduction in number of lanes along SW 8th Street (east of SR 826/Palmetto Expressway) could also be influencing the number of crashes that occurred along this segment.

From the safety analysis performed, there are three segments along the study limits with safety concerns. These segments are:

- From west of SW 122nd Avenue to the SR 821/HEFT Overpass
- Between the SR 821/HEFT Overpass and SW 107th Avenue
- Between SR 826/Palmetto Expressway (Overpass) and SW 73rd Court

In general, the major contributing causes for the entire limits of the study were: careless driving behavior (57 percent), failed to yield (12 percent) and no improper driving act (7 percent). From these contributing causes it seems that SW 8th Street does not experience crashes related to roadway design deficiencies. Crashes along SW 8th Street seem to be related to aggressive driving behavior.

The three segments above experiencing safety concerns resulted in contributing causes similar to the ones identified for the whole limits of the study (i.e. careless driving, failed to yield, no improper driving act)

Table 22 – Safety Analysis Summary

Segment	Year	Total Number of Crashes	ADT (vpd)	Segment Length (mi)	Safety Ratio	Confidence Level
From West of SW 122 Avenue to HEFT Overpass	2007	96	69,000	0.614	0.963	99.788%
	2008	105	66,000	0.614	1.116	99.999%
	2009	119	63,000	0.614	1.228	99.999%
	2010	124	60,000	0.614	1.253	99.999%
	2011	132	59,500	0.614	1.300	99.999%
	2012	102	62,500	0.614	0.926	99.134%
	TOTAL	678				
	Average	113				
From HEFT Overpass to SW 107 Avenue	2007	116	66,000	1.039	0.764	48.800%
	2008	140	64,500	1.039	0.959	99.673%
	2009	161	68,500	1.039	0.974	99.813%
	2010	217	62,000	1.039	1.344	99.999%
	2011	217	58,500	1.039	1.367	99.999%
	2012	204	60,000	1.039	1.207	89.796%
	TOTAL	1055				
	Average	176				
From SW 107 Avenue to SW 87 Avenue	2007	147	62,000	2.010	0.566	0.000%
	2008	179	55,500	2.010	0.777	31.920%
	2009	213	54,500	2.010	0.874	86.650%
	2010	215	63,500	2.010	0.718	1.920%
	2011	229	58,000	2.010	0.802	34.830%
	2012	225	79,000	2.010	0.569	0.000%
	TOTAL	1208				
	Average	201				
From SW 87 Avenue to SR 826/Palmetto Expressway (Overpass)	2007	74	53,000	0.945	0.642	12.100%
	2008	81	55,000	0.945	0.694	29.120%
	2009	96	50,500	0.945	0.826	86.650%
	2010	146	57,000	0.945	1.059	99.999%
	2011	136	68,000	0.945	0.816	72.240%
	2012	103	69,000	0.945	0.586	0.180%
	TOTAL	636				
	Average	106				
From SR 826/Palmetto Expressway (Overpass) to SW 73 Court	2007	48	44,000	0.349	1.254	99.999%
	2008	65	44,500	0.349	1.765	99.999%
	2009	63	45,000	0.349	1.572	99.999%
	2010	57	49,000	0.349	1.356	99.999%
	2011	60	45,500	0.349	1.398	99.999%
	2012	59	47,000	0.349	1.254	99.999%
	TOTAL	352				
	Average	59				

Table 23 summarizes the types of crashes along the entire segment of SW 8th Street. As indicated in this table, the most common type of crash along SW 8th Street is Rear-end (52 percent), followed by Angle (20 percent), other (10 percent) and sideswipe (6 percent). These types of crashes are typical of arterial roadways with signalized intersections and median openings. No abnormal crash types were identified that could suggest a roadway design deficiency.

Data from FDOT District 6 regarding percentage of night crashes (Districtwide and Miami-Dade County) was compared with the percentage of night crashes obtained for the SW 8th Street Corridor Study. Percentage of night crashes along SW 8th Street (within the limits of the Study Area) has been decreasing through the years (2007 = 37.84% and 2012 = 28.28%). The last year of analysis (2012) resulted in a value of 28.28%, while the 2012 districtwide average resulted in a value of 28.90%, and for Miami-Dade County, 28.95%. Therefore, the last year shows a value slightly below FDOT District 6 average.

In addition, most of the crashes occurred with a dry surface (82 percent) which seems to indicate that there are no drainage deficiencies within the segment that would contribute to crashes. Most of the crashes also occurred during the daylight (67 percent) which would indicate that the segment does not present any lighting conditions that would need to be corrected.

The pattern for the type of crashes occurring along the entire limits being analyzed is similar to the pattern for the most common types of crashes identified along the three segments categorized as high crash segments. The three segments categorized as high crash locations show rear-end crashes as the number one type of crash, followed by angle collisions and third sideswipe. These are typical crashes that occur along arterial roadways.

Crashes occurring within the entire segment being analyzed seem to be of a low severity since out of the 3,975 crashes (during the last six years) only 16 crashes (0.42 percent – less than one percent) resulted in fatalities. One of the crashes resulted in two fatalities; thus, a total of 17 fatalities. The fatal crashes were carefully analyzed in order to determine if there was a specific location that was more prone to fatal crashes.

Table 23 – Summary of Types of Crashes

Categories	Type of Crash	Number of Crashes						Average	Total	Percentage of Total
		Year								
		2007	2008	2009	2010	2011	2012			
Crash Type	Rear End	236	245	323	401	426	437	344.7	2068	52.0%
	Head On	3	6	8	13	12	3	7.5	45	1.1%
	Angle	87	134	137	149	159	139	134.2	805	20.3%
	Left Turn	46	54	45	47	3	7	33.7	202	5.1%
	Right Turn	6	6	5	10	3	2	5.3	32	0.8%
	Sideswipe	53	70	60	78	0	0	43.5	261	6.6%
	Pedestrian & Bicycle	5	6	7	9	2	5	5.7	34	0.9%
	Fixed Object	15	20	25	14	16	20	18.3	110	2.8%
	Overturned	1	0	1	1	0	1	0.7	4	0.1%
	Other	29	29	41	37	153	125	69.0	414	10.4%
	TOTAL CRASHES	481	570	652	759	774	739	662.5	3975	100.0%
Surface Conditions	Dry	389	477	536	625	632	605	544.0	3264	82.1%
	Wet	86	90	115	131	141	134	116.2	697	17.5%
	Others	6	3	1	3	1	0	2.3	14	0.4%
	TOTAL CRASHES	481	570	652	759	774	739	662.5	3975	100.0%
Time of Day	Day	299	378	442	506	515	530	445.0	2670	67.2%
	Night	182	192	210	253	259	209	217.5	1305	32.8%
	TOTAL CRASHES	481	570	652	759	774	739	662.5	3975	100.0%
Crash Severity	Property Damage Only	243	270	353	421	512	504	383.8	2303	57.9%
	Injuries	235	300	295	334	258	233	275.8	1655	41.6%
	Fatalities	3	0	4	4	4	2	2.8	17	0.4%
	TOTAL CRASHES	481	570	652	759	774	739	662.5	3975	100.0%

Table 24 summarizes on a per-segment basis the locations where the fatal crashes occurred. As listed in this table, the segment between SW 107th Avenue and SW 87th Avenue resulted in the segment with the highest number of fatal crashes. The segment with the second highest number of fatal crashes is between SW 122nd Avenue and the SR 821/HEFT Overpass. The segments between SR 821/HEFT Overpass and SW 107th Avenue and between SW 87th Avenue and the SR 826/Palmetto Expressway Overpass both had two fatal crashes.

In the first segment (between SW 122nd Avenue and the SR 821/HEFT SB Ramps), three fatal crashes (resulting in 4 fatalities) occurred at the intersection with the SR 821/HEFT SB Ramps. These three crashes always involved one of the vehicles traveling in the eastbound direction and two of the crashes involved a westbound vehicle crashing against an eastbound vehicle. This condition would seem to indicate that the westbound left-turn movement is making the desired movement and interfering with the eastbound through movement. A more detailed analysis of this intersection will need to be performed in order to determine if the crashes are occurring due to either aggressive drivers' behavior or some other intersection design element. For instance, it may be possible the green time or/and the clearance time is not adequate or there is insufficient sight distance.

In the third segment (between SW 107th Avenue and SW 87th Avenue), five fatal crashes were reported between SW 92nd Avenue and SW 94th Avenue within a distance of approximately 1,400 feet. No particular pattern was observed for these crashes. Some of them occurred in the eastbound direction, some of them occurred in the westbound direction. From the field data collected, it was determined that this particular segment experiences relatively high speeds during the morning and afternoon peak hours (in both directions). It is possible that the high speed differential between the drivers traveling along SW 8th Street and the drivers entering from the cross-streets is influencing these crashes along this segment.

Table 24 – Summary of Types of Crashes By Segment

Segment	Year	# of Fatalities	# of Fatal Crashes
From West of SW 122 Avenue to HEFT Overpass	2007	1	1
	2008	0	0
	2009	1	1
	2010	0	0
	2011	3	2
	2012	0	0
	Total	5	4
From HEFT Overpass to SW 107 Avenue	2007	c	1
	2008	0	0
	2009	1	1
	2010	1	0
	2011	0	
	2012	0	
	Total	2	2
From SW 107 Avenue to SW 87 Avenue	2007	1	1
	2008	0	0
	2009	2	2
	2010	3	3
	2011	1	1
	2012	1	1
	Total	8	8
From SW 87 Avenue to SR 826/Palmetto Expressway (Overpass)	2007	1	1
	2008	0	0
	2009	0	0
	2010	0	0
	2011	0	0
	2012	1	1
	Total	2	2
From SR 826/Palmetto Expressway (Overpass) to SW 73 Court	2007	0	0
	2008	0	0
	2009	0	0
	2010	0	0
	2011	0	0
	2012	0	0
	Total	0	0

4.2 Intersection Crash Analysis

The intersection crash analysis was focused on two major intersections along the corridor: SW 107th Avenue and SW 87th Avenue. Table 25 and 26 summarize the data for these two intersections.

Table 25 – SW 8th Street and SW 107th Avenue Intersection – Crash Analysis

Year	Total Number of Crashes	ADT (vpd)	Actual Crash Rate	Average Crash Rate ®	Ave. Veh. Exposure (million veh mi.)	K	Critical Crash Rate	Safety Ratio	Cumulative Standard Distribution (k)	Confidence Level
2007	45	115,000	1.072	0.805	41.98	3.291	1.249	0.858	2.01	97.778%
2008	55	116,500	1.293	0.801	42.52	3.291	1.241	1.042	3.67	99.988%
2009	63	121,500	1.421	0.873	44.35	3.291	1.323	1.073	3.98	99.997%
2010	81	118,000	1.881	0.911	43.07	3.291	1.378	1.365	6.75	99.999%
2011	84	110,500	2.083	0.962	40.33	3.291	1.458	1.429	7.34	99.999%
2012	65	115,000	1.549	1.001	41.98	3.291	1.497	1.034	3.62	99.999%

Table 26 – SW 8th Street and SW 87th Avenue Intersection – Crash Analysis

Year	Total Number of Crashes	ADT (vpd)	Actual Crash Rate	Average Crash Rate ®	Ave. Veh. Exposure (million veh mi.)	K	Critical Crash Rate	Safety Ratio	Cumulative Standard Distribution (k)	Confidence Level
2007	30	101,000	0.814	0.805	36.87	3.291	1.278	0.637	0.15	35.962%
2008	57	91,500	1.707	0.801	33.40	3.291	1.296	1.317	5.95	99.999%
2009	41	92,500	1.214	0.873	33.76	3.291	1.387	0.875	2.21	98.645%
2010	62	105,000	1.618	0.911	38.33	3.291	1.405	1.151	4.67	99.999%
2011	65	94,000	1.894	0.962	34.31	3.291	1.498	1.264	5.66	99.999%
2012	58	121,000	1.313	0.962	44.17	3.291	1.436	0.914	2.46	99.999%

From the safety analysis performed, it was determined that these two intersections are categorized as high crash intersections. Although the segment that included these two intersections resulted as a no high crash segment, the intersections themselves are considered high crash locations.

Similar to the segment crash analysis, the most common types of crashes are rear-end, angle and sideswipe. These crashes are typical of arterial roadways.

4.3 Safety Analysis - Summary of Findings

The safety analysis concluded that there are three segments along SW 8th Street that are experiencing abnormally high crash rates when compared to similar facilities across the state. These three segments are:

- From west of SW 122nd Avenue to the SR 821/HEFT Overpass
- Between the SR 821/HEFT Overpass and SW 107th Avenue
- Between SR 826/Palmetto Expressway (Overpass) and SW 73rd Court

The three segments categorized as high crash locations show rear-end crashes as the number one type of crash, followed by angle collisions and third sideswipe. These are typical crashes for arterial roadways and correlate with the most common types of crashes for the entire limits of SW 8th Street being analyzed (Rear-end (52 percent), Angle (20 percent) and other (10 percent)).

In addition, the intersections of SW 8th Street with SW 107th Avenue and SW 8th Street with SW 87th Avenue were also determined to be high crash locations.

The most common types of crashes at these two intersections follow the pattern identified for the high crash segments (rear-end, angle and sideswipe).

Most of the crashes occurred with a dry surface (82 percent) which seems to indicate that there are no drainage deficiencies within the segment. In addition, most of the crashes occurred during daylight (67 percent) which is indicative that the segment does not present insufficient/inadequate lighting.

A total of 17 fatalities were reported between 2007 and 2012. However, only 16 fatal crashes occurred (one fatal crash resulted in two fatalities). A detailed analysis of fatal crash locations revealed that there are two areas prone to fatal crashes. One area is the intersection of SW 8th Street with the SR 821/HEFT SB Ramps and the other is the segment between SW 92nd Avenue and SW 94th Avenue.

Based on the data obtained from FDOT crash information, the first location seems to be involving drivers in the eastbound hitting drivers from westbound left-turn movement. This seems to indicate that when the westbound drivers are making the desired movement, they are interfering with the eastbound through traffic. A more detailed analysis of this intersection will need to be performed in order to determine if the crashes are occurring due to either aggressive drivers' behavior or some other intersection design element.

For the second location reporting frequency in the number of fatal crashes, no particular pattern was observed. Some of them occurred in the eastbound direction, some of them occurred in the westbound direction. From the travel times studies it was determined that this particular segment experienced relatively high speeds during the morning and afternoon peak hours (in both directions). The high speed differential between the drivers traveling along SW 8th Street and the drivers entering from the cross-streets may be influencing the crashes along this segment.

5.0 OVERALL ANALYSIS SUMMARY

From the traffic and safety analysis conducted for existing conditions it was determined that currently SW 8th Street is not experiencing major concerns from the traffic operations perspective. Only one segment of SW 8th Street is experiencing low speeds during the morning peak hour. This segment was identified to be along the eastbound direction from east of SW 87th Avenue to SR 826/Palmetto Expressway. This segment was also found to experience an abnormally high crash rate that categorizes it as a high crash segment.

Overall, traffic flow along SW 8th Street is operating at relatively acceptable LOS (in the AM and PM peak hours). As described above, only one segment experiences heavy delays in the eastbound direction, during the AM peak hour. However, cross-streets (minor and major) are experiencing heavy delays at the SW 8th Street approaches in the morning and afternoon peak hours.

Therefore, a set of conceptual alternatives will be developed in order to increase capacity along SW 8th Street and minimize impacts at the cross-streets. These alternatives will consider roadway improvements as well as transit enhancements. All of the alternatives will be oriented towards increasing capacity along SW 8th Street and cross-streets by either providing different configurations at the intersections/re-timing traffic signals or promoting mode-shift by ride-sharing/transit use along the corridor.

Because of the complexity of the corridor being analyzed, the proposed recommendations will likely require a mix of roadway alternatives to address the existing and future traffic issues.

Appendix A – Raw 72-Hour Classification and Regular Counts

Appendix B – Raw 72-Hour Regular Counts on Cross-Streets

Appendix C – Raw Turning Movement Counts

Appendix D – Raw Travel Time Data

Appendix E – Raw Queue Data

Appendix F – Time of Day vs. Volume Profiles

Appendix G – Processed Turning Movement Counts

Appendix H – Area-wide Raw/Balanced Peak Hour Volumes

Appendix I – Signal Timing Plans

Appendix J – AM and PM SimTraffic Model Calibration Checks

Appendix K – Detailed Segment - Safety Analysis

Appendix L – Crash Data

Appendix D – Technical Memorandum #4 - Conceptual Alternatives

SW 8TH STREET CORRIDOR STUDY - CONCEPTUAL ALTERNATIVES TECHNICAL MEMORANDUM #4

MIAMI-DADE METROPOLITAN PLANNING ORGANIZATION

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Miami, FL 33174

April 2015

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1.0 INTRODUCTION

The Study Area for SW 8th Street (also known as the Tamiami Trail and SR 90) is a four mile segment of a facility that ultimately connects Naples, Florida to downtown Miami. The SW 8th Street study area extends from SW 74th Avenue to SW 122nd Avenue and includes interchanges with both the Homestead Extension of Florida's Turnpike (HEFT) and the Palmetto Expressway (SR 826). SW 8th Street is predominantly an eight-lane divided facility that narrows to six lanes east of SW 87th Avenue then narrows again to a 4 lane facility east of SR 826.

The Tamiami Canal is located along the north-side of the roadway and limits the number of intersections with northern approaches. The right-of-way line on the northern side of SW 8th Street extends to the edge of the canal, which varies along the corridor. At most locations, the available right-of-way on the north is between 10 to 17 feet with some locations, such as at existing bus bays, narrowing to five (5) feet (See Figures 1 – 5). The southern side of SW 8th Street is mostly developed with commercial land uses extending to the edge of right-of-way. Therefore, the northern side of the roadway offers the most right-of-way to accommodate any improvements to the corridor.

Figure 1 shows the project location map. Figures 2 through 6 detail the modified typical sections, and existing right-of-way, following a recently completed Florida Department of Transportation (FDOT) resurfacing project. This project added four (4) foot-wide bicycle lanes on both sides of the roadway, turbo-lanes at several of the T-intersections, and improved markings, signing and channelization. The turbo-lanes are located at SW 102nd Avenue and SW 99th Place.

Figure 1 – Project Location

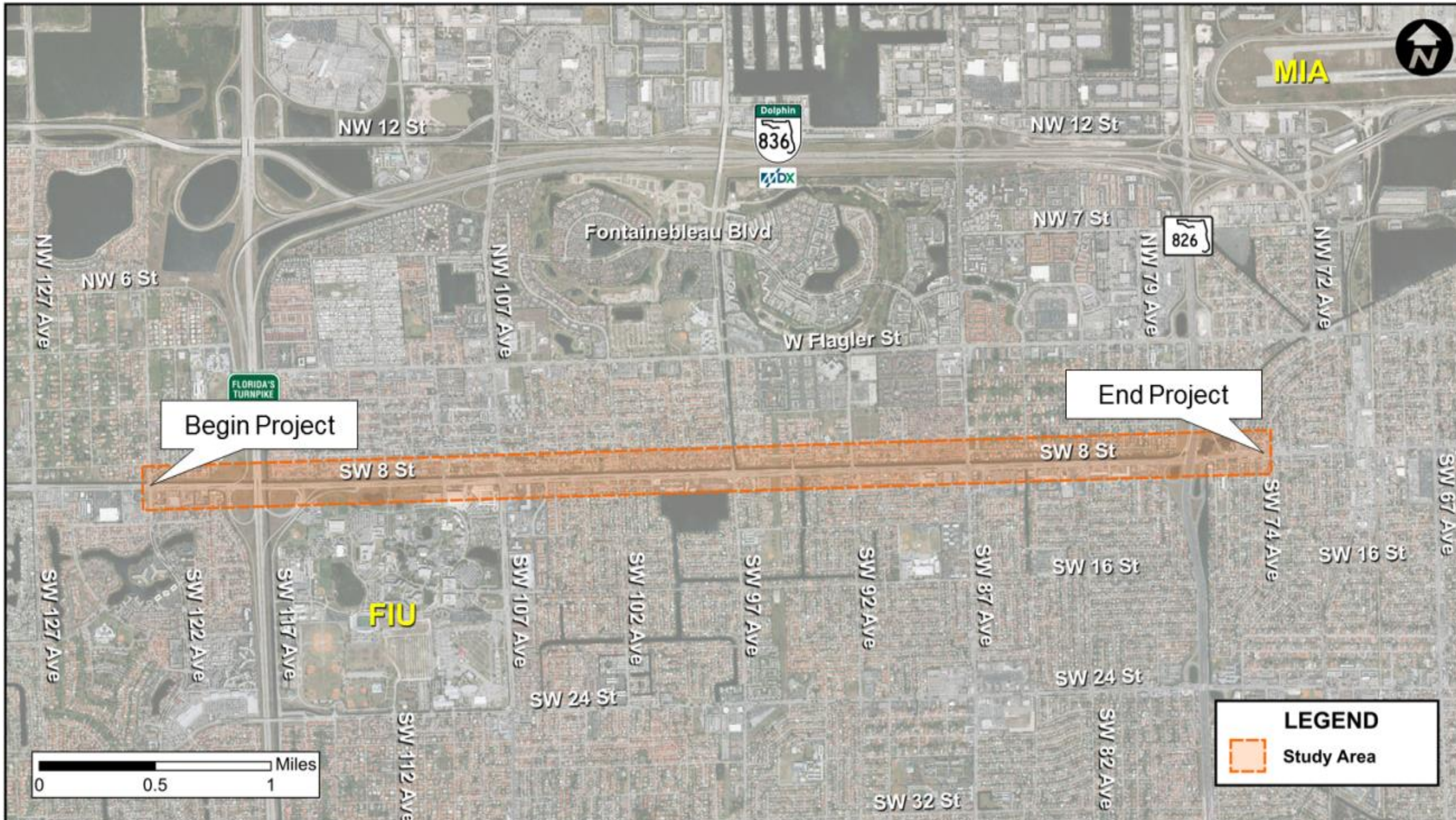


Figure 2 – Existing Typical Sections

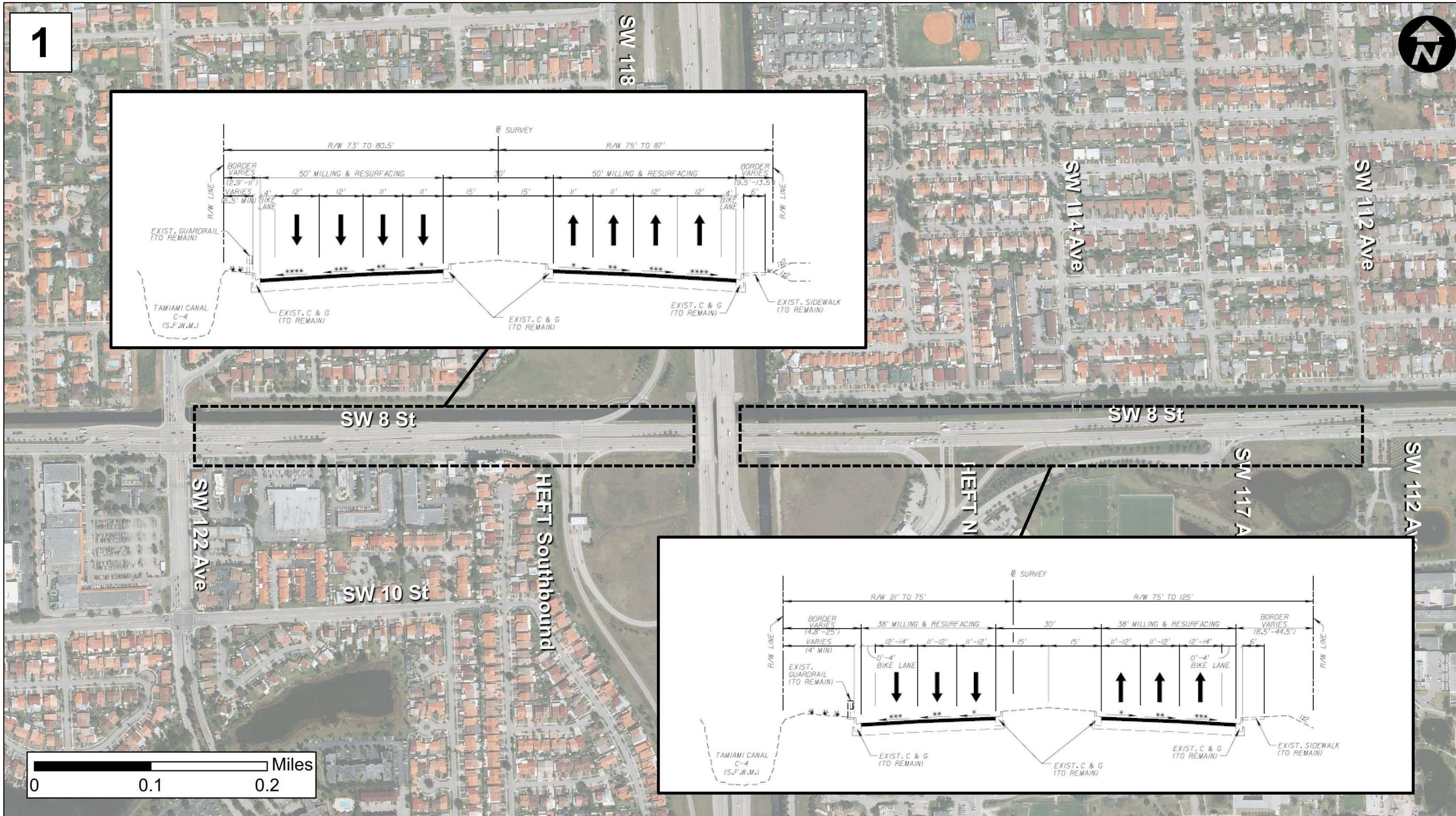


Figure 3 – Existing Typical Sections

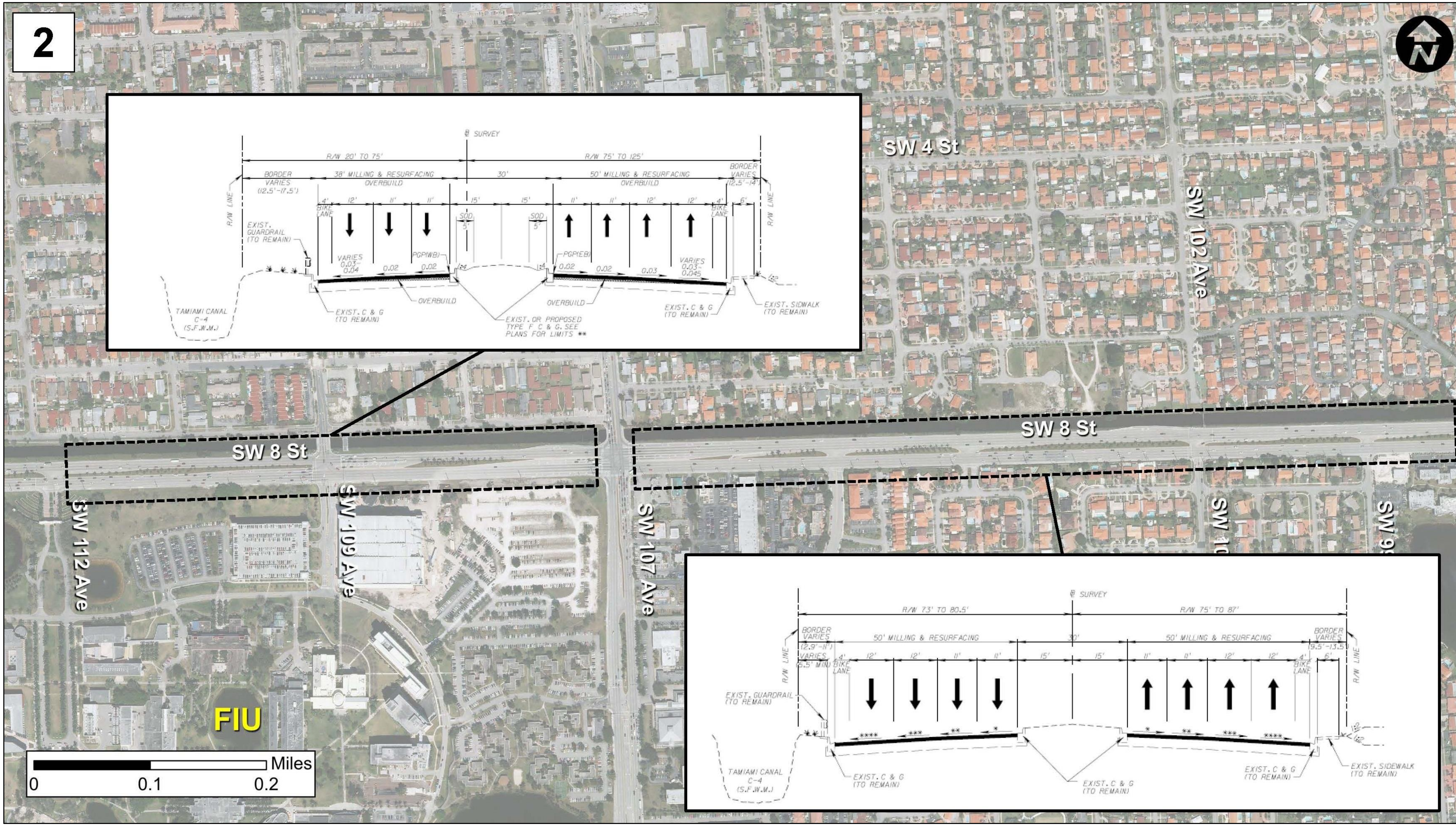


Figure 4 – Existing Typical Sections

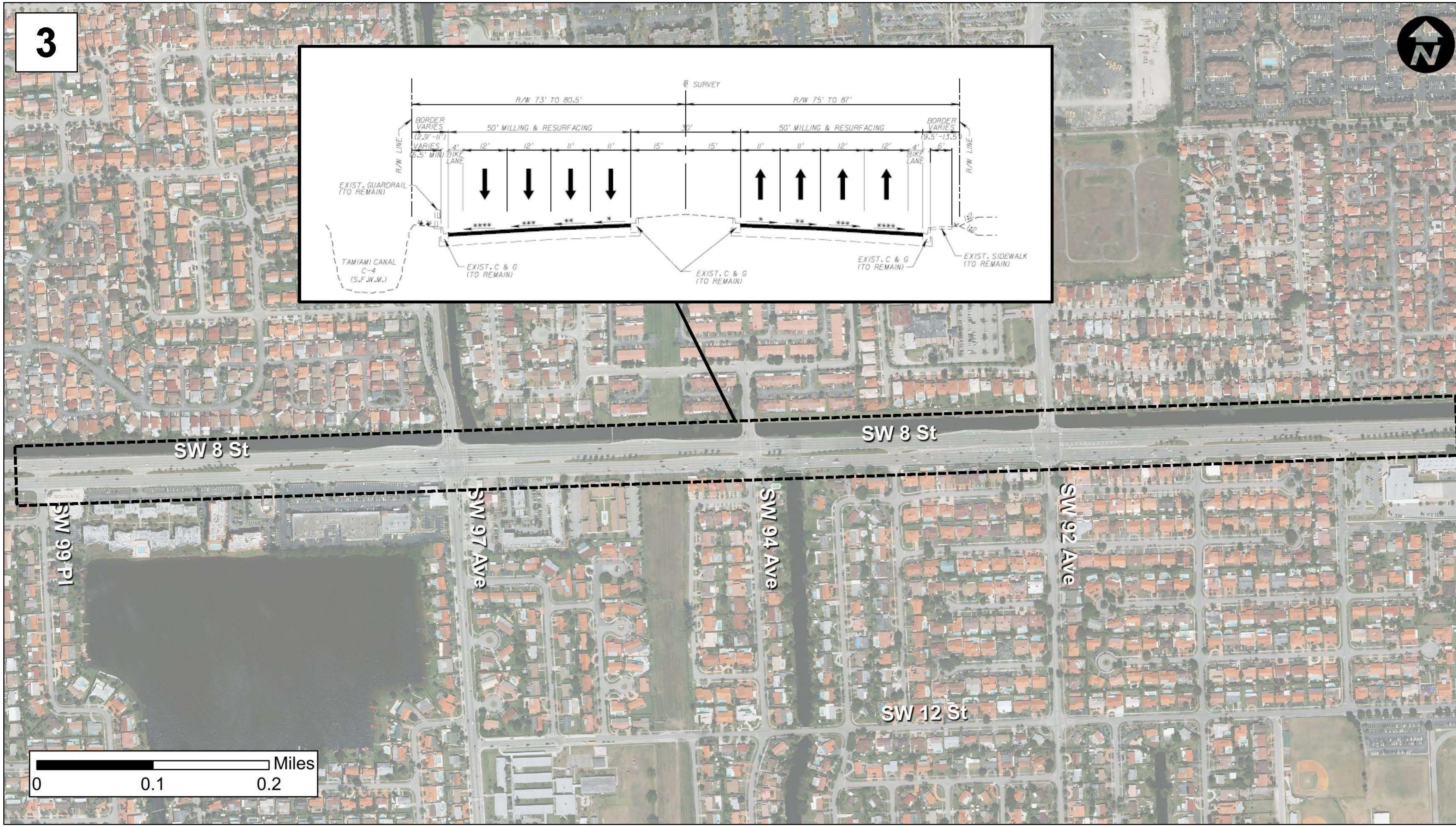


Figure 5 – Existing Typical Sections

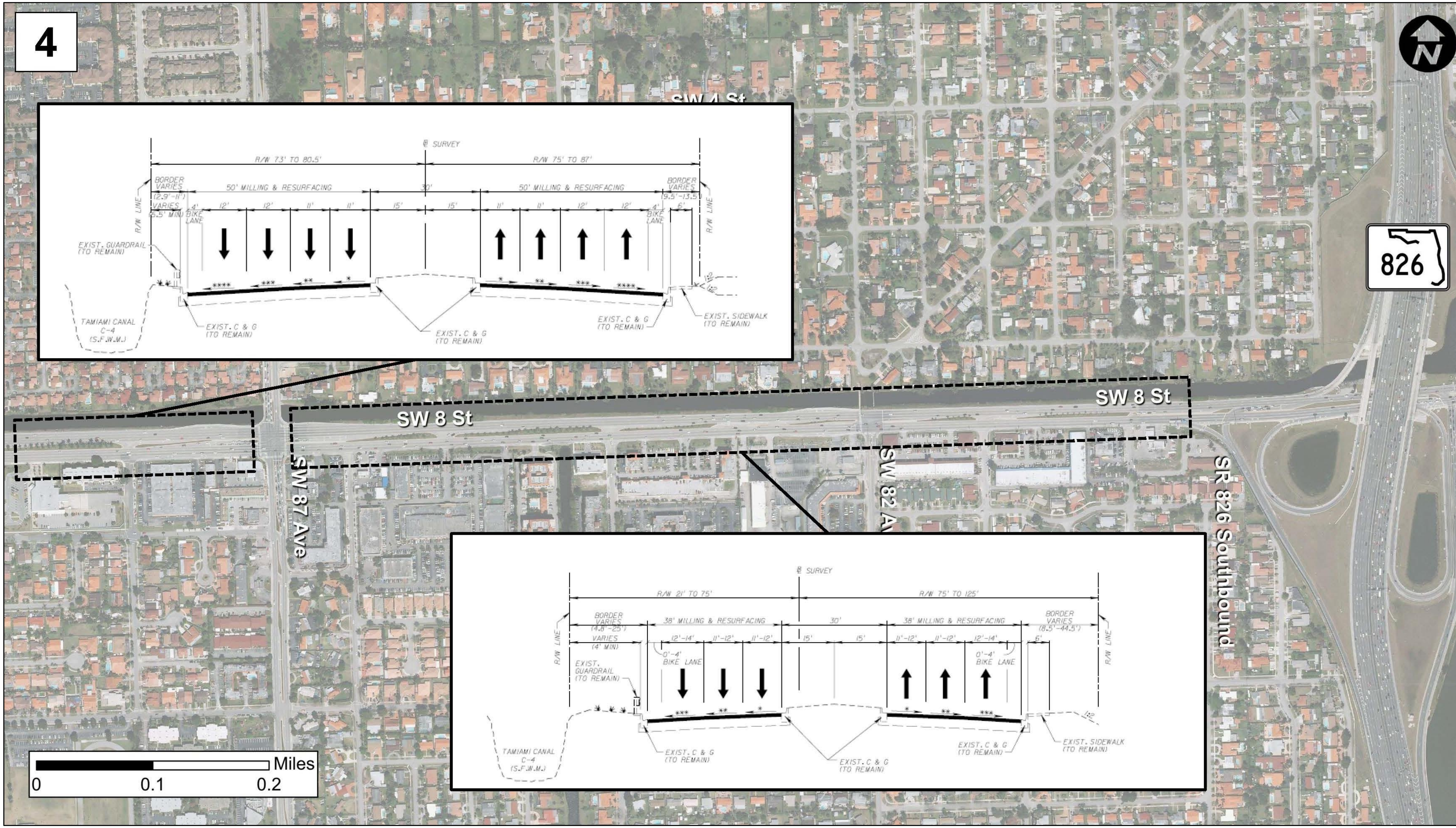


Figure 6 – Existing Typical Sections

1.1 Roadway Issues

SW 8th Street serves a number of functions that create traffic issues within this study area. First, there are regional through trips between the western suburbs and employment centers to the east. During the AM peak period the lane reductions at SW 87th Avenue and again at SR 826 cause temporary backups and bottlenecking. Secondly, there are a large number of trips accessing the regional facilities of the HEFT and SR 826. Thirdly, there are regional trips that terminate at the large commuter university, Florida International University (FIU). Moreover, there is a concentration of northbound turning movements at section-line and half-section line roads because of the limited number of crossings along the Tamiami Canal. Traffic analysis has confirmed that during the AM peak period, the northbound movements experience significant queues, whereas during the PM peak period, southbound movements along these section lines experience significant queues. Finally, the roadway functions as a major access to the local commercial land uses along the south-side of SW 8th Street. Motorists slowing to turn into the multiple driveways further impede and interfere with east-bound traffic.

The combination of the issues described above result in poor levels of service (LOS) at key locations along the corridor.

1.2 Transit Issues

Most of the existing transit services in the study corridor are provided by Miami-Dade Transit (MDT) with the exception of the Sweetwater trolleys near FIU. Currently MDT only operates one bus route along the corridor – Route 8. However, the SW 8th Street corridor is currently fed by four other MDT Metrobus routes: Routes 11, 51, 71 and 87. These routes cross SW 8th Street and provide transfer opportunities with Route 8. These transit routes along with the MDT bus stops that are within the SW 8th Street corridor are illustrated in Figure 7 below.

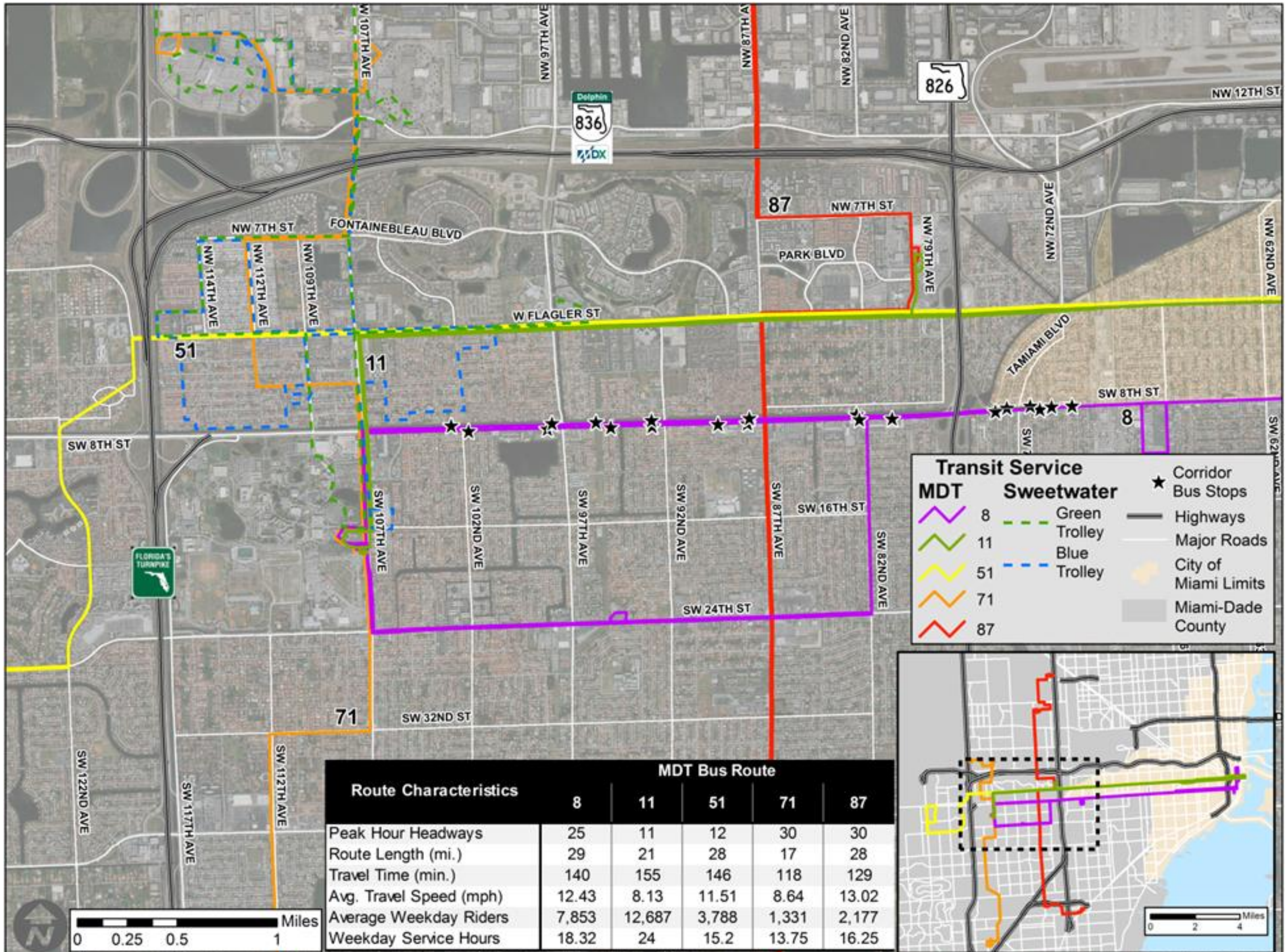
Route 8 averages nearly 7,900 transit riders every week day. The peak hour headways for Route 8 are approximately 25 minutes.

Three of the five routes serving the SW 8th Street corridor provide direct service to FIU – Routes 8, 11, and 71. Route 8 only provides service to FIU once every three scheduled trips.

All transit stops have transit signs that provide information on the transit routes as well as a bus bench. Some stops have a trash receptacle and the SW 75th Ave eastbound stop has a shelter for riders. All of the westbound transit stops along SW 8th Street between SR 826 and FIU have a bus bay.

Figure 8 details the average number of daily boardings and alightings for each Route 8 bus stop within the corridor. A majority of the ridership activity for Route 8 occurs east of SR-826.

Figure 7 – Existing Transit Service



Route Characteristics	MDT Bus Route 8	11	51	71	87
Peak Hour Headways	25	11	12	30	30
Route Length (mi.)	29	21	28	17	28
Travel Time (min.)	140	155	146	118	129
Avg. Travel Speed (mph)	12.43	8.13	11.51	8.64	13.02
Average Weekday Riders	7,853	12,687	3,788	1,331	2,177
Weekday Service Hours	18.32	24	15.2	13.75	16.25

Figure 8 – Average Daily Bus Activity

2.0 2025 NO-BUILD SCENARIO

As a part of this study, recommended alternatives will be measured and evaluated compared to the 2025 No-Build Scenario. The No-Build Scenario will include committed projects from the 2035 LRTP within the study area that are programmed to be implemented prior to 2025. These projects are listed below.

2.1 Widening of SW 107th Avenue

This project will ultimately widen and rehabilitate SW 107th Avenue from W. Flagler Street to SW 11th Street, which will be divided into two segments: From SW 1100 Block to SW 4th Street (FDOT FM #412479-3) and from SW 5th Street to W Flagler Street (FDOT FM #412479-2). Construction for these two segments are planned to start in 2015 and 2016 respectively. The project will include bicycle lanes in each direction, dual left-turn bays for each direction at the SW 8th Street intersection, exclusive right turn lanes for each direction at the SW 8th Street intersection, and pedestrian infrastructure improvements such as enhanced lighting and crosswalks.

2.2 New MDT Transit Services

MDT is incrementally implementing rapid transit services in the East-West Corridor (Dolphin Expressway/SR 836), which is a part of the People's Transportation Plan. Ultimately three of these new transit services provided by MDT will use a portion of SW 8th Street within the study corridor.

Figure 9 details all the various routes scheduled for the East-West corridor's rapid transit services, including the three services that are within the study corridor and are a part of the 2025 No-build scenario. Of the three routes that use a portion of SW 8th Street, only the 'B-Line' Express Service uses the Dolphin Expressway/SR 836.

2.2.1 SR 836 Express 'B-Line'

The SR 836 Express ('B-Line'), which will provide service from the funded Panther Station/FIU Transit Terminal at SW 8th Street between SW 109th and SW 112th Avenues to the Miami Intermodal Center (MIC), is scheduled to begin service in 2019. This service will operate primarily on the Dolphin Expressway (SR 836) with no intermediate stops, thereby reducing transit travel times.

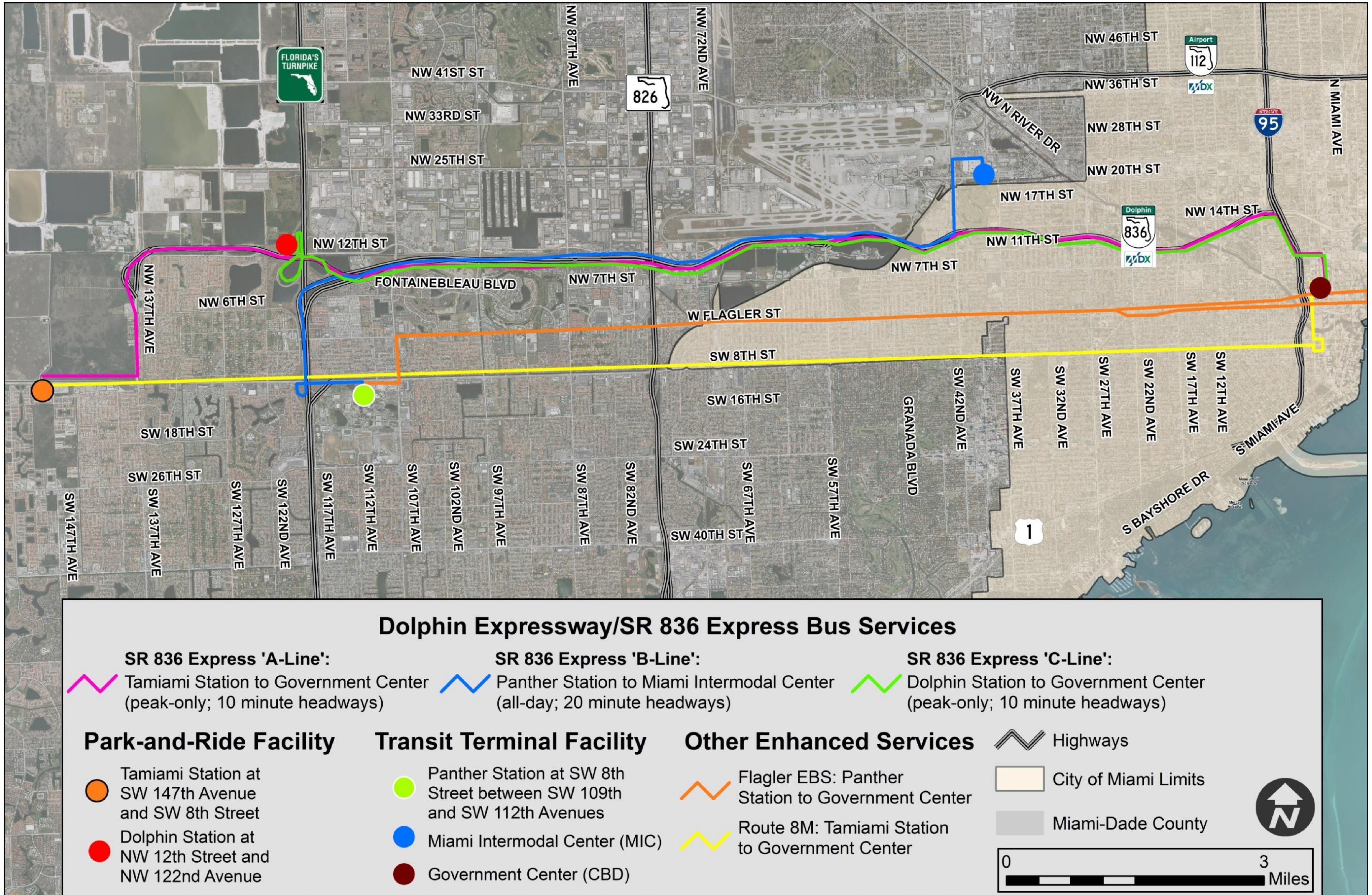
2.2.2 MDT Bus Route 8M

The 8M MDT Bus Route, which will provide limited-stop service from the funded Tamiami Station at SW 8th Street and SW 147th Avenue to Government Center in Downtown Miami, is scheduled to begin service in 2019.

2.2.3 Flagler Enhanced Bus Service

The Flagler Enhanced Bus Service (EBS), which will provide limited-stop service from the funded Panther Station/FIU Transit Terminal at SW 8th Street between SW 109th and SW 112th Avenues to Government Center in Downtown Miami, is scheduled to begin service in 2021. This service will replace the existing Flagler MAX (Route 51).

Figure 9 – New (Future) MDT Transit Service



2.3 Improved Access to the new FIU Terminal

Access improvements from SW 8th Street to the proposed FIU Transit Terminal between SW 112th and 109th Avenues are funded for implementation by MDT and will be part of the No-Build for this study. The new FIU Terminal will be served by the transit services shown in Table 1. The future circulation around the FIU bus terminal is shown in Figure 10.

Table 1: Proposed Transit Service around the FIU Transit Terminal

Route #	Frequency (minutes)	Peak Hour Buses
8	15	4
8 Max (new)	15	4
11	30	2
Flagler EBS (new)	10	6
24	20	3
71	30	2
251 (new)	45	1
HEFT Express North (new)	10	6
HEFT Express South (new)	10	6
SR 836 Express (new)	20	3

Twenty-three (23) westbound buses per hour in route to the FIU terminal must make a U-turn at SW 112th Avenue to access the terminal. Similarly, fifteen (15) buses an hour must ultimately go westbound when departing the FIU terminal. As depicted in Figure 10, these 15 buses must first turn right (eastbound) out of the FIU terminal and make a U-turn at SW 109th Avenue to begin their westbound trips.

Because of the large number of daily transit vehicles operating between SW 112th and 109th Avenue using the FIU terminal, exclusive lanes are programmed between these two points. These exclusive lanes require construction of a new lane on the north side of SW 8th Street for westbound buses and an additional lane on the south side for eastbound buses. All of the U-turning bus movements, despite direction, will start in the outside exclusive bus lanes as seen in Figure 11 (MDT 836 Enhanced Bus Service Project) below. This may negatively impact corridor mobility for the segment of SW 8th Street near FIU.

An exclusive U-turn phase and associated signal improvements would be needed at the SW 109th Avenue and SW 112th Avenue traffic signals. These lanes only impact three blocks of the corridor near FIU.

Funding for the FIU bus terminal, the exclusive bus lanes on both sides of SW 8th Street, and the signal modifications near FIU are included as a part of the MDT SR 836 Express Bus Project in the 2015 TIP.

Figure 10 – Proposed Transit Circulation around the FIU Transit Terminal

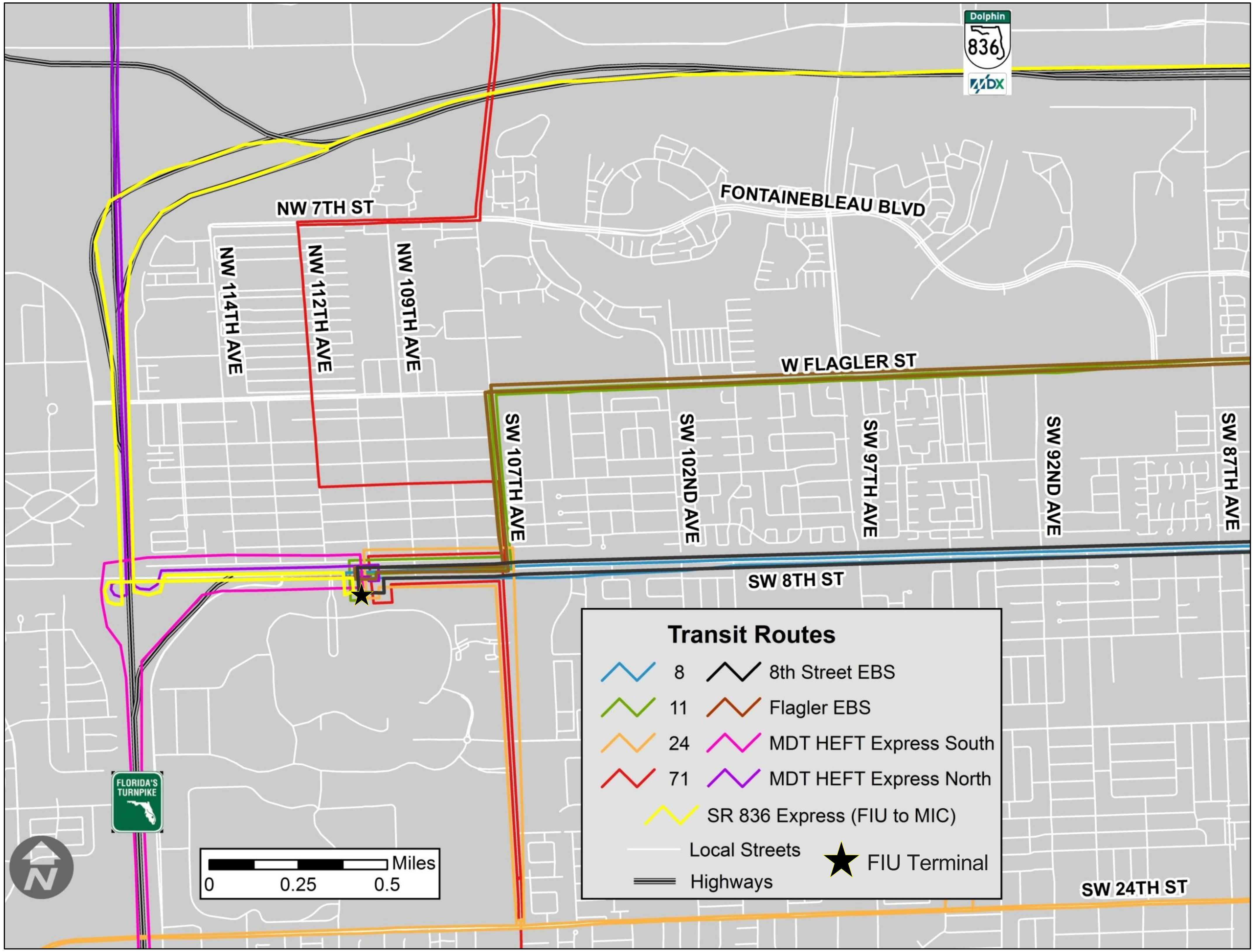


Figure 11 – Proposed Peak-Hour Bus Operations around the FIU Transit Terminal (MDT 836 Enhanced Bus Service Project)

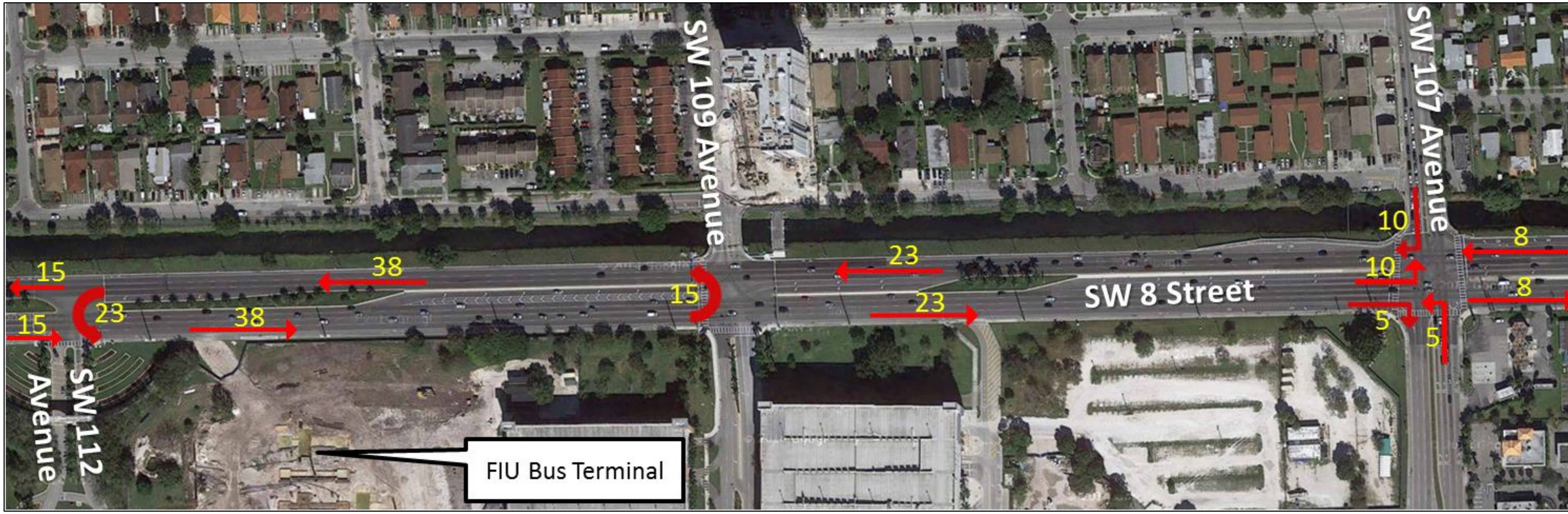
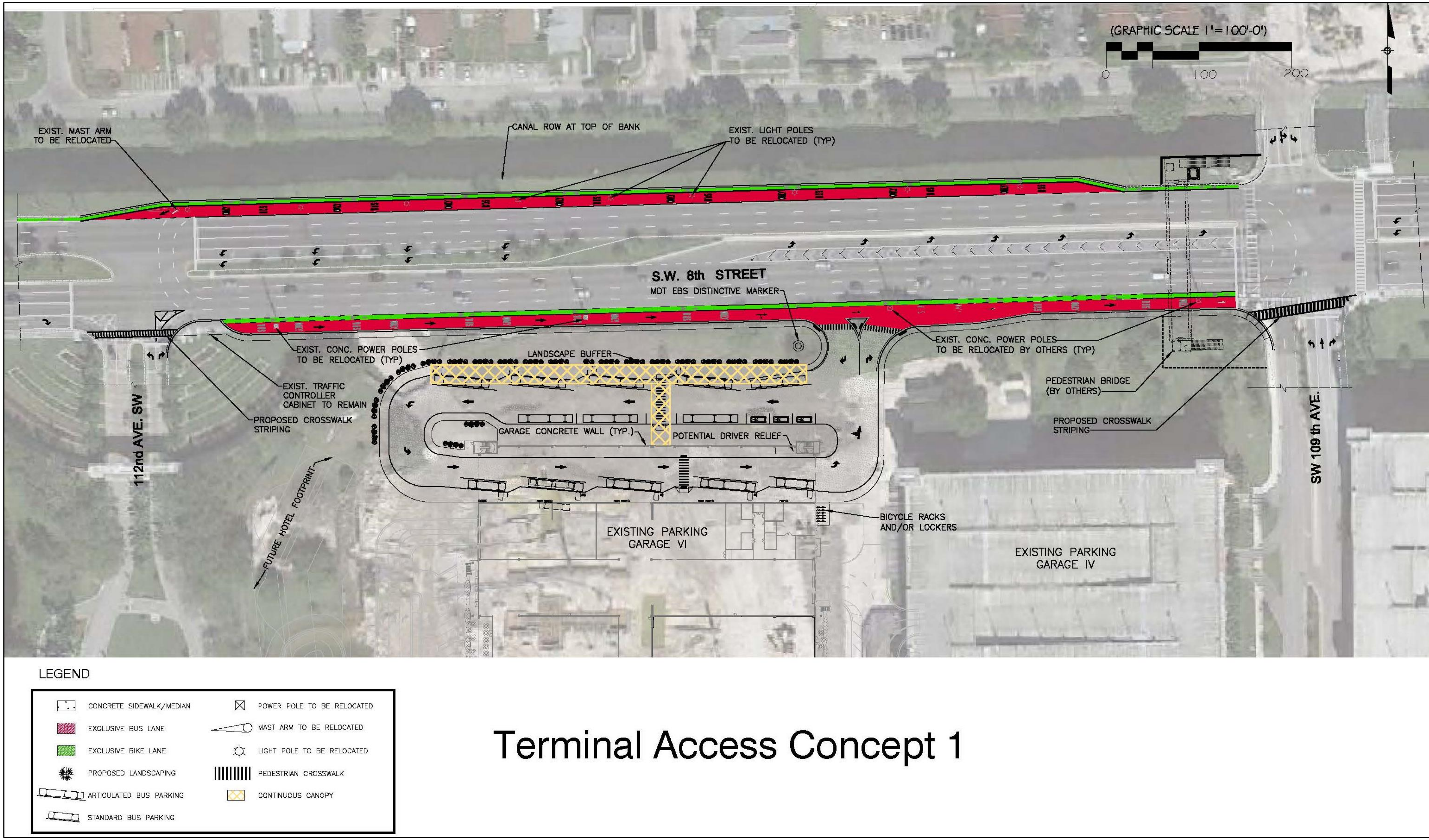


Figure 12 – Proposed Bus Lanes at FIU Transit Terminal

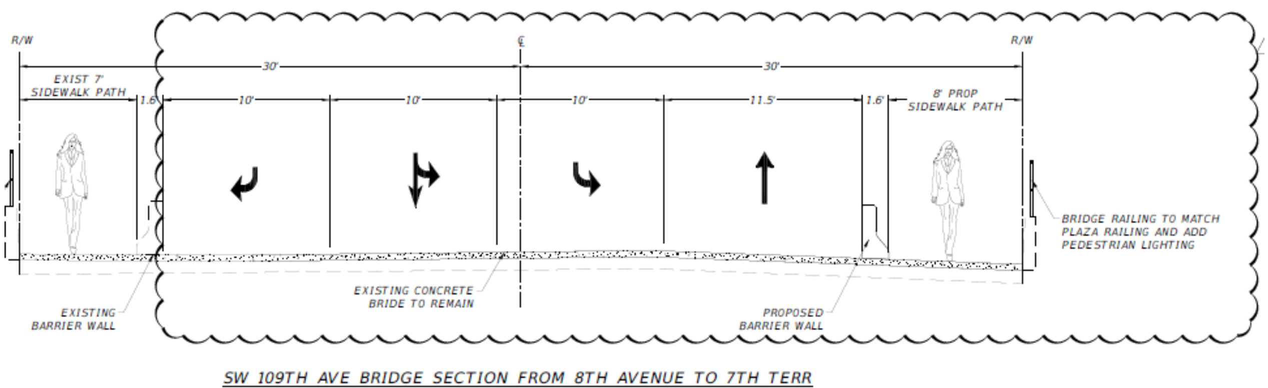


2.4 SW 109th Avenue and SW 8th Street Intersection

FIU was awarded a TIGER grant which provides funding for a new pedestrian bridge spanning SW 8th Street on the western side of SW 109th Avenue. This project will also modify the existing north leg of this intersection. HNTB consulted with FIU to obtain the latest concepts for the improvements at the intersection of SW 109th Avenue and SW 8th Street. The north leg of this intersection currently has three southbound lanes and one northbound lane with a sidewalk on the west side of the roadway. Figure 13 illustrates the plans for this north leg, which includes a sidewalk on both sides of the road as well as bridge railings and pedestrian lighting.

For No Build analysis purposes, we are assuming the pedestrian bridge will be the main pedestrian crossing at this location. Currently, the signal timing at this intersection has been changed to add more time for pedestrian crossings at grade. However, this condition was not in place at the time of the collection of count information for this study and is considered temporary. The bridge is estimated to be completed by 2016.

Figure 13 – North Leg of SW 109th Avenue / SW 8th Street Intersection



2.5 Turnpike Improvements at SW 8th Street

The improvements associated with the Turnpike at SW 8th Street are proposed to be opened by 2017 and are designed considering 2037 traffic levels. These improvements are depicted in Figure 14 and will be included in the 2025 No-Build scenario. This proposed project includes replacing the southbound to westbound free-flow right-turn lane with signalized triple right-turn lanes, widening loop ramps, and adding turn lanes at the southbound and northbound off-ramp terminal intersections. The improvements are proposed to alleviate ramp queues currently extending onto the HEFT mainline and will facilitate access to and from SW 8th Street. Proposed improvements also include increasing the storage of the left-turn lanes along SW 8th Street, modifying westbound lane alignment, and optimizing signal timing.

An analysis of existing conditions confirmed observations that the HEFT southbound queues on the loop ramp that extended onto the mainline were not caused by congestion along SW 8th Street, but were due to inadequate green time for ramp approaches, thus justifying the need to optimize existing signal timing.

The Turnpike's existing conditions analysis demonstrated that the proposed improvements generally eliminate unsafe queues extending onto the HEFT mainline and significantly improve traffic conditions at the ramp intersections without negatively affecting SW 8th Street. These improvements are also anticipated to enhance safety by converting two free-flow right turn lanes (southbound to westbound and northbound to eastbound) to controlled signalized movements, improving the alignment approaching SW 8th Street and increasing sight distance.

Figure 14 – Turnpike Improvements at SW 8th Street

2.6 SW 117th Avenue Intersection Modifications

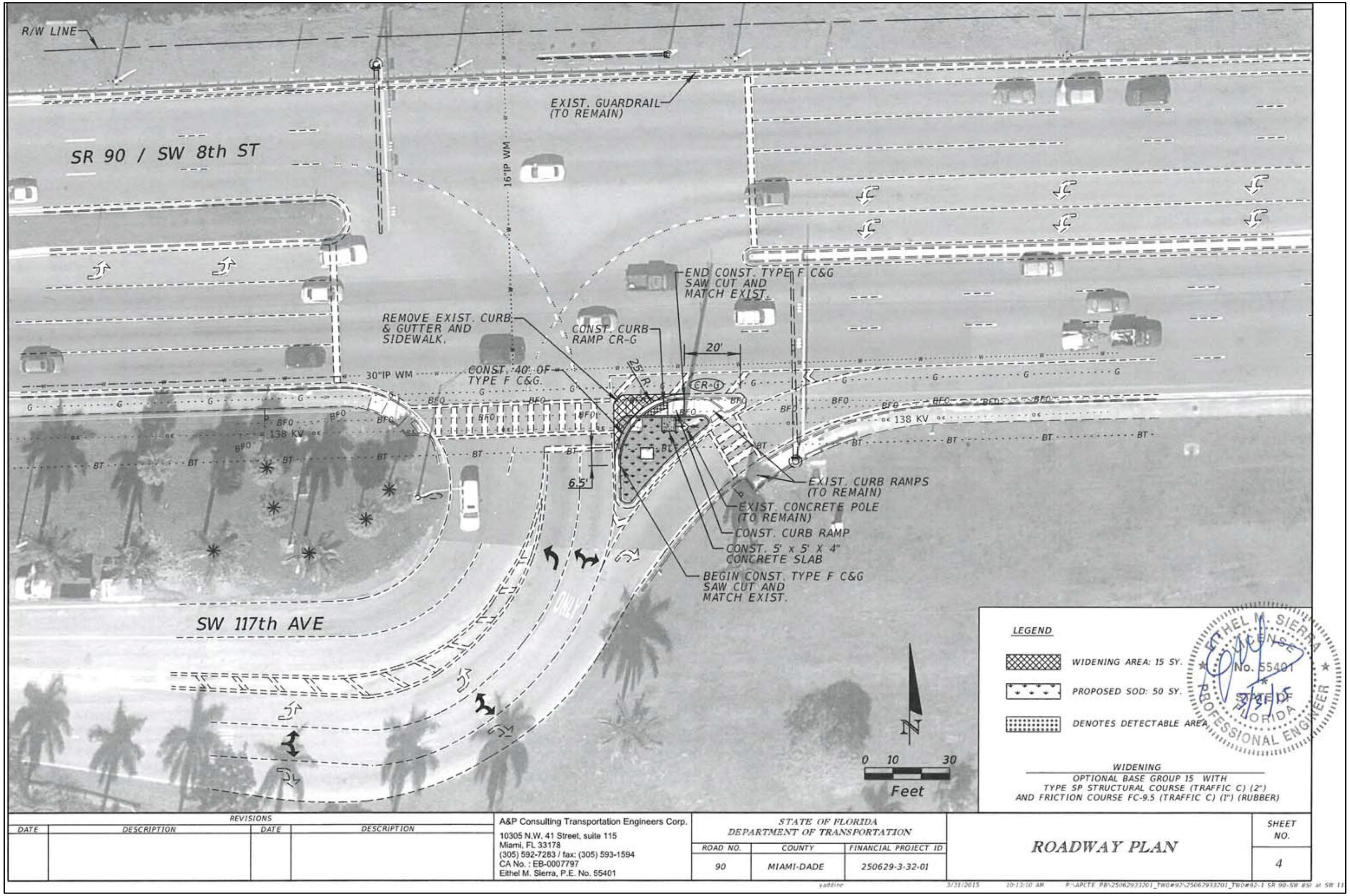
FDOT is planning to make some minor roadway improvements at the intersection of SW 117th Avenue and SW 8th Street that will change the geometry and likely the distribution of turning volumes for the future. Currently, SW 117th Avenue is a two lane road that widens as it approaches SW 8th Street. At this intersection, the northbound leg includes two exclusive left turn lanes controlled by a traffic signal, and one exclusive free-flow right turn lane. These turning movements are separated by a raised pedestrian refuge island.

The planned FDOT improvements will change the existing outside left turn lane from an exclusive left turn lane to a left or right turn lane, which will include new signage and pavement markings. The existing pedestrian refuge island between the exclusive right turn lane and the exclusive left turn lanes will be reconstructed to allow for right turns from the middle lane, as shown in Figure 15.

FIU currently has plans to improve the intersection at SW 117th Avenue and SW 12th Street at the western end of campus. This improvement is meant to enhance the western entrance / exit to the campus, helping to alleviate congestion within other parts of the campus. Therefore, higher volumes of traffic are anticipated coming from FIU's western end, likely traveling through the SW 117th Avenue / SW 8th Street intersection. The planned FDOT improvements at this intersection will better accommodate higher right turning volumes in light of FIU's planned improvements. Although there is not a finalized schedule for construction, FDOT's objective is to implement the proposed modifications before 2016.

The new geometry of this intersection will be incorporated in the network for the 2025 No-Build scenario.

Figure 15 – SW 117th Avenue Intersection Modifications



3.0 ALTERNATIVE DEVELOPMENT

3.1 Concept for Improvements

The Alternatives that are developed must address the issues and problems that have been identified in the corridor as part of the existing conditions analysis (Technical Memorandum 3). Because of the complexity of types of trips found in the study area, the potential solutions may require a mix of all the alternatives presented below, depending on the Tier I evaluation results and input from the Project Advisory Team.

Concepts for improvements include:

- Managed/Reversible Lanes
- Street Widening
- At Grade Improvements
- Grade Separations

3.2 Roadway Emphasis Improvements

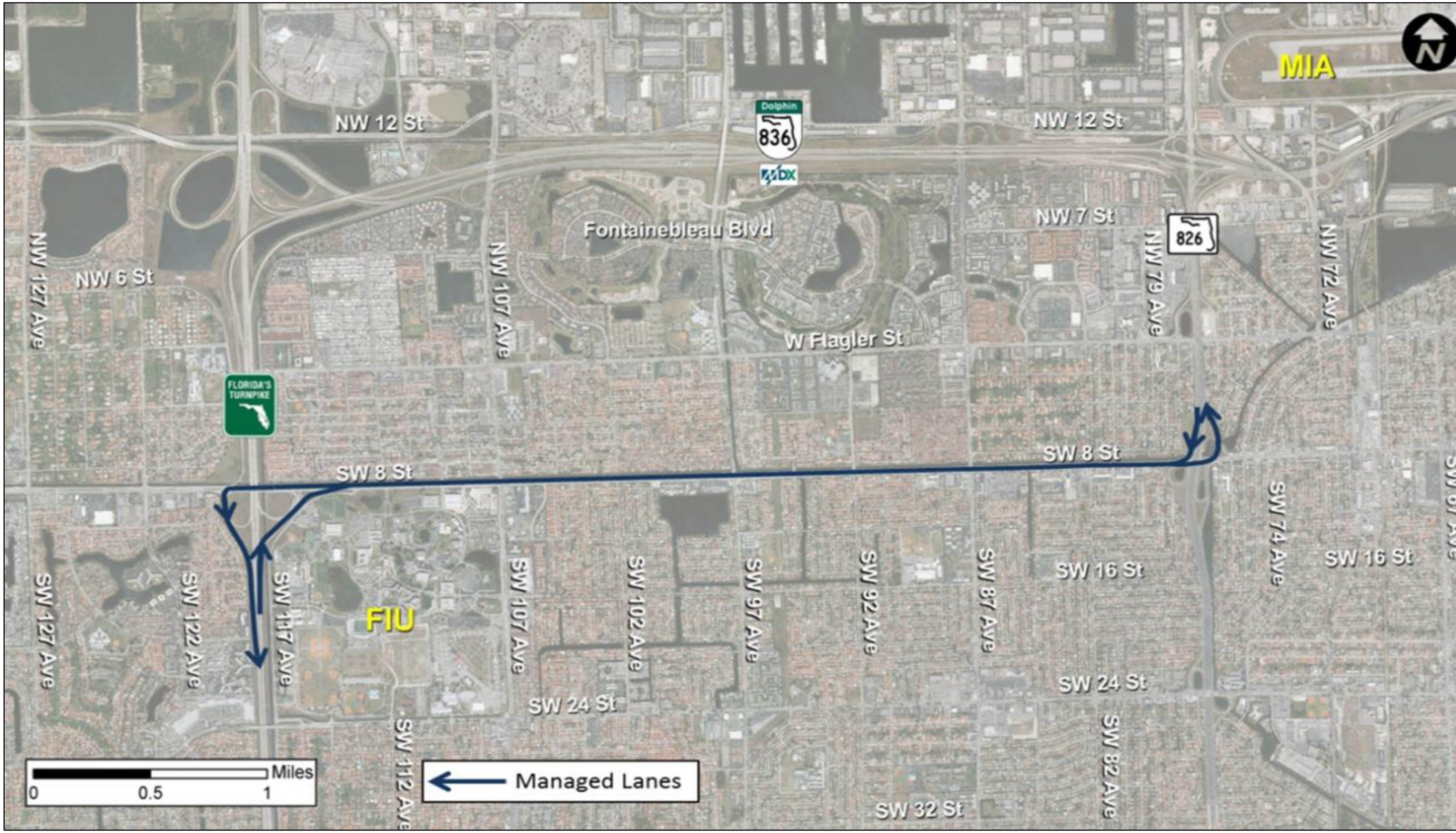
3.2.1 Managed/Reversible Lanes

A tolled managed lane alternative was evaluated connecting the HEFT and SR 826. The proposal would be for an elevated structure along the median of SW 8th Street. Direct ramps would be provided to the HEFT managed lanes and to the general purpose lanes on SR 826, as seen in Figure 16. The facility would be reversible: eastbound in the morning peak; and westbound in the afternoon peak. Gates would be used to control access to the off-peak ramps. A managed lane facility would only accommodate through trips in the corridor, however, this would provide some relief for local trips within the corridor.

After consideration, it was determined that the managed lanes were not a viable option for the corridor for several reasons. Managed lanes along SW 8th Street would duplicate the MDX plans for managed lanes on SR 836 between the HEFT and SR 826, which have funding for construction identified in the 2040 LRTP (Priority III; 2026-2030). Managed lanes are an extremely costly option, conflicts with other planned improvements, and would have major construction impacts in the corridor for both adjacent businesses and for commuters.

For these reasons the managed lane alternative was not evaluated any further in the Tier I analysis.

Figure 16 – SW 8th Street Managed Lanes Alternative



3.2.2 At-Grade Improvements at SW 107th Avenue

This alternative would increase the overall capacity of the intersection by modifying the lengths of the existing turn bays and closing some of the existing median openings. These proposed changes to the existing conditions of the intersection are illustrated in Figure 17.

After consideration, it was determined that the at-grade improvements at SW 107th Avenue would likely not be necessary due to the programmed road widening project mentioned as a part of the No-Build scenario. This road widening project will address some of the queuing and capacity issues at the intersection, thus not requiring additional at-grade roadway improvements.

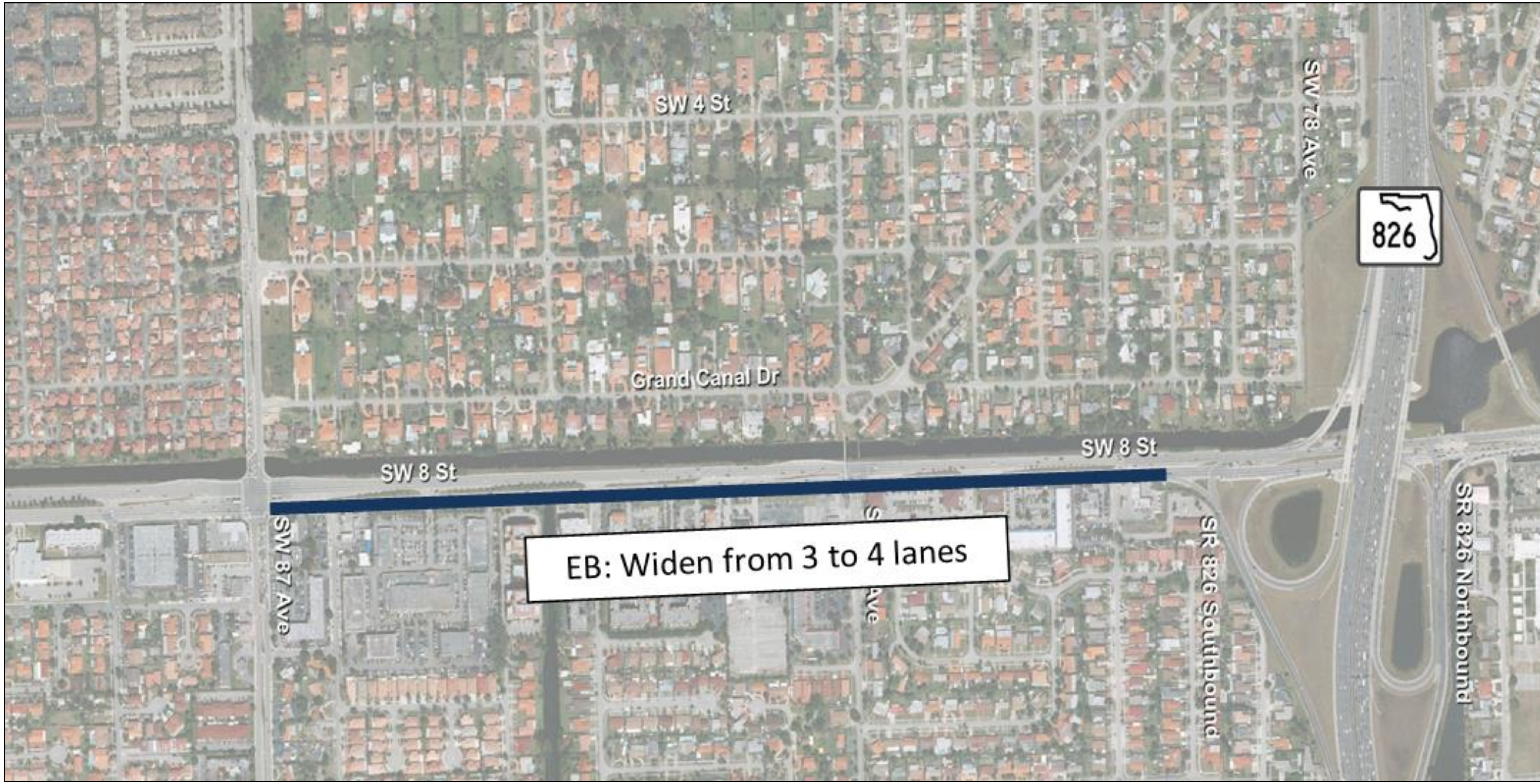
For this reason, the at-grade improvements at SW 107th Avenue will not be evaluated any further in the Tier I analysis.

3.2.3 Street Widening

SW 8th Street narrows from eight-lanes to six-lanes east of SW 87th Avenue. A potential alternative to improve traffic flow, especially during the AM peak period, would be to widen the eastbound three lane portion of SW 8th Street to four-lanes between SW 87th Avenue and SR 826, as seen in Figure 18 below.

Widening in the westbound direction is not required because there is no westbound bottlenecking and traffic is fairly free flow. This widening would help to further facilitate traffic movement eastbound from a potential grade separation at 87th Avenue. This alternative would require right-of-way to be acquired on the southern side of SW 8th Street. This alternative should consider a slight alignment shift of the roadway to the north towards the canal to reduce impacts to businesses, while also taking advantage of the potential right-of-way between the Tamiami Canal and the existing roadway.

Figure 17 – SW 8th Street Road Widening Alternative



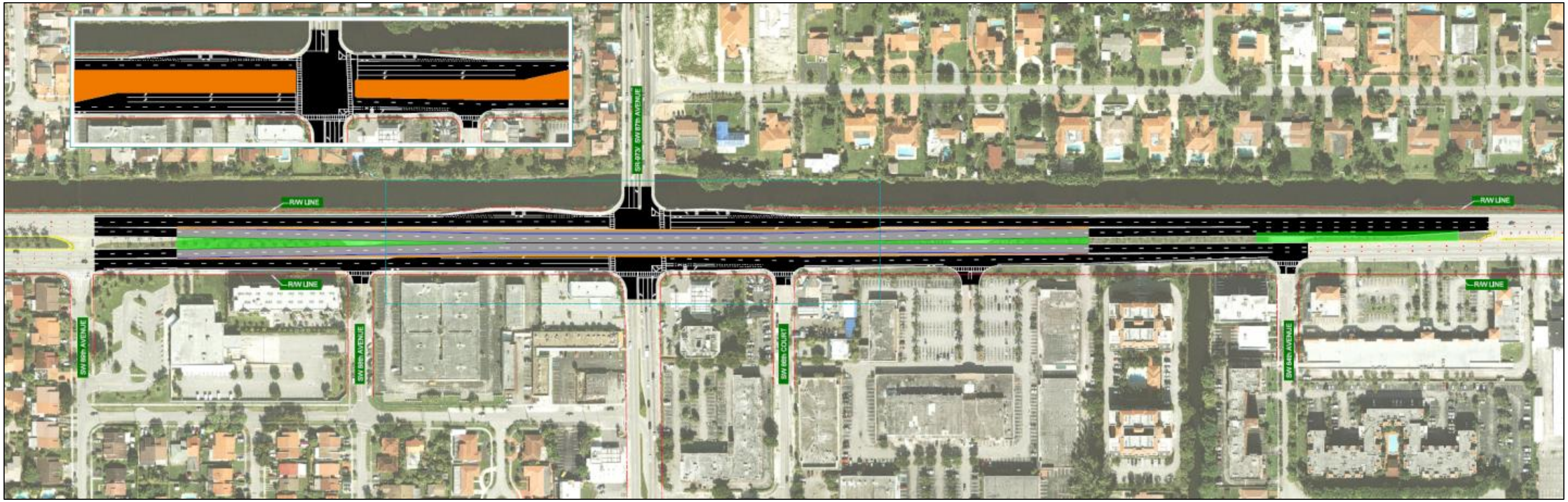
3.2.4 SW 87th Avenue Grade Separation

There are two high volume intersections along the study corridor that have been previously studied and will be further analyzed for a potential grade separation. The first is SW 8th Street at 87th Avenue.

The SW 87th Avenue grade separation was listed as an unfunded project in the 2035 LRTP and therefore not included in the No-Build consistent with the study methodology. The recently adopted 2040 LRTP lists this project as funded in Priority II (pre-engineering, right-of-way, and construction).

The proposed grade separation will provide two lanes in each direction for the east/west through traffic as seen in Figure 19 below. Two lanes will remain at grade for local access and turning movements. The bridge portion will be on structure and the required number of turn lanes at the intersection can be accommodated under the bridge. By removing the east-west through-traffic from the signal cycle, more green time can be provided to the congested north/south movements and all of the other at-grade movements. This will improve the operations of the at-grade intersection. This alternative does not have any right-of-way impacts and does not require any additional right-of-way.

Figure 18 – Grade Separation Alternative at SW 87th Avenue



3.2.5 SW 107th Avenue Grade Separation

The second grade separation to further analyze is SW 8th Street over 107th Avenue. Based on coordination with FDOT, FIU, and the MPO, multiple concept designs were developed and considered for this location. Major factors considered during design were the location of the touch down of the western end of the grade separation, existing and proposed turning movements, access into the FIU campus from SW 8th Street, and the future pedestrian bridge that is proposed to span SW 8th Street just west of SW 109th Avenue.

Currently, the existing condition on the eastern leg of the intersection is two left turn lanes (westbound to southbound), three westbound through lanes, and one exclusive right turn lane (westbound to northbound). The existing condition of the western leg of the intersection is two left turn lanes (eastbound to northbound), three eastbound through lanes, and one exclusive right turn lane (eastbound to southbound).

Conceptual designs that were developed for this grade separation but later discarded due to capacity or operational conflicts are included in **Appendix A**. These conceptual designs will not be further evaluated as a part of the Tier I Analysis due to "fatal flaws", such as eliminating access into FIU, conflicts with the proposed pedestrian bridge at SW 109th Avenue, and operational constraints such as limited roadway capacity. These alternatives included:

- Alternative #2: Grade Separation between SW 105th and SW 109th Avenues with one at-grade westbound travel lane between SW 107th and SW 109th Avenues that eliminates left turn access into FIU at SW 109th Avenue **(Appendix A)**
- Alternative #3: Grade Separation between SW 105th and SW 112th Avenues with two at-grade westbound travel lanes between SW 109th and SW 112th Avenues that eliminates left turn access into FIU at SW 112th Avenue **(Appendix A)**
- Alternative #4: Grade Separation between SW 105th and SW 112th Avenues with one at-grade westbound travel lane between SW 109th and SW 112th Avenues that eliminates left turn access into FIU at SW 112th Avenue **(Appendix A)**

After review, discussion, and ultimately recommendation by the study partners, it was determined that the alternative design to be included in the composite Build analysis is a grade separation from SW 105th Avenue to SW 109th Avenue with two grade separated lanes in both the eastbound and westbound directions, as illustrated in Figure 19 (Alternative #1). Considering the future growth anticipated in the Sweetwater and FIU area, this grade separation alternative prioritizes existing access into FIU as well as accommodates vehicular capacity, both for the existing and future conditions.

In order to maintain the left turn bays accessing FIU at SW 109th and SW 112th Avenues, this alternative proposes that the westbound grade separated lanes are constructed over the northern side of the roadway while the eastbound grade separated lanes are constructed over the median. Two at-grade lanes are provided in both directions between SW 105th and SW 109th Avenues.

Based on this preferred alternative, the westbound approach of the SW 107th Avenue intersection will have two left turn lanes (westbound to southbound), two grade separated westbound through lanes, two at-grade westbound through lanes, and one at-grade exclusive right turn lane (westbound to northbound). This design proposes four total westbound through lanes (two at-grade and two grade separated), which is one more through lane than what is currently provided. After passing through this intersection, two at-grade westbound through lanes will be maintained to accommodate future capacity needs, and to receive northbound-to-westbound turning traffic from SW 107th Avenue, as well as southbound-to-westbound turning traffic from SW 107th Avenue.

The eastbound approach of the intersection at SW 107th Avenue will maintain the existing left turn bays (eastbound to northbound), albeit both turning lanes being slightly shortened to 200’ to accommodate the grade separation. Two at-grade eastbound through lanes are proposed, which when combined with the two grade separated lanes, results in one more eastbound through lane than what currently exists. The existing exclusive right turn lane (eastbound to southbound) is also maintained.

The western touch down of the grade separation will land just east of SW 109th Avenue. In order to receive the two at-grade and two grade separated westbound lanes, the segment of SW 8th Street between SW 109th and SW 112th Avenues would be widened to four lanes. Southwest 8th Street will then be tapered back down to three westbound through lanes prior to reaching the intersection at SW 112th Avenue. This touch down and typical section configuration will not have any adverse impacts on the proposed pedestrian bridge since the pedestrian bridge is now being designed to touch down north of the Tamiami Canal, thus not impacted by any road widening.

This concept will require varying widths of right of way on the north side of SW 8th Street east of SW 109th Avenue. The maximum right of way width needed is 12 feet, although this width is less in other areas. The estimated length of right of way impact is just over 1700 feet. None of the right of way needed encroaches into the Tamiami Canal, although secondary impacts to the canal can be expected due to construction.

Operationally, at-grade right turning movements at SW 109th Avenue (westbound to northbound) cannot be accommodated because of the touch down of the grade separated lanes. Access to SW 109th Avenue for westbound vehicles wanting to travel northbound is limited to grade separated traffic only. Additional wayfinding signs will have to be provided to alert drivers wanting to access northbound SW 109th Avenue. This alternative also limits business access along SW 8th Street between SW 107th Avenue and SW 105th Place. Westbound traffic wishing to access businesses here must take an alternative route, such as making a U-turn at SW 107th Avenue / SW 8th Street.

High-level planning cost estimates were developed for the SW 107th Avenue grade separation concepts (with a touchdown at 109th Avenue and a touchdown at 112th Avenue.

As indicated in Appendix A, these cost estimates included roadway, bridge, and MSE wall costs. The roadway cost estimates were based on the FDOT Generic Cost per Mile Model and the bridge cost estimates were based on similar bridge structures with costs of $250 per square foot. The preferred 109th Avenue Alternative (Alternative #1 in Appendix) was estimated at approximately $31 million, while the alternatives with a touchdown at 112th Avenue were in the $42 million range due to the longer bridge lengths.

A grade separation at SW 107th Avenue and SW 8th Street was not included in this study's No-Build scenario. However, a grade separation project is listed as a funded Priority II project (pre-engineering, right-of-way, and construction) in the recently adopted 2040 LRTP.

Figure 19 – Grade Separation Alternative at SW 107th Avenue (Alternative #1)

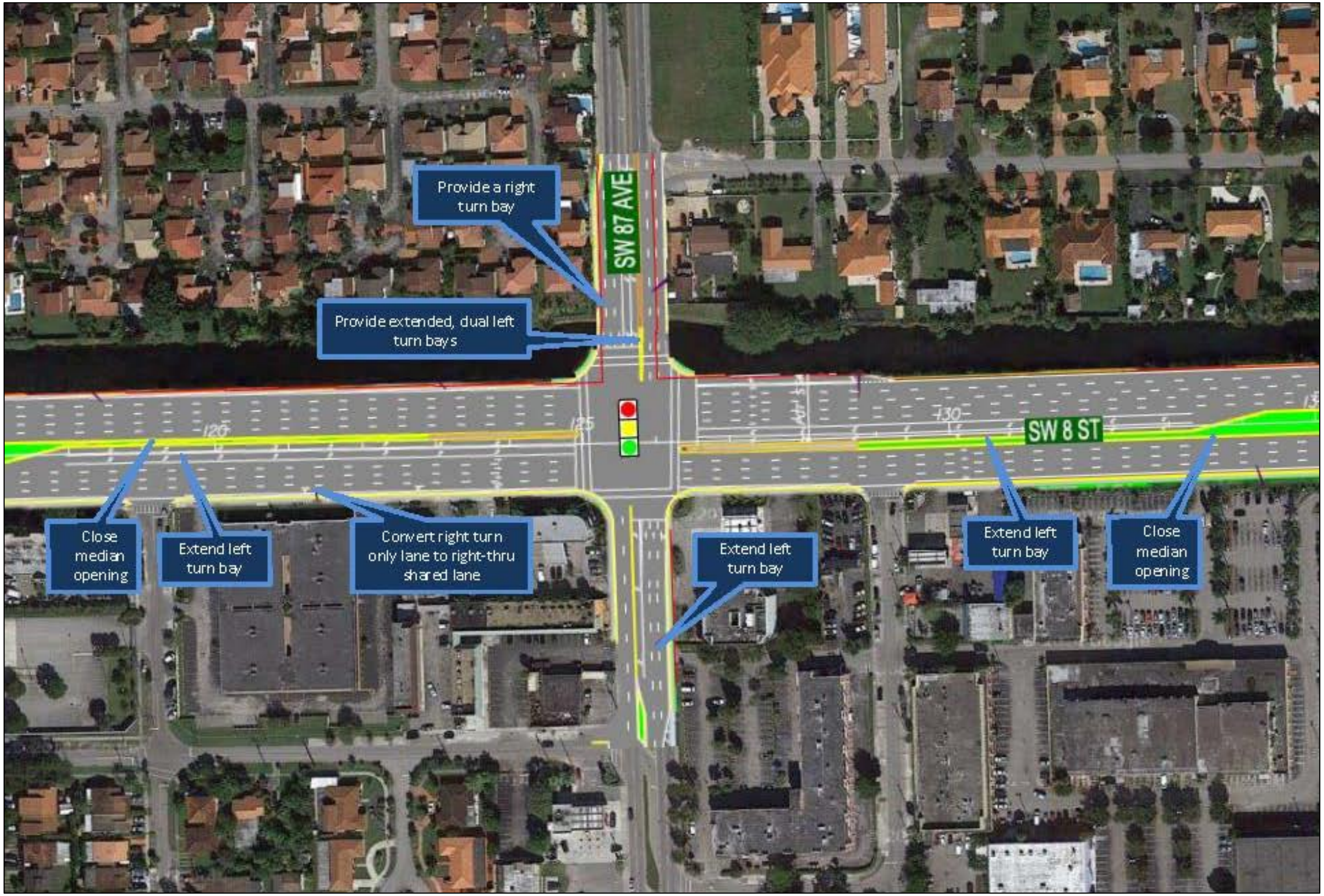
3.2.6 At-Grade Improvements at SW 87th Avenue

This alternative would increase the overall capacity of the intersection by modifying the lane configuration and the length of turn bays. These proposed changes are illustrated in Figure 21 below and include:

- Converting the right turn lane at the eastbound approach to SW 87th Avenue into a shared through/right turn lane for a total of four through lanes at this approach
- Providing a dual left turn for the SW 87th Avenue southbound approach to SW 8th Street
- Extending the left turn bays at all approaches at the intersection, which will require closing some mid-block median openings
- Providing a right-turn bay at the SW 87th Avenue southbound approach to SW 8th Street

The proposed at-grade improvements at SW 87th Avenue will require additional right-of-way at the southbound approach to SW 8th Street for additional left turn and right turn bays. Currently, the southbound approach has two through lanes and one exclusive southbound left turn lane. The right through lane is shared for right turn lanes. Existing right-of-way is approximately 75', inclusive of sidewalks on either side. A minimum of 22' of additional right-of-way would be needed to accommodate an additional left turn lane and an exclusive right turn lane. The southbound approach of the intersection is also directly above the Tamiami Canal, further increasing the cost of construction and adding to the potential impacts.

Figure 20 – At-Grade Improvements at SW 87th Avenue

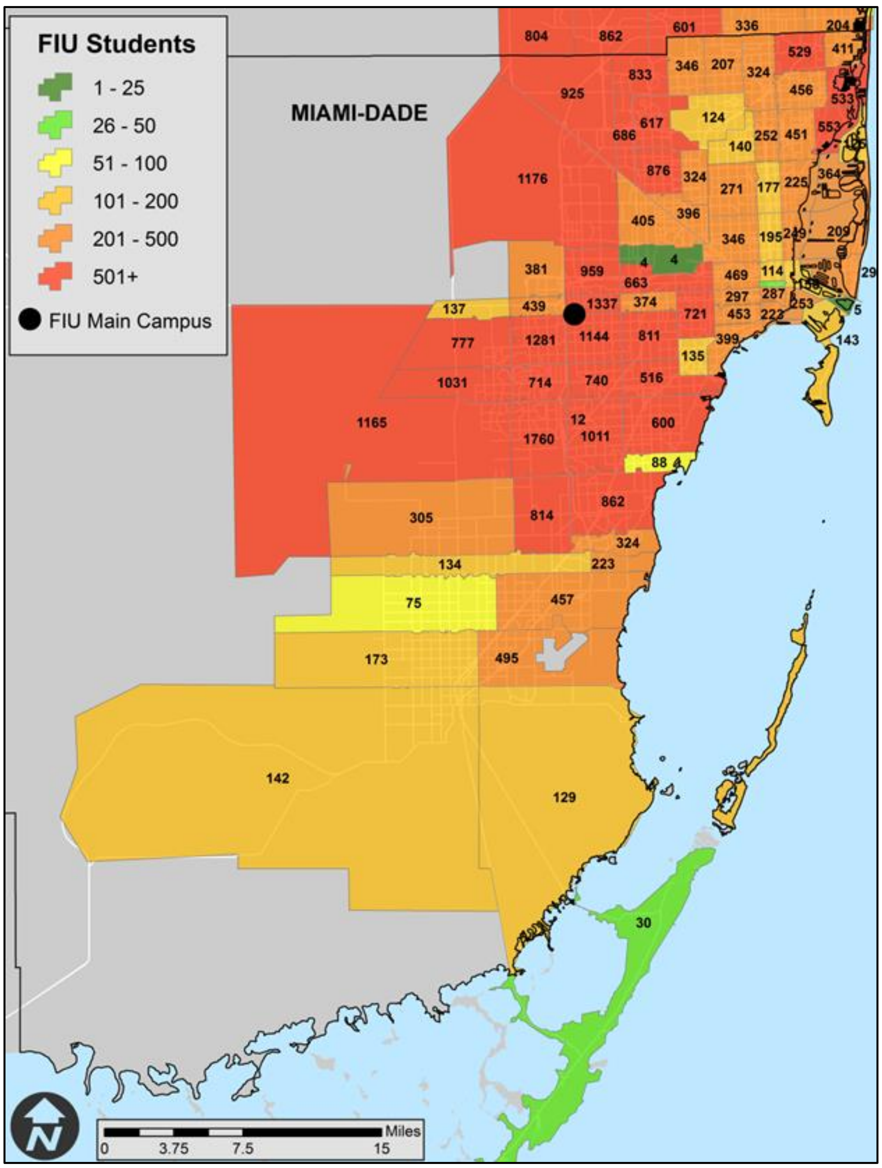


3.3 Transportation Demand Management and Transportation Systems Management and Operations Alternatives

3.3.1 FIU Rideshare Program

FIU administration should continue to work with both the South Florida ridesharing and vanpooling organizations to establish a more active ridesharing program for FIU students and faculty. Parking incentives such as free parking or priority parking should be provided for carpooling students. The University should also look to set up several van pools based upon student/faculty home addresses and schedules. Figure 22 illustrates the number of current FIU students for each zip code in Miami-Dade County.

Figure 21 – Distribution of FIU Students in Miami-Dade County

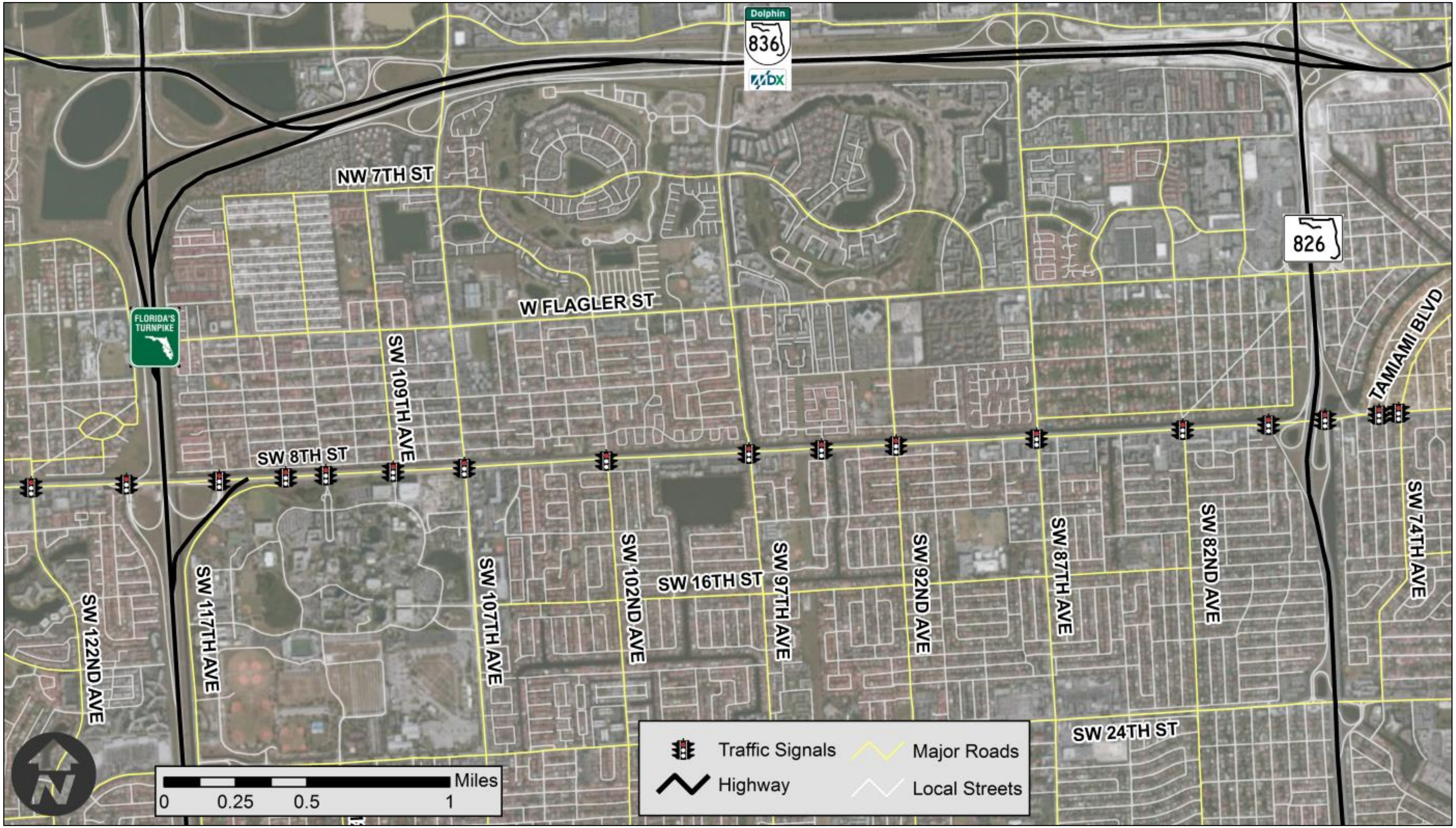


3.3.2 Adaptive Signal Control Technology Pilot Project

FDOT has joined forces with Miami-Dade County for the SR 90/US 41/SW 8th Street Adaptive Signal Control Technology (ASCT) Pilot Project. The new advanced system will be deployed along SW 8th Street from SW 67th Avenue (east of SR 826/ Palmetto Expressway) to SW 142nd Avenue (west of SR 821/Florida's Turnpike). This project accounts for 29 signalized intersections, which includes all 17 signals within the SW 8th Street Study Corridor, as illustrated in Figure 23 below.

In an attempt to improve the current signal timing technology and to reduce traffic delays, ASCT will determine which lights should be red and which should be green based on real-time data received and processed from strategically placed sensors. Research suggests that ASCT improves travel time by more than 10 percent. Project is scheduled to begin construction in the fall of 2015, followed by a two year evaluation period.

Figure 22 – Existing Signalized Intersections along SW 8th Street



3.4 Transit Alternatives

3.4.1 Rapid Bus Implementation – Flagler BRT

Two rapid bus services will be considered in a future alternative that would affect the project study area: a Flagler Bus Rapid Transit (BRT) and a SW 8th Street Enhanced Bus Service (EBS).

The alignment for the Flagler BRT service would begin at FIU (SW 112th Avenue and 8th Street) and would travel east on SW 8th Street, then turn north on SW 107th Avenue, then east onto Flagler Street to continue towards downtown (as depicted in Figure 24). This BRT service would operate in a repurposed existing curbside lane throughout and would be developed to meet the MAP 21/FTA BRT standards.

The curbside lane would be mostly exclusive to buses while allowing conditional use for vehicles making right turn movements into driveways and cross streets. Transit signal priority (TSP) would be available along the entire corridor, based on the established agreement between Miami-Dade Transit (MDT) and Public Works and Waste Management (PWWM) that TSP be provided for schedule adherence only (when buses are operating behind schedule). On the short segment of SW 107th Avenue between SW 8th Street and Flagler Street, the BRT service would operate in mixed flow traffic. The BRT would operate between the hours of 5:00 am and 7:30 pm with 10 minute headways in both directions during the peak periods and 20 minute headways during off peak.

This alternative would build upon MDT plans for a Flagler Street Enhanced Bus Service (EBS), which is part of the No-Build improvements. The Flagler Street EBS has approximately $15.7 million programmed in the 2015 Transportation Improvement Program (TIP) for EBS improvements, and is planned to replace MDT Route 51 (Flagler MAX).

The proposed alternative for this study recommends converting the Flagler Street EBS to a full bus rapid transit (BRT) service between FIU and Downtown Miami to further enhance service reliability and attract new riders. The Flagler Street BRT is currently an unfunded project in the 2040 LRTP.

Figure 23 – Proposed W Flagler Street BRT Alignment

3.4.2 Rapid Bus Implementation – SW 8th Street EBS

The SW 8th Street EBS would operate between FIU and Downtown Miami as depicted in Figure 25. Figure 26 shows the existing MDT Route 8, which has three different run alignments out of downtown. Every third bus leaving Downtown Miami either operates on Coral Way to FIU, on SW 8th Street to FIU, or does a short turn at SW 94th Court and Coral Way. Because of the distinct routes, headways leaving downtown are erratic. During the peak, various Route 8 trips leave downtown Miami every 10, 15 or 20 minutes, but only operate through the study area every 30 minutes during the peak.

This alternative would complement the existing local service (Route 8) with a new premium bus service that would provide 10 minute peak hour headways between FIU and the downtown Wolfson Campus of Miami Dade College. Stops would be spaced at approximately every mile and bus stations would be identified with unique branding that helps to distinguish the premium EBS from the traditional local bus service. A SW 8th Street EBS for the corridor is referenced in the 2040 LRTP, but currently is unfunded.

Figure 24 – Proposed SW 8th Street EBS Alignment

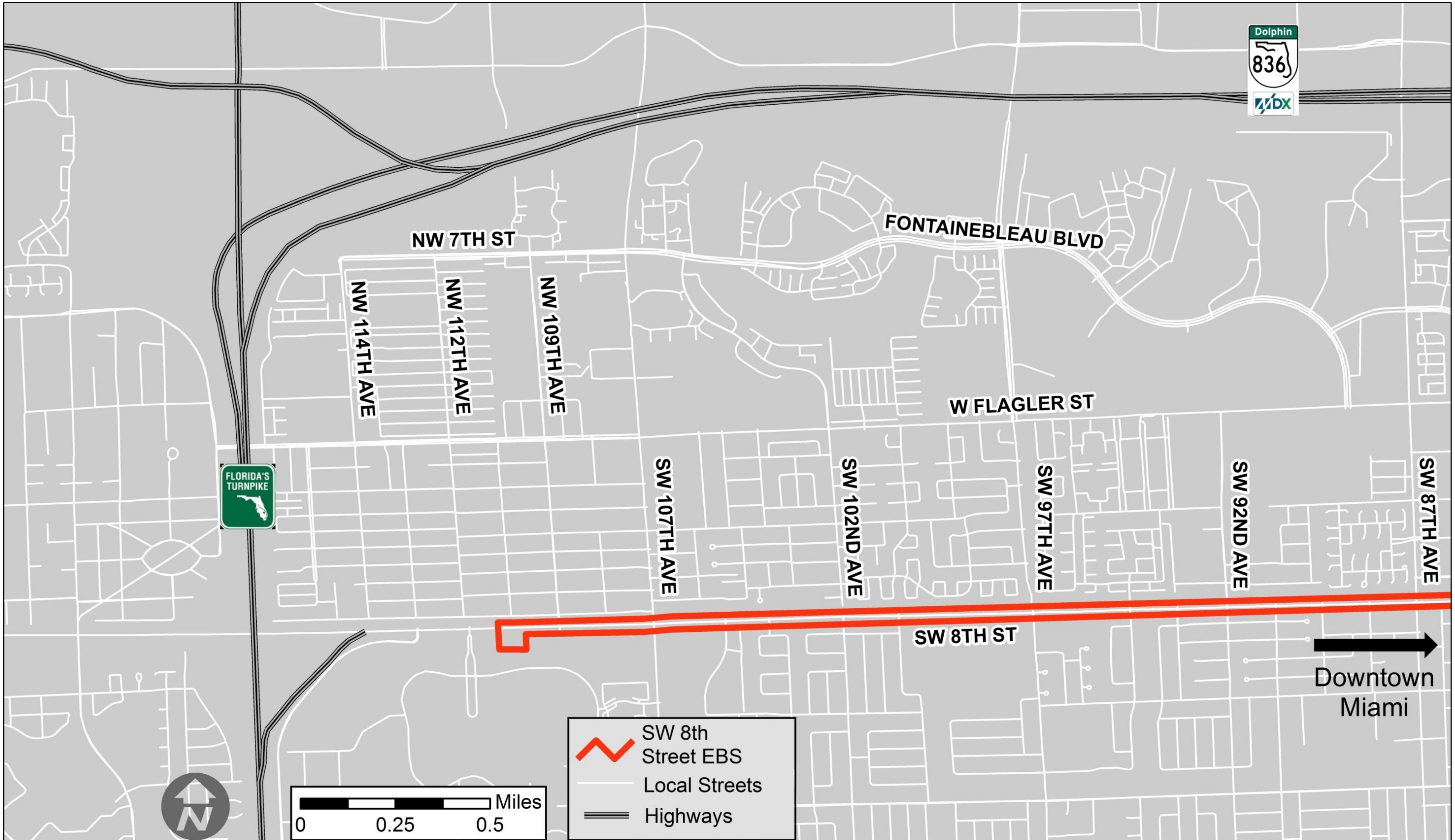
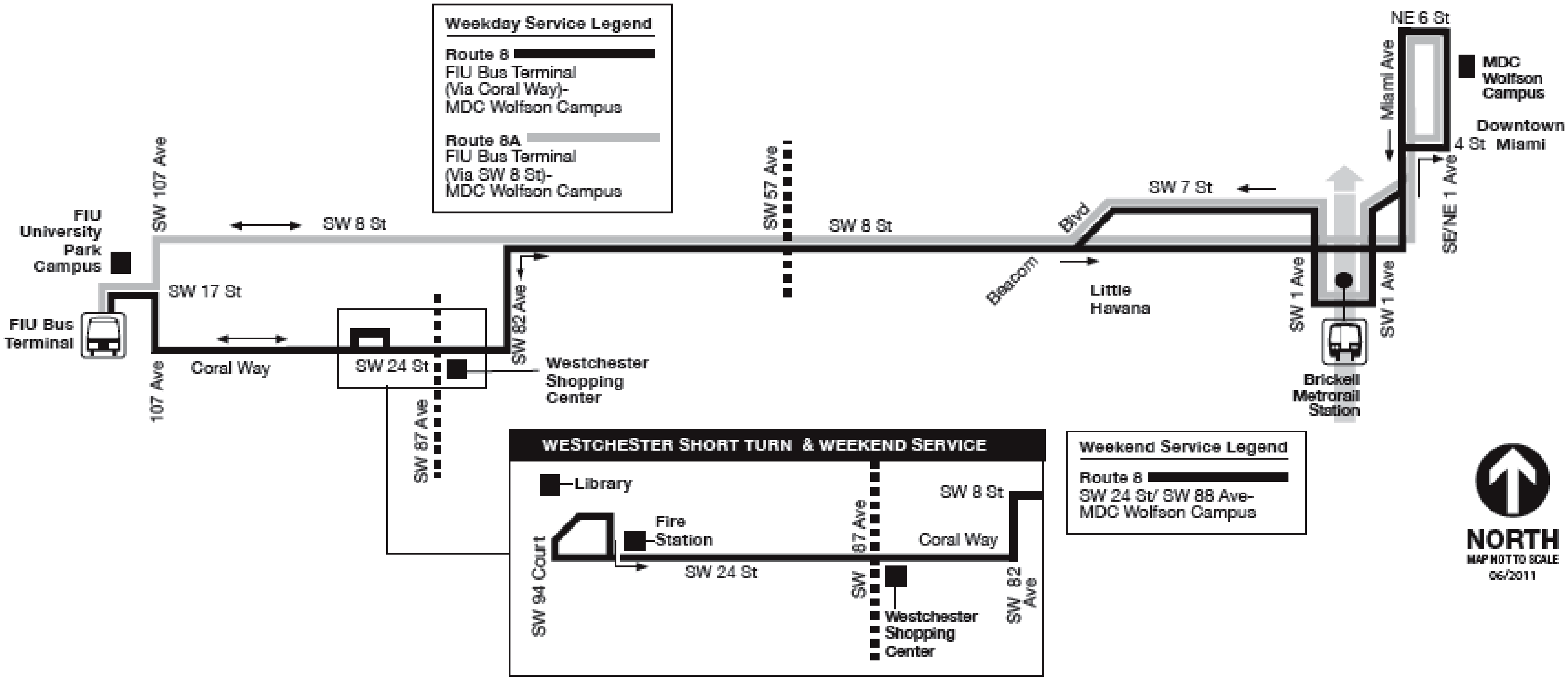


Figure 25 – Existing MDT Route #8 Alignment



3.4.3 Eastbound to Northbound Flyover at SW 107th Avenue

A grade separated flyover at the intersection of SW 107th Avenue dedicated for eastbound buses heading northbound at SW 107th Avenue would decrease travel times for transit vehicles and help to improve service reliability.

Ideally, this alternative would continue the exclusive bus lanes (from the new access plans around the FIU Transit Terminal referenced previously) to the flyover. The eastbound exclusive bus lane would cross the SW 109th Avenue intersection and merge onto the flyover while remaining in the outside-most lane. The flyover would then continue northbound on SW 107th Avenue until landing in the median near SW 5th Street, as seen in Figure 27 below.

An alternate design was developed that features a flyover starting in the median along SW 8th Street and landing in the median along SW 107th Avenue. This alternate design is included in Appendix B. The major issue with this design was the elimination of the eastbound to northbound left turn lanes at SW 107th Avenue. Therefore this alternate design was not considered for further evaluation.

The selected design would require additional right-of-way (from FIU) along SW 8th Street east of SW 109th Avenue as well as one existing eastbound general purpose lane to continue the proposed exclusive bus lane to the flyover. The aforementioned SW 107th Avenue road widening project, that is a part of the 2025 No-Build scenario, plans to acquire additional right-of-way on either side of SW 107th Avenue. Therefore, no additional right-of-way along SW 107th Avenue would likely be needed for this alternative.

The design plans for the SW 107th Avenue road widening project have three (3) northbound through lanes, three (3) southbound through lanes, two (2) eastbound left turn lanes, a southbound right turn lane, and a bike lane in each direction. The proposed flyover alternative does not alter the typical section proposed for the widening. The major difference between the SW 107th Avenue road widening typical section and the flyover typical section is the northbound through lanes. There are three (3) northbound through lanes in both scenarios. With the proposed flyover scenario, two (2) lanes are at-grade and another lane is grade separated (and for transit only). Ultimately, the flyover lands near SW 5th Street to create a total of three (3) at-grade, northbound lanes. Vehicles traveling north along SW 107th Avenue would have to merge from 3 through lanes to 2 directly after crossing SW 8th Street because the flyover would be in the median of the roadway, thus eliminating one through lane.

The flyover alternative would also reduce the number of eastbound through lanes on SW 8th Street between SW 109th and SW 107th Avenues from four (4) lanes to three (3) lanes with the lane drop and merge occurring just east of the intersection at SW 109th Avenue, as illustrated in Figure 27 below. The existing eastbound to northbound dual left turn lanes would not be impacted by this flyover alternative, nor would the eastbound to southbound exclusive right turn lane.

Figure 26 – Eastbound to Northbound Flyover at SW 107th Avenue

4.0 TIER I EVALUATION

4.1 Criteria

Each of the individual Tier I alternatives described in this technical memorandum will be evaluated against the same set of criteria. The Tier I evaluation was mostly qualitative ranking, whereby the criteria established below received a ranking from -1 to 2, whereby negative values were given to alternatives with undesirable impacts. Therefore, the alternatives with the highest ordinal scores were considered to best meet the objectives of this study and will be carried forward into a Tier II evaluation, while the alternatives with the lowest scores will be dropped from further consideration. Alternatives that are carried through to the Tier II evaluation, and can be modeled from an operations perspective, will be included in the composite Build alternative for analyzing future year conditions. The Tier I evaluation was discussed in conjunction with the Project Advisory Team. The following criteria were used for the evaluation:

- **Impact on Corridor Mobility**
  - +2=Improves travel time through the corridor,
  - +1=Provides spot improvements to traffic,
  - 0=No noticeable improvement to traffic in the corridor
- **Mode Split**
  - +2=Increases modal options into and through the corridor,
  - +1=Little impact on mode split
  - 0=No impact on Mode Split
  - -1=Encourages use of the automobile over other modes
- **Impact on Cross-Street Mobility**
  - +2=Improves movements in the intersection,
  - +1=Improves 1 set of movements,
  - 0=No improvements
  - -1=Negative impact on intersection
- **Safety**
  - +2=Improves conditions at high crash intersection
  - +1=Improves conditions along high crash segments
  - 0=No changes to high crash areas
- **Impact on Local Business**
  - +1=Improves access to businesses,
  - 0=No impact on business access,
  - -1=Reduces access to businesses
- **Capital Costs**
  - +1=Low Capital Costs,
  - 0=Medium Capital Costs,
  - -1=High Capital Costs

- **Operating and Maintenance Costs**
  - +1=Low O&M Costs,
  - 0=Medium O&M Costs,
  - -1=High O&M Costs

- **Constructability**
  - +1=Minimal impacts during construction
  - 0=Acceptable impacts during construction
  - -1=Major impacts during construction

- **Consistency with Local Plans**
  - +1=Present in adopted plans,
  - 0=Not addressed in local plans,
  - -1=Conflicts with local plans

4.2 Evaluation

Table 2 provides results and recommendations of the alternative evaluation followed by a more detailed discussion of which alternatives will be part of the composite Build alternative due to their higher scores.

Table 2: Tier I Evaluation

	Street Widening	87th Avenue Grade Separation	107th Avenue Grade Separation	At-Grade Improvements at SW 87th Avenue	FIU Ridesharing	Adaptive Signal Project	Flagler BRT	SW 8th Street EBS	EB to NB Flyover at SW 107th Avenue
Corridor Mobility	0	1	1	1	0	2	0	0	1
Mode Split	0	0	0	0	1	0	2	2	1
Cross-Street Mobility	0	2	2	2	0	2	0	0	1
Safety	0	2	2	2	0	0	0	0	0
Local Business	0	-1	-1	-1	0	0	0	0	0
Capital Costs	0	-1	-1	0	1	1	-1	0	-1
O&M Costs	1	0	0	0	1	0	-1	-1	0
Constructablity	0	-1	-1	-1	1	1	0	0	-1
Right of way	-1	0	0	-1	1	1	0	0	-1
VMT	0	-1	-1	-1	1	-1	1	1	-1
VHT	1	1	1	1	1	1	1	1	1
Local Plans	-1	1	1	0	1	1	1	0	0
Total Score	**0**	**3**	**3**	**2**	**8**	**8**	**3**	**3**	**0**

** Note that At-Grade Improvements at SW 87th Avenue will not be included in the Build Alternative because of proposed grade separation

Included in the Build Alternative
Will not be modeled as a part of the Build Alternative
Not included in the Build Alternative

4.2.1 Street Widening

The eastbound widening between SW 87th Avenue and SR 826 may be important to the operation of an ultimate SW 87th Avenue Grade Separation Alternative, while also providing improvements to local and cross-street mobility. However, the widening will provide little benefit to the bottleneck issues that occur as a result of the lane reductions on SW 8th Street east of the SR 826 interchange. Moreover, although the eastbound widening can be accomplished with minimal impacts to traffic operations, nearly a mile of roadway will need to be shifted north slightly, adding additional costs for roadway and median reconstruction.

Recommendation: To accommodate this widening, there would be a necessary shift of SW 8th Street north towards the Tamiami Canal to avoid acquiring additional right of way along the businesses on the south side. However, widening this short segment of SW 8th Street would provide little benefit to the bottlenecking already occurring near SR 826 (which is a result of the typical section change of SW 8th street east of SR 826). Therefore, it is recommended that this alternative be dropped from further consideration.

4.2.2 SW 87th Avenue Grade Separation

The 4-lane grade separation over SW 87th Avenue will improve both cross-street and corridor mobility, however, it will not improve mode split. Although local access to businesses will be maintained, westbound traffic would have to perform U-turns to access most businesses. The grade separation will reduce the visibility of businesses on the south side of the facility and may result in some local opposition. The proposed concept would have major impacts on traffic during construction. The capital cost is considered high and there will be O&M costs related to maintenance of the bridge structure.

Recommendation: Continue consideration for implementation.

4.2.3 SW 107th Avenue Grade Separation

A grade separation concept over SW 107th Avenue would improve both cross-street and corridor mobility, however, it will not likely improve mode split. Although the grade separation will maintain local access, some westbound traffic will have to perform U-turns to access businesses on the south side of SW 8th Street. The grade separation would also reduce the visibility of businesses on the south side of the facility and may lead to some local opposition. The current design requires right-of-way to be acquired on the northern side of SW 8th Street between SW 109th and SW 112th Avenues to provide an additional westbound travel lane, which will be tapered back down to three through lanes before the intersection at SW 112th Avenue. The capital cost is considered high and there will be O&M costs related to maintenance of the bridge structure.

Recommendation: Continue consideration for implementation.

4.2.4 At-Grade Improvements at SW 87th Avenue

This project would help to improve corridor and cross-street mobility. The at-grade improvements would likely have little impact on improving mode split or safety. Some median openings will need to be closed along SW 8th Street to extend the left-turn bays, which will limit the access to existing local businesses.

Recommendation: Because of the decreased access to local businesses and the evaluation of a grade separation alternative at this location, it is recommended to drop this alternative from further consideration.

4.2.5 FIU Ridesharing

The expansion of the existing FIU ridesharing program would be relatively inexpensive to implement and operate. There would be no negative impacts to the program. Depending upon the success of the programs offered, ridesharing could have a positive impact on mode split.

Recommendation: Continued implementation by others.

4.2.6 Adaptive Signal Program

The FDOT demonstration project on SW 8th Street would have a positive impact on local and corridor mobility. The project would have no negative impacts in the corridor. The capital and operating costs would be relatively low compared to most other alternatives.

Recommendation: Continued implementation by others.

4.2.7 Flagler BRT

This project would operate on SW 8th Street between SW 112th Avenue and SW 107th Avenue and would have minimal impacts on cross-street mobility. A traffic analysis would have to be completed to determine the impact to traffic by repurposing a lane for transit use along the corridor. For the portion along SW 8th Street, the only impact to traffic would be the increased delay for vehicles at SW 112th Avenue in order to accommodate an additional signal phase for bus U-turns, which all buses would require when accessing the FIU terminal from SW 8th Street (also part of SW 8th Street EBS). Since the transit project terminates at FIU, it would likely have a positive impact on mode split for trips going to and from FIU. The BRT project would have a medium capital cost but one of the higher operating and maintenance costs.

Recommendation: Continue consideration for implementation as it is the most important transit improvement for improving the mode split and mobility along the corridor and builds upon MDT short term plans. This project is scheduled for a Project Development and Environment Study by FDOT in 2016.

4.2.8 SW 8th Street EBS

This project would provide an opportunity to improve the mode split in the corridor by providing an alternative to the single-occupant automobile. SW 8th Street EBS would have similar traffic impacts at the SW 112th Avenue signal as the Flagler BRT alternative because of the need for a protected U-turn movement to access the FIU terminal. This alternative would have similar capital and operating costs as the Flagler Street EBS project (which has funding in the TIP).

Recommendation: This alternative would serve similar needs to the Flagler Street BRT alternative, and therefore would be dropped from further consideration to avoid duplicative transit service. Currently, SW 8th Street is not considered a priority transit corridor by Miami-Dade Transit (MDT).

4.2.9 Eastbound to Northbound Flyover at SW 107th Avenue

This project would decrease the intersection delay for buses travelling northbound on SW 107th Avenue from SW 8th Street. Transit speeds and travel time would improve, thus likely improving the mode split in the corridor. Cross streets along SW 107th Avenue between SW 8th Street and SW 5th Street would have reduced mobility due to the median being blocked by the flyover. A driveway accessing FIU just east of SW 109th Avenue would be eliminated due to the flyover. There would be major issues during construction that would adversely impact traffic operations at this intersection, and thus, the corridor. This alternative would also have high capital costs.

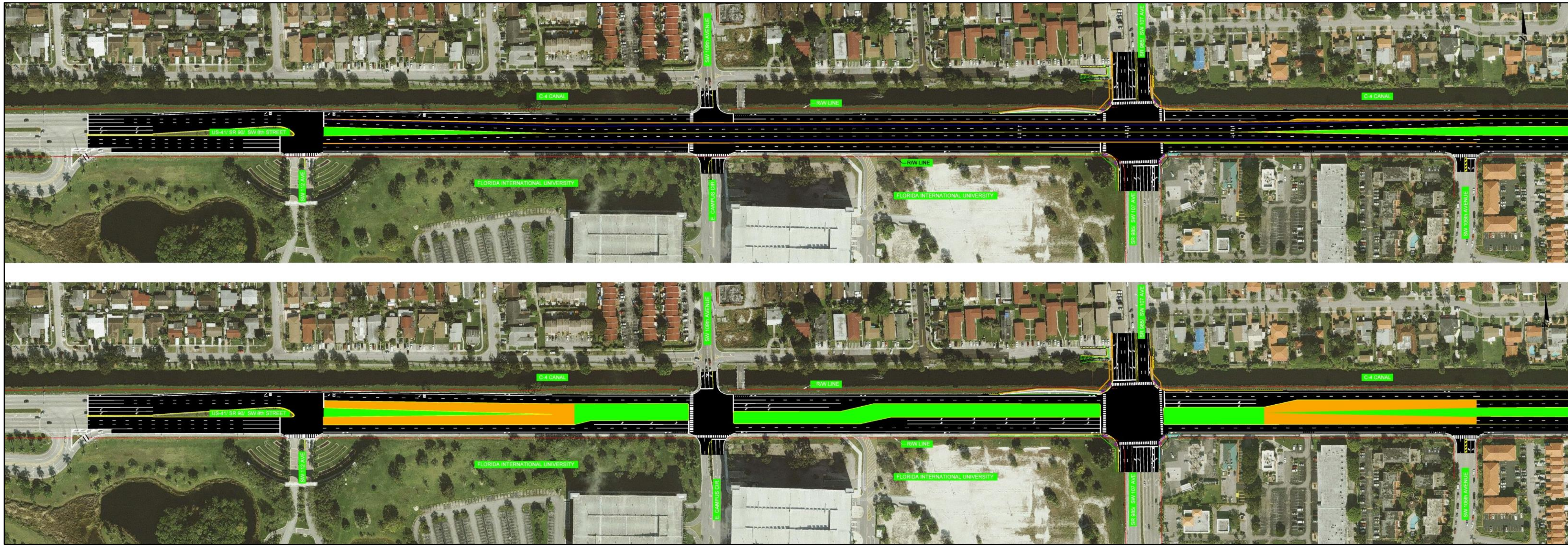
Recommendation: Only ten buses during the peak hour are proposed to make the eastbound to northbound turn onto SW 107th Avenue from SW 8th Street, which is not significant enough to justify the need for the flyover. Additionally, there is a school just north of SW 8th Street on SW 107th Avenue which may create issues for the touchdown of the flyover. This alternative is not recommended for further evaluation.

Appendix A – Alternate Grade Separation Designs at SW 107th Avenue and SW 8th Street

Alternate #2 – SW 107th Avenue Grade Separation

Alternate #3 – SW 107th Avenue Grade Separation

Alternative #4 – SW 107th Avenue Grade Separation



Appendix B – Alternate Flyover Designs at SW 107th Avenue and SW 8th Street

Alternate SW 107th Avenue Flyover

Appendix E – Technical Memorandum #5 - Conceptual Alternatives Analysis

SW 8TH STREET CORRIDOR STUDY - CONCEPTUAL ALTERNATIVES ANALYSIS TECHNICAL MEMORANDUM #5

DRAFT

MIAMI-DADE
METROPOLITAN
PLANNING
ORGANIZATION

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November 2015

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1.0 INTRODUCTION

The SW 8th Street Corridor Study limits extend from SW 74th Avenue to SW 122nd Avenue (approximately 4 miles) and includes interchanges with both the Florida's Turnpike and the Palmetto Expressway (SR 826). SW 8th Street is predominantly an eight-lane divided facility that narrows to six lanes east of SW 87th Avenue then narrows again to a 4 lane facility east of SR 826.

The Tamiami Canal is located along the north-side of the roadway and limits the number of intersections with northern approaches. The right-of-way line on the northern side of SW 8th Street extends to the edge of the canal, which varies along the corridor. At most locations, the available right-of-way on the north is between 10 to 17 feet with some locations, such as at existing bus bays, narrowing to five (5) feet. The southern side of SW 8th Street is mostly developed with commercial land uses extending to the edge of right-of-way. Therefore, the northern side of the roadway offers the most right-of-way to accommodate any improvements to the corridor.

Figure 1 shows the study project location map. **Figures 2 through 6** detail the modified typical sections, and existing right-of-way, following a recently completed Florida Department of Transportation (FDOT) resurfacing project. This project added four (4) foot-wide bicycle lanes on both sides of the roadway, turbo-lanes at several of the T-intersections, and improved markings, signing and channelization. The turbo-lanes are located at SW 102nd Avenue and SW 99th Place.

This technical memorandum briefly summarizes the findings of the existing conditions analysis (detailed in Technical Memorandum No. 3), which became the basis for the proposed conceptual alternatives (detailed in Technical Memorandum No. 4) and recommended build concepts. The main purpose of this technical memorandum is to provide results of the detailed analysis of the future conditions with the recommended alternative.

Figure 1 – Project Location

Figure 2 – Existing Typical Sections (1)

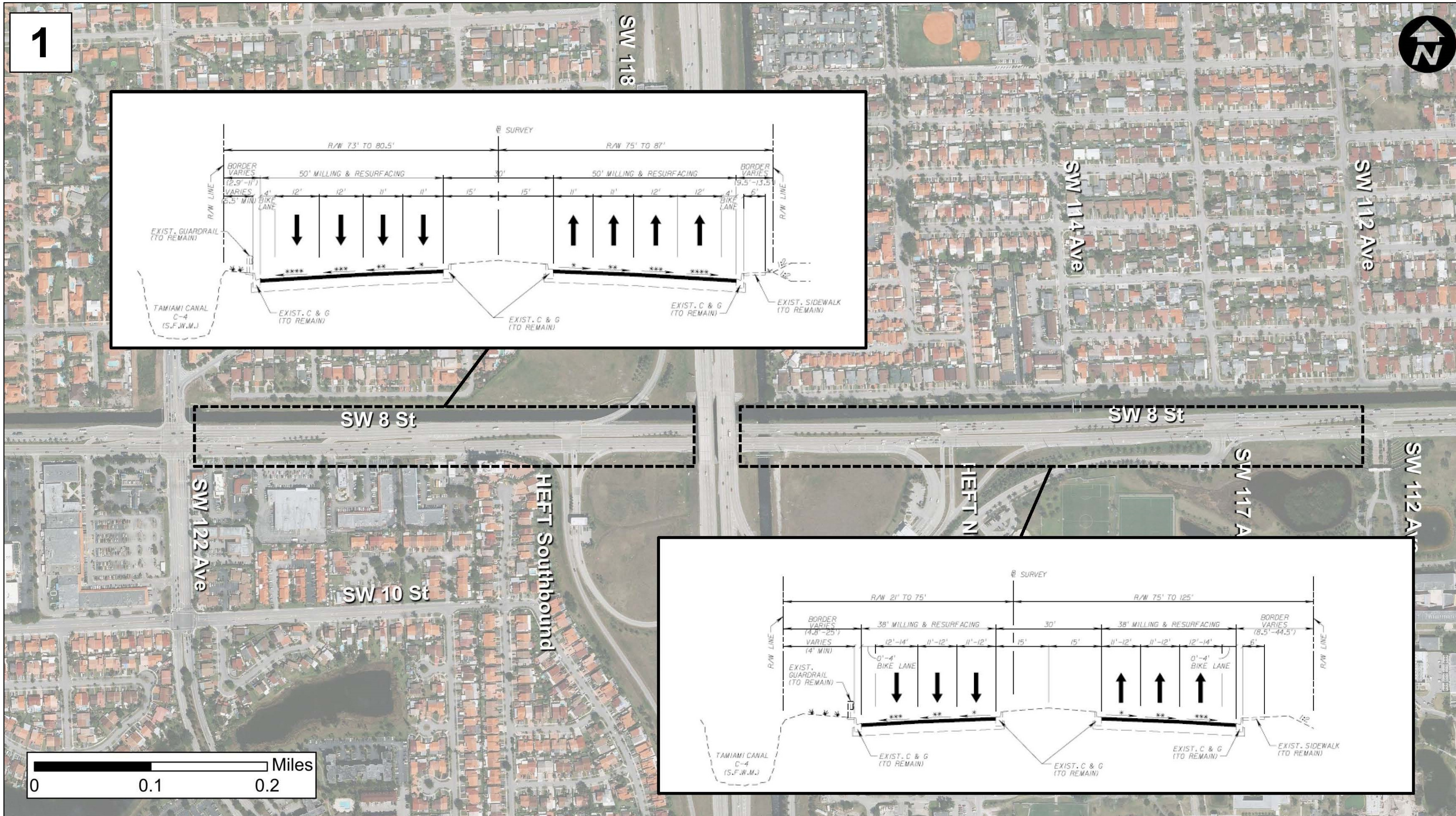


Figure 3 – Existing Typical Sections (2)

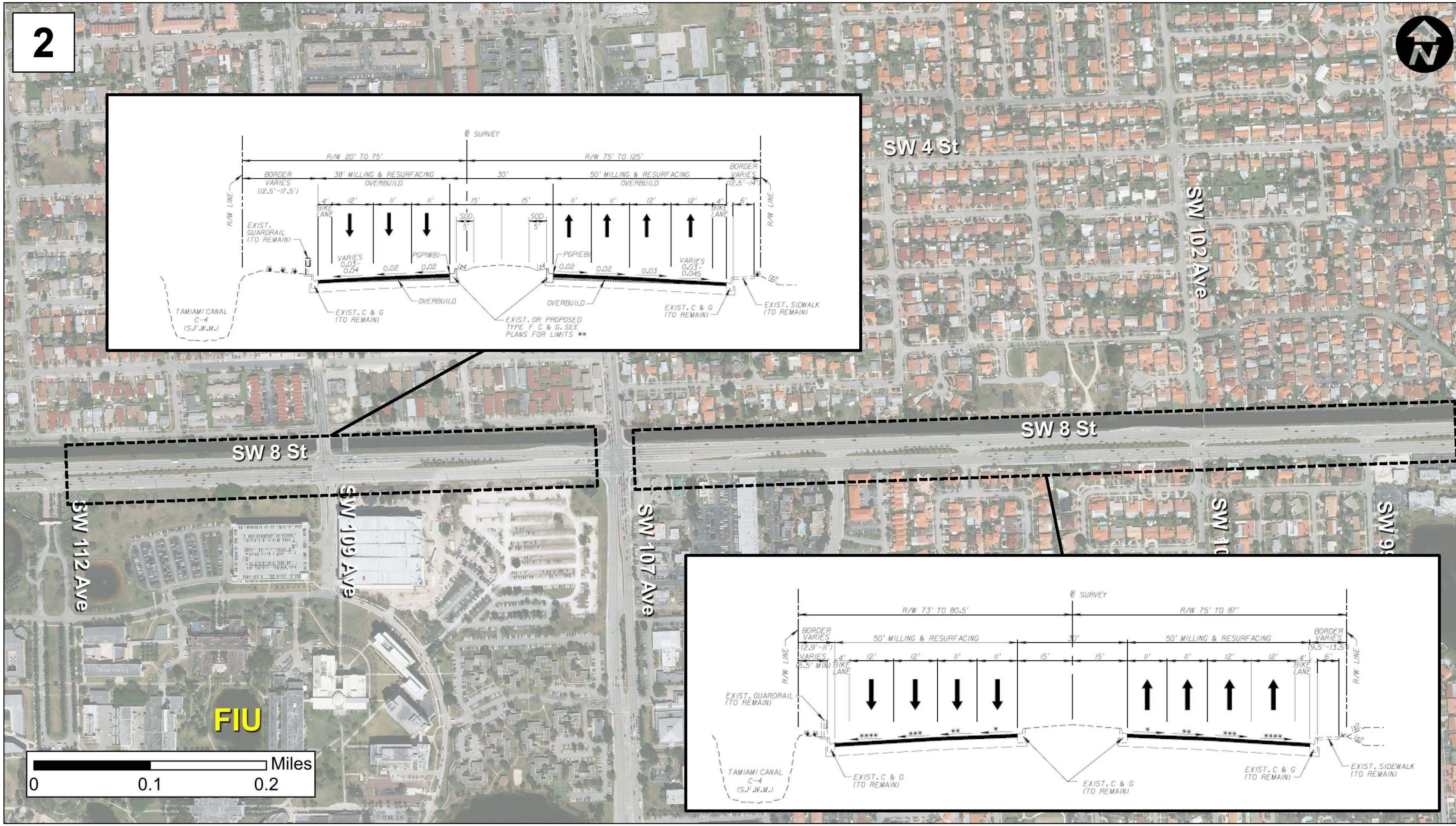


Figure 4 – Existing Typical Sections (3)

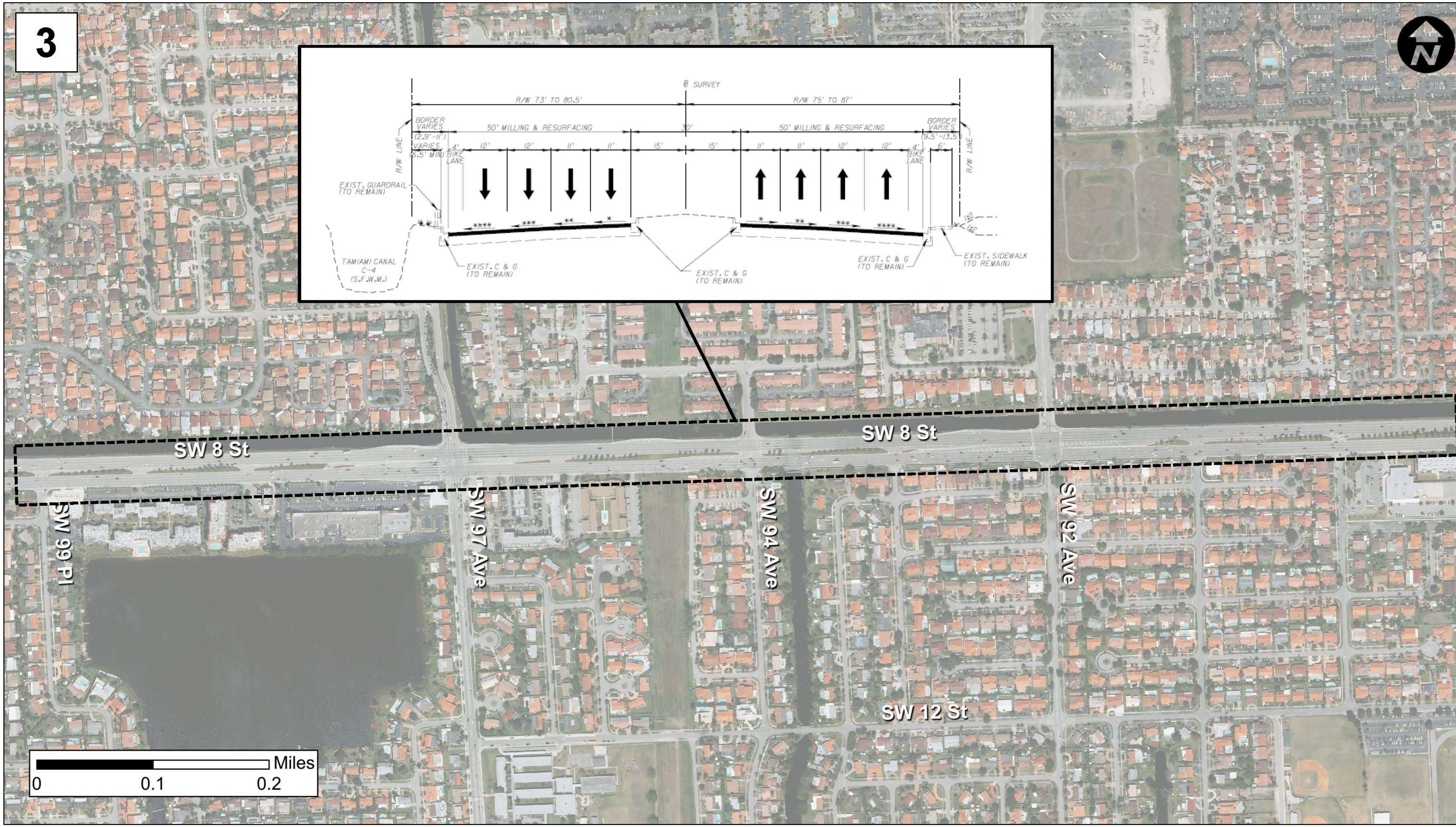


Figure 5 – Existing Typical Sections (4)

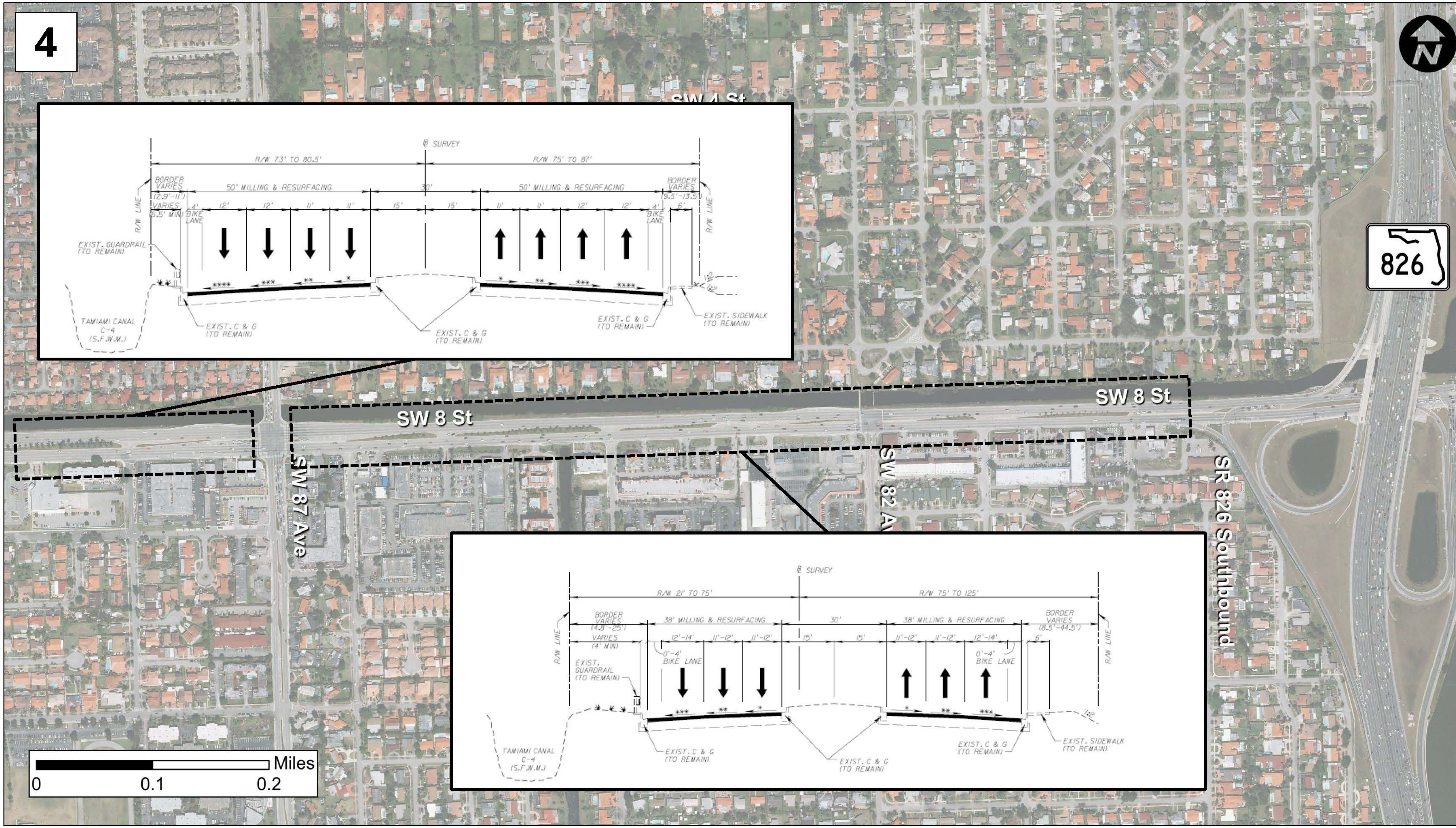


Figure 6 – Existing Typical Sections (5)

1.1 Existing Conditions Traffic Operations Summary

Southwest 8th Street is a significant County arterial that provides connectivity between major employment centers (to the east) and residential suburbs (to the west). In addition, it serves commuters making longer trips due to interchange access at Florida's Turnpike and SR 826. Southwest 8th Street adjacent land uses consist of major commercial and educational land uses (such as Florida International University) on the south that attract traffic from other areas within Miami-Dade County. There is limited access on the north due to the existing Tamiami Canal.

An existing conditions analysis was completed after extensive data collection and field reviews. The analysis confirmed that SW 8th Street experiences a higher volume of traffic in the eastbound direction during the morning peak hour and in the westbound direction during the afternoon. In addition, the cross-streets tend to experience higher traffic volumes along the northbound direction during the morning peak and in the southbound direction during the afternoon.

Because of the presence of the Tamiami Canal on the north side of the roadway, there is a lack of connectivity with the area north of SW 8th Street. Access from the north is limited to the roadways that provide a bridge over the Tamiami Canal (SW 122nd Avenue, SW 109th Avenue, SW 107th Avenue, SW 97th Avenue, SW 94th Avenue, SW 92nd Avenue and SW 87th Avenue). Therefore, traffic volumes cannot be diverted or distributed to other north/south roadways.

From the existing traffic analysis conducted for the SW 8th Street Corridor, it was determined that during the morning peak hour, the reduction in number of lanes provided by SW 8th Street, east of SR 826/Palmetto Expressway, causes a bottleneck that translates into high delays, low speeds and heavy friction for the traffic traveling eastbound between east of SW 87th Avenue and SR 826/Palmetto Expressway.

Major intersections along the corridor at SW 122nd Avenue, SR 821/Turnpike SB ramps, SW 107th Avenue, and SW 87th Avenue, are experiencing heavy delays along the cross-streets, while traffic along SW 8th Street (eastbound/westbound) itself experiences relatively lower delays than the cross-streets.

The existing conditions traffic analysis confirmed that, during the afternoon peak, the same pattern exists (as in the morning peak) of the cross-street approaches experiencing heavier delays while SW 8th Street itself is operating relatively satisfactory. In the afternoon peak, there were no segments identified with major congestion. The only segment (in the westbound direction) that reported low speeds was the westbound approach at the intersection of SW 8th Street and SW 107th Avenue.

Similar to the morning peak hour analysis, the afternoon peak hour analysis determined that the intersections of SW 8th Street with SW 107th Avenue and the intersection of SW 8th Street with SW 87th Avenue are experiencing heavy delays in the northbound/southbound approaches.

1.2 Transit Characteristics

Most of the existing transit services in the study corridor are provided by Miami-Dade Transit (MDT) with the exception of the Sweetwater trolleys near FIU. Currently MDT only operates one bus route along the corridor – Route 8. However, the SW 8th Street corridor is currently fed by four other MDT Metrobus routes: Routes 11, 51, 71 and 87. These routes cross SW 8th Street and provide transfer opportunities with Route 8. These transit routes along with the MDT bus stops that are within the SW 8th Street corridor are illustrated in **Figure 7** below.

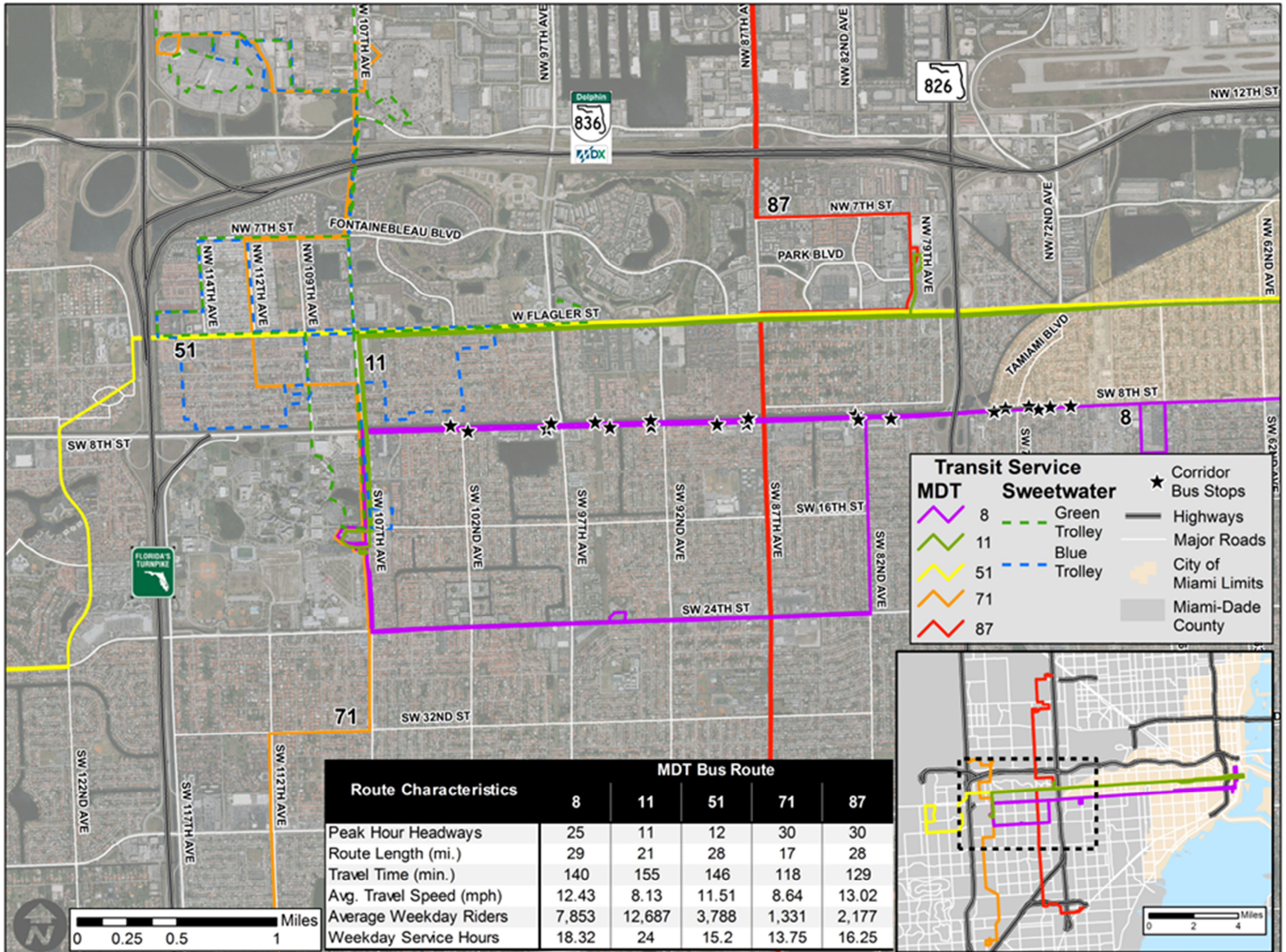
Route 8 averages nearly 7,900 transit riders every week day. The peak hour headways for Route 8 are approximately 25 minutes.

Three of the five routes serving the SW 8th Street corridor provide direct service to FIU – Routes 8, 11, and 71. Route 8 only provides service to FIU once every three scheduled trips.

All transit stops have transit signs that provide information on the transit routes as well as a bus bench. Some stops have a trash receptacle and the SW 75th Avenue eastbound stop has a shelter for riders. All of the westbound transit stops along SW 8th Street between SR 826 and FIU have a bus bay.

Figure 8 details the average number of daily boardings and alightings for each Route 8 bus stop within the corridor. Boardings are displayed in the upper graphic of Figure 8 while alighting are displayed in the lower graphic. A majority of the ridership activity for Route 8 occurs east of SR-826.

Figure 7 – Existing Transit Service



Route Characteristics	MDT Bus Route 8	11	51	71	87
Peak Hour Headways	25	11	12	30	30
Route Length (mi.)	29	21	28	17	28
Travel Time (min.)	140	155	146	118	129
Avg. Travel Speed (mph)	12.43	8.13	11.51	8.64	13.02
Average Weekday Riders	7,853	12,687	3,788	1,331	2,177
Weekday Service Hours	18.32	24	15.2	13.75	16.25

Figure 8 – Average Daily Bus Activity

2.0 FUTURE CONDITIONS ANALYSIS

Based on the existing conditions analysis along SW 8th Street (traffic operations as well as transit services) several alternative strategies were developed and preliminarily analyzed, as documented in Technical Memorandum No. 4 (Conceptual Alternatives). Transit improvements planned for the corridor as well as roadway improvements in the 2040 MPO Long Range Transportation Plan were determined to be insufficient to significantly alleviate traffic congestion along SW 8th Street, parallel corridors, and cross-streets.

A tiered analysis was completed using evaluation criteria jointly established with the MPO and five recommended alternatives/strategies were identified for moving forward:

1. SW 87th Avenue and SW 8th Street Grade Separation
2. SW 107th Avenue and SW 8th Street Grade Separation
3. FIU Rideshare Program
4. Adaptive Signal Program
5. Flagler BRT

Out these five alternatives, three relate directly to traffic operations along the corridor. However, the adaptive signal program is a pilot project headed by the FDOT 6 that is currently underway and its impact on traffic operations cannot be modeled at this time. The other two alternatives involve grade separations at two intersections. These improvements were previously identified as part of the MPO Grade Separation Study dated June 2005. These two alternatives were combined and analyzed in detail as part of the Build Alternative for this SW 8th Street Corridor Study. The FIU Rideshare and Flagler BRT concepts are being potentially implemented by others and are not part of the future modeling effort since they are difficult to quantify for impacts.

Therefore, the future conditions analysis consisted of one No-Build alternative and one composite Build alternative. These alternatives were analyzed for two future years (2025 and 2045). The No-Build alternative consisted of improvements programmed along the study area of influence in the 2035 MPO LRTP. In order to develop the future conditions analysis, projected volumes were developed as part of the travel demand effort. These volumes were then used to perform a detailed traffic operations analysis using Synchro and SimTraffic software.

The following sections summarize the steps taken to develop the projected volumes as well as the steps conducted to perform the detailed traffic operational analysis.

2.1 Travel Demand Modeling

General Objective

To use the Southeast Florida Regional Planning Model (SERPM) 6.5 model to estimate the demand along the SW 8th Street Corridor Study area and to evaluate the impacts of proposed improvements recommended for local intersections: grade separation at the intersections of SW 8th Street & SW 107th Avenue and SW 8th Street and SW 87th Avenue.

Anticipated Area of Influence

For travel demand forecasting purposes the area of influence was extended past the limits described in the Scope of Work in order to determine whether proposed projects with regional impact have an impact on the current traffic flow along SW 8th Street and it crossing roadways. Therefore, the influence area was as follows:

- SW 72nd Avenue/Milam Dairy Road to the east
- SW 177th Avenue/Krome Avenue to the west
- NW 25th Street to the north
- SW 24th Street/Coral Way to the south

The north and south limits were selected as to be consistent with the analysis presented in the SW 8th Street and SW 87th Avenue Intersection Improvements Concept and Feasibility Study by FDOT. The influence area listed above has been determined to be the area of influence based not only on the geographical size of the area but also on the roadway network.

Within the area of influence, the accuracy of the network in the SERPM highway network versus the actual characteristics of the roadway, such as number of lanes, facility types, etc. were verified in both the 2005 and 2035 based networks (approved networks). The centroid boundaries and the loading points of the centroids were double checked as was the socio economic data. These checks were made for the 2005 and 2035 model set up. Also, the 2035 model was checked in order to ensure that the projects listed in **Table 1** were properly incorporated into the model.

The area of influence is mostly made up of a grid system and the TAZs are well established as well as the centroids. Both years (2005 & 2035) were run and volumes on SW 8th Street Corridor were analyzed and compared to counts taken along the corridor to determine a level of reasonableness. Based on the review of the mainline volumes, no changes were deemed necessary in the network or in the TAZ structure within the area of influence.

Table 1 – Existing and Committed Projects

Project Number	Project Description	Year to be Completed	Agency Responsible	Notes
4124792	Adding lanes and rehabilitating the pavement on SW 107 Avenue from SW 5th Street to north of W Flagler St	2016-2017	FDOT	
4124793	Adding lanes and rehabilitating the pavement on SW 107 Avenue from SW 11th Street to SW 4 St	2015-2016	FDOT	
4332911	Rail Safety Project at CSX Xing # 630155E	2013-2014	FDOT	
2495811	SR 826/836 Interchange - Add lanes from north of SW 8 Street to south of NW 25 St and from NW 87 Avenue to NW 57 Avenue	2016-2017	FDOT	
4291623	Resurfacing of SW 8 Street from east of SW 127 Avenue to the Turnpike on-ramp exit	2013-2014	FDOT	
4311771	Resurfacing of SW 107 Avenue from SW 24 St to SW 11 St	2014-2015	FDOT	
2496143	SR 997/Krome Avenue - Add lanes from Kendall Drive to one mile north of SW 8 Street	2014-2015	FDOT	
2496147	SR 997/Krome Avenue - Add lanes from SW 136 Street to Kendall Drive	2015-2016	FDOT	
4150514	Florida's Turnpike Widening - From Bird Road to SR 836/Dolphin Expressway	2014-2015	Florida Turnpike Enterprise	
4150517	Florida's Turnpike/SR 836 X-press lanes Direct Connect	2015-2016	Florida Turnpike Enterprise	
PW000749	SW 137 Avenue - Widen to 6 lanes from SW 24 Street to SW 8 Street	2014-2015	Miami-Dade Public Works and Waste Department	
83608	SR 826/SR 836 Interchange Improvements	2017	MDX	This is the same project as 2495811 listed above
83625	SR 836 Extension - construction of a public-use ramp from west of NW 107 Avenue to SR 836 westbound	2016	MDX	
83629	SR 836 Interchange Modifications at NW 87 Avenue	2019	MDX	
83631	SR 836 Infrastructure Modifications for Open Road Tolling (West and Central)	2016	MDX	
	NW 25 Street - From NW 89 court to SR 826 (Widen to 6 lanes (4 to 6))	To be built by 2020		
	NW 25 Street - Viaduct - From SR 826 to NW 87 Court - Construction of Viaduct to facilitate truck traffic flow.	To be built by 2020		

Development of the Base Year Model (2014)

The SERPM Model was undergoing an update while the SW 8th Street Corridor Study was in process. Therefore, various outside checks were run to determine the reliability of the LRTP 2005 and 2035 datasets. HNTB checked an interim 2010 socio-economic dataset provided by the County and a 2060 dataset developed as part of the Seven50 project. A 2010 scenario was run and analyzed in order to determine if the current year model (2014) should be developed using the 2010 interim dataset or if the current year model (2014) was to be developed using the LRTP year 2005 and 2035 scenarios. Results of the interpolation between 2010 and 2060 showed that there was not a real significant difference between the two sets of data; as such it was decided by the project team to use the 2005 and 2035 adopted land use data as developed as part of the MPO LRTP. **Table 2** shows the results of the comparison between the 2005/2035 model volumes and the 2014 counted volumes.

Within the area of influence all the socioeconomic data, including the special generator file, was reviewed for each of the interpolated socioeconomic data sets. Within the area of influence, no major developments are occurring in the identified analysis time period. In addition, the area is a well-established as far as land-use is concerned and mostly built out. Therefore, no additional changes to the model were deemed necessary.

Development of the 2025 and 2045 No-Build Models

Other files that were analyzed to develop the years 2014, 2025 and 2045 were the external to external files. Like the socioeconomic data, these files were developed by straight lining the growth rate of the number of trips for each existing pairs between the year 2005 and 2035, for the years 2014, 2025 and 2045. Due to the location of the study area, deep in the middle of the County, the likelihood of external to external traffic influence was minimal and therefore, no additional changes were made to the model.

Table 2 – Comparison between the 2014 and the 2005/2035 Model Volumes

Corridor	Crossroad: Node Number Reference		Crossroad	Segment: From		Segment: To			2005				2010	2014	2014 *				2014 **				2025*			2035			2045*		
	2005, 2014, & 2025	2035 & 2045	Road Name	Road Name	A	Road Name	B	Count	A-B	B-A	TOTAL	% Diff Model-Count	Count	Count	A-B	B-A	TOTAL	% Diff Model-Count	A-B	B-A	TOTAL	% Diff Model-Count	A-B	B-A	TOTAL	A-B	B-A	TOTAL	A-B	B-A	TOTAL
SW 8th Street	24821	24821	SW 127th Ave	SW 127th Ave	24821		24822	70,000	25,918	25,481	51,399	-26.6%	60,805	46,775	28,847	29,026	57,873	23.7%	28,173	28,395	56,568	20.9%	33,232	33,665	66,897	35,270	34,302	69,572	38,375	38,922	77,297
					24822	SW 122nd Ave	24823		26,529	26,173	52,702				29,535	29,808	59,343		28,776	29,101	57,877		34,037	34,518	68,555	35,915	34,988	70,903	39,011	39,645	78,656
SW 8th Street	24823	24823	SW 122nd Ave	SW 122nd Ave	24823		29333		29,568	30,789	60,357				31,792	34,109	65,901		28,633	30,912	59,545		37,896	39,908	77,804	37,873	40,414	78,287	41,306	45,206	86,512
					29333	Florida's Turnpike SB Ramp	23963		30,416	31,639	62,055				32,671	34,987	67,658		29,527	31,835	61,362		38,761	40,816	79,577	38,818	41,328	80,146	42,241	46,098	88,339
SW 8th Street	23963	23963	Florida's Turnpike SB Ramp	Florida's Turnpike SB Ramp	23963	Florida's Turnpike NB Ramp	23965		32,137	21,351	53,488				34,910	23,314	58,224		31,314	23,605	54,919		41,434	24,607	66,041	39,889	26,703	66,592	44,264	26,134	70,398
SW 8th Street	23965	23965	Florida's Turnpike NB Ramp	Florida's Turnpike NB Ramp	23965	SW 117th Ave	24827		24,236	24,615	48,851			64,936	27,585	27,078	54,663	-15.8%	28,098	26,245	54,343	-16.3%	25,610	29,169	54,779	38,217	31,344	69,561	39,831	32,305	72,136
SW 8th Street	24827	24827	Snapper Creek Canal/SW 117th/SW11	Snapper Creek Canal/SW 117th/SW112/CC	24827	SW 109th Ave/CC FIU Entry Exit	24828		32,015	31,417	63,432				33,449	32,565	66,014		33,280	31,397	64,677		31,349	33,374	64,723	41,104	36,490	77,594	41,278	37,601	78,879
SW 8th Street	24828	24828	SW 109th Ave/CC FIU Entry Exit	SW 109th Ave/CC FIU Entry Exit	24828	SW 107th Ave	24831	56,500	27,966	27,651	55,617	-1.6%	62,000	57,365	33,668	32,071	65,739	14.6%	32,896	30,447	63,343	10.4%	34,053	36,158	70,211	39,572	33,394	72,966	40,730	36,048	76,778
SW 8th Street	24831	24831	SW 107th Ave	SW 107th Ave	24831		*26800*		24,445	24,023	48,468				30,747	28,864	59,611		28,674	26,810	55,484		32,823	34,211	67,034	26,160	23,157	49,317	30,623	28,305	58,928
					26800	SW 102nd Ave	24832		26,316	26,573	52,889			44,838	32,848	31,564	64,412	43.7%	30,754	29,221	59,975	33.8%	35,171	37,018	72,189	28,903	26,237	55,140	33,918	31,690	65,608
SW 8th Street	24832	24832	SW 102nd Ave	SW 102nd Ave	24832	SW 99th Pl	26799		24,471	24,467	48,938				31,335	29,847	61,182		28,880	27,227	56,107		33,037	34,321	67,358	34,397	31,212	65,609	38,254	35,570	73,824
SW 8th Street	26799	26799	SW 99th Pl/cc	SW 99th Pl/cc	26799	SW 97th Ave	24835		24,967	25,350	50,317		56,900	60,392	32,449	30,984	63,433	5.0%	29,921	28,310	58,231	-3.6%	34,173	35,481	69,654	35,533	32,600	68,133	39,492	36,958	76,450
SW 8th Street	24835	24835	SW 97th Ave	SW 97th Ave	24835	Sw 94th Ave	24836		33,384	33,922	67,306		56,900		40,463	39,133	79,596		38,513	37,466	75,979		42,697	43,828	86,525	35,796	35,893	71,689	40,608	40,208	80,816
SW 8th Street	24836	24836	Sw 94th Ave/cc	Sw 94th Ave/cc	24836	SW 92nd Ave	31064/31062		30,630	31,477	62,107		56,300	56,177	38,291	39,415	77,706	38.3%	37,601	38,252	75,853	35.0%	39,883	43,529	83,412	33,940	34,997	68,937	39,145	39,526	78,671
SW 8th Street	31064	31062	SW 92nd Ave	SW 92nd Ave	31064/31062		24837		30,021	32,563	62,584				32,858	34,735	67,593		30,628	32,108	62,736		36,324	39,781	76,105	31,609	33,471	65,080	37,172	38,387	75,559
					24837	SW 87th Ave	24840/21195	52,000	28,544	31,035	59,579	14.6%	63,500	57,413	32,234	33,643	65,877	14.7%	30,202	31,096	61,298	6.8%	35,441	38,591	74,032	30,937	32,877	63,814	36,463	37,705	74,168
SW 8th Street	24840	21195	SW 87th Ave	SW 87th Ave	24840/21195		23246	58,000	24,888	26,265	51,153	-11.8%	57,000	60,486	28,268	28,587	56,855	-6.0%	27,416	27,117	54,533	-9.8%	29,875	31,710	61,585	24,106	27,676	51,782	26,549	29,520	56,069
					23246	SW 82nd Ave	*24842*		22,471	23,782	46,253				25,725	26,329	52,054		24,844	24,505	49,349		27,229	29,730	56,959	21,378	25,017	46,395	23,548	27,214	50,762
SW 8th Street	24842	24842	SW 82nd Ave	SW 82nd Ave	24842		26865		27,114	37,636	64,750				31,631	30,806	62,437		30,123	28,778	58,901		33,710	35,211	68,921	33,884	35,722	69,606	36,634	39,149	75,783
SW 8th Street	26865	26865			26865	NB SR 826 Ramps	23576		28,465	28,951	57,416				32,982	32,337	65,319		31,627	30,253	61,880		35,154	36,653	71,807	35,540	37,268	72,808	38,365	40,726	79,091
			SB SR 826 on Ramp	SB SR 826 on Ramp	23576	SB SR 826 off Ramp	23874		26,034	28,951	54,985		57,900	55,432	30,363	32,337	62,700	13.1%	28,694	30,253	58,947	6.3%	32,453	36,653	69,106	32,290	37,268	69,558	34,746	40,726	75,472
SW 8th Street	23874	23874	SB SR 826 off Ramp	SB SR 826 off Ramp	23874	SB SR 826 off Loop Ramp	24843		26,034	19,612	45,646				30,363	21,598	51,961		28,694	19,634	48,328		32,453	24,256	56,709	32,290	20,856	53,146	34,746	21,372	56,118
SW 8th Street	24843	24843	SB SR 826 off Loop Ramp	SB SR 826 off Loop Ramp	24843	SB SR 826 on Loop Ramp	27108		28,287	19,612	47,899				33,055	21,598	54,653		31,814	19,634	51,448		35,489	24,256	59,745	37,123	20,856	57,979	39,089	21,372	60,461
SW 8th Street	27108	27108	SB SR 826 on Loop Ramp	SB SR 826 on Loop Ramp	27108	NB SR 826 on Loop Ramp	27107		28,287	20,672	48,959		57,400		33,055	22,693	55,748		31,814	21,421	53,235		35,489	25,363	60,852	37,123	24,093	61,216	39,089	25,800	64,889
SW 8th Street	27107	27107	NB SR 826 on Loop Ramp	NB SR 826 on Loop Ramp	27107	NB SR 826 off Loop Ramp	23577		23,280	20,672	43,952				24,636	22,693	47,329		23,572	21,421	44,993		26,804	25,363	52,167	27,869	24,093	51,962	29,039	25,800	54,839
SW 8th Street	23577	23577	NB SR 826 off Loop Ramp	NB SR 826 off Loop Ramp	23577	NB SR 826 off Ramp	23864		23,280	20,544	43,824				24,636	22,367	47,003		23,572	20,835	44,407		26,804	25,034	51,838	27,869	24,081	51,950	29,039	25,786	54,825
SW 8th Street	23864	23864	NB SR 826 off Ramp	NB SR 826 off Ramp	23864	NB SR 826 on Ramp	*23873*		28,233	20,544	48,777				31,007	22,367	53,374		30,379	20,835	51,214		34,357	25,034	59,391	39,688	24,081	63,769	42,084	25,786	67,870
SW 8th Street	23873	23873	NB SR 826 on Ramp	NB SR 826 on Ramp	23873	SW 75 Ave/Tamiami Canal Road	24845		28,233	28,485	56,718				31,007	32,987	63,994		30,379	31,731	62,110		34,357	36,354	70,711	39,688	42,001	81,689	42,084	44,394	86,478
SW 8th Street	24845	24845	SW 75 Ave/Tamiami Canal Road	SW 75 Ave/Tamiami Canal Road	24845		24846		17,933	18,664	36,597				20,391	21,704	42,095		20,993	21,897	42,890		23,408	24,416	47,824	25,917	27,443	53,360	27,251	28,816	56,067
					24846	SW 74th Ct/Flagami Blvd	26864		16,118	16,349	32,467				20,391	21,704	42,095		20,993	21,897	42,890		23,408	24,416	47,824	23,888	25,505	49,393	25,663	27,151	52,814
SW 8th Street	26864	26864	SW 74th Ct/Flagami Blvd/cc	SW 74th Ct/Flagami Blvd/cc	26864	cc	24847		16,118	16,349	32,467				18,753	19,981	38,734		19,347	20,023	39,370		21,769	22,897	44,666	23,888	25,505	49,393	25,663	27,151	52,814

* Socioeconomic input data was based on a straightlined projection between the 2005 and 2035 SERPM input data sets.
** Socioeconomic input data was based on a straightlined projection between the 2010 and 2060 SERPM input data sets.

Development of the Highway and Transit Networks

Year 2014 Networks

After a review of the 2035 project list for the area, and based on the phasing of the highway improvements and the complexity of the coding effort associated with interchanges, it was determined to be more efficient to use the LRTP 2035 highway network and eliminate projects rather than use the 2005 highway network and add projects to build the 2014 network. The following projects were removed from the 2035 network to create the 2014 network:

- Krome Avenue widening from 2 to 4 lanes from SW 8th Street north to Everglades Pkwy I-75
- SW 137th Avenue widen from 4 to 6 lanes south of SW 8th Street
- SW 107th Avenue from 4 lanes to 6 lanes between SW 8th Street and Flagler
- I-95 managed lanes north of Golden Glades
- Managed Lanes on SR 826 from SR 836 north to 87th Ave

On the transit site, the opposite was observed. The complexity of the 2035 transit network, with the introduction of new service in BRT and rail, is such that it was more time efficient to use the year 2005 transit files as a starting point and update it to the 2014 service levels. The shape files from Miami Dade Transit were obtained for the year 2014 and the transit service was updated to reflect the 2014 service levels. All necessary coding updates were made in the SERPM 6.54 to ensure that the transit network was compatible with the revised 2035 highway network; however no service changes were made outside Miami Dade County because it would not affect the study area analyzed for the SW 8th Street area of influence.

Year 2025 Networks

The year 2014 networks were used to develop the 2025 networks. The following changes were made to reflect the 2025 transit service levels:

Five bus routes were added:

- SR 836 Line A
- SR 836 Line B
- SR 836 Line C
- Flagler EBS
- Route 8M

Two Stations were added:

- Dolphin Station
- Panther Station (MIC and Government Center station were already part of the year 2014/2025 network)

For the roadway network update, the programmed widening of SW 107th Avenue from 4 lanes to 6 lanes from Flagler Street to SW 8th Street was added.

Year 2045 Networks

For the year 2045, the adopted cost feasible networks as developed for the 2040 LRTP were used. No additional projects were added. All of the networks were reviewed for accuracy. All the networks included projects in the No-Build. All of the projects mentioned above were included as part of the No-Build Alternatives.

Development of the Build Alternative

The SERPM travel demand model was primarily used to establish a base scenario and to analyze the total demand on the SW 8th Street corridor so that an assessment can be made regarding the impact of the alternatives. However, it must be noted that the alternatives that are being analyzed on SW 8th Street (grade separations) are more likely to have an impact on operations rather than on a regional model network, especially since they cover a relatively short distance in regional model terms. Due to the nature of the improvements, the SERPM 6.5.4 is not the most desirable tool to measure the impacts of the improvements; however it does provide us with some change that can be analyzed and provides the opportunity to analyze the effect of an improvement on parallel routes. The composite Build Alternative coded in the 2025 and 2045 networks included:

- A grade separated facility with 2 lanes in each direction over the intersection of SW 8th Street and SW 87th Avenue
- A grade separated facility with 2 lanes in each direction over the intersection of SW 8th Street and SW 107th Avenue
- Widening of SW 8th Street between SW 109th Avenue and SW 112th Avenue to four lanes in the westbound direction (eastbound remains three lanes between SW 109th Avenue and SW 112th Avenue)

Alternative Analysis

All travel demand estimates developed for the SW 8th Street corridor study used the multi-modal SERPM 6.5.4 model. For the Alternative analysis the traffic for the opening (2025) and design year (2045), were obtained and compared to the No-Build and Build Alternatives. The initial runs were performed by coding an additional link “across” the existing intersection. No other changes were made other than the adjustments to reflect the correct number of lanes. These initial runs gave the most reasonable estimates in the traffic patterns.

Several runs were performed to test the sensitivity of the model. These tests involved adjusting the facility type, capacity as well as the speed to differentiate between the at-grade and grade separated links. The results of these runs did not produce additional insights (see **Table 3** and **Table 4**).

As stated previously, changes to the network and links prior to the inclusion of the grade separation were minor. Therefore, it is reasonable to see minimal changes after the inclusion of the grade separation links. The grade separations function as an operational improvement at the signal and a more refined operational model is needed to analyze these operational impacts. Therefore, the results obtained by the original multi-modal run were used as input into the operational analysis.

Table 3 – Travel Demand Model Runs (Build Alternative) –SW 8th Street

Corridor	Crossroad: Node Number Reference 2005, 2014, & 2025	Crossroad: Node Number Reference 2035 & 2045	Crossroad: Road Name	Segment From: Road Name	A	B	2025 No Build* A-B	2025 No Build* B-A	2025 No Build* TOTAL	2025 Build* A-B (East Bound)	2025 Build* B-A (West Bound)	2025 Build* TOTAL	% Difference Between No-Build and Build	2025 Build First Rerun A-B (East Bound)	2025 Build First Rerun B-A (West Bound)	TOTAL	% Difference Between No-Build and Build	2025 Build Sceond Rerun A-B (East Bound)	2025 Build Sceond Rerun B-A (West Bound)	TOTAL	% Difference Between No-Build and Build
SW 8th Street	24821	24821	SW 127th Ave	SW 127th Ave	24821	24822	33,232	33,665	66,897	33,966	34,318	68,284	2.07%	33,711	34,026	67,737	1.26%	33,518	33,799	67,317	0.63%
					24822	24823	34,037	34,518	68,555	34,780	35,172	69,952	2.04%	34,526	34,872	69,398	1.23%	34,333	34,643	68,976	0.61%
SW 8th Street	24823	24823	SW 122nd Ave	SW 122nd Ave	24823	29333	37,896	39,908	77,804	38,543	40,661	79,204	1.80%	38,081	40,252	78,333	0.68%	37,860	39,957	77,817	0.02%
					29333	23963	38,761	40,816	79,577	39,424	41,586	81,010	1.80%	38,954	41,167	80,121	0.68%	38,741	40,880	79,621	0.06%
SW 8th Street	23963	23963	Florida's Turnpike SB Ramp	Florida's Turnpike SB Ramp	23963	23965	41,434	24,607	66,041	42,260	25,934	68,194	3.26%	42,004	24,750	66,754	1.08%	41,670	25,600	67,270	1.86%
SW 8th Street	23965	23965	Florida's Turnpike NB Ramp	Florida's Turnpike NB Ramp	23965	24827	25,610	29,169	54,779	27,500	30,580	58,080	6.03%	26,788	30,376	57,164	4.35%	26,915	30,146	57,061	4.17%
SW 8th Street	24827	24827	Snapper Creek Canal/SW 117th/SW11	Snapper Creek Canal/SW 117th/SW112/CC	24827	24828	31,349	33,374	64,723	33,449	34,929	68,378	5.65%			0				0	
					24827	31070								31,653	34,810	66,463	2.69%	31,674	34,625	66,299	2.43%
					31070	24828								31,653	34,810	66,463	2.69%	31,674	34,674	66,348	2.51%
SW 8th Street	24828	24828	SW 109th Ave/CC FIU Entry Exit	SW 109th Ave/CC FIU Entry Exit	24828	24831	34,053	36,158	70,211	18,342	19,722	38,064	7.26%	14,670	16,631	31,301	0.27%	15,062	18,055	33,117	-0.01%
SW 8th Street	24828		Grade Separated SW 107th Ave	Grade Separated SW 107th Ave	24828	26800				18,417	18,828	37,245	75309	19,336	19,763	39,099	70400	19,028	18,062	37,090	70207
													70438				70320				69976
SW 8th Street	24831	24831	SW 107th Ave	SW 107th Ave	24831	*26800*	32,823	34,211	67,034	16,275	16,918	33,193	5.08%	15,042	16,179	31,221	4.90%	15,470	17,416	32,886	4.39%
					26800	24832	35,171	37,018	72,189	37,025	38,562	75,587	4.71%	36,717	38,754	75,471	4.55%	36,854	38,303	75,157	4.11%
SW 8th Street	24832	24832	SW 102nd Ave	SW 102nd Ave	24832	26799	33,037	34,321	67,358	34,667	35,665	70,332	4.42%	34,372	35,824	70,196	4.21%	34,470	35,302	69,772	3.58%
SW 8th Street	26799	26799	SW 99th Pl/cc	SW 99th Pl/cc	26799	24835	34,173	35,481	69,654	35,802	36,825	72,627	4.27%	35,510	36,983	72,493	4.08%	35,600	36,456	72,056	3.45%
SW 8th Street	24835	24835	SW 97th Ave	SW 97th Ave	24835	24836	42,697	43,828	86,525	43,794	44,955	88,749	2.57%	43,564	44,884	88,448	2.22%	43,688	44,512	88,200	1.94%
SW 8th Street	24836	24836	Sw 94th Ave/cc	Sw 94th Ave/cc	24836	31064/31062	39,883	43,529	83,412	40,972	44,236	85,208	2.15%	40,692	43,991	84,683	1.52%	41,031	43,632	84,663	1.50%
SW 8th Street	31064	31062	SW 92nd Ave	SW 92nd Ave	31064/31062	24837	36,324	39,781	76,105	37,233	40,661	77,894	2.35%	38,158	41,880	80,038	5.17%	37,955	40,729	78,684	3.39%
					24837	24840/21195	35,441	38,591	74,032	18,800	20,669	39,469	1.96%	18,149	19,103	37,252	6.14%	17,155	18,890	36,045	3.94%
SW 8th Street	24837		Grade Separated SW 87th Ave	Grade Separated SW 87th Ave	24837	23246				17,239	18,775	36,014	75483	19,203	22,121	41,324	78576	19,481	21,422	40,903	76948
													66990			0	67308			0	66775
SW 8th Street	24840	21195	SW 87th Ave	SW 87th Ave	24840/21195	23246	29,875	31,710	61,585	14,918	16,058	30,976	8.78%	12,922	13,062	25,984	9.29%	12,594	13,278	25,872	8.43%
					23246	*24842*	27,229	29,730	56,959	29,440	32,104	61,544	8.05%	29,395	32,438	61,833	8.56%	29,356	31,969	61,325	7.67%
SW 8th Street	24842	24842	SW 82nd Ave	SW 82nd Ave	24842	26865	33,710	35,211	68,921	34,827	36,426	71,253	3.38%	34,496	36,337	70,833	2.77%	34,420	35,877	70,297	2.00%
SW 8th Street	26865	26865			26865	23576	35,154	36,653	71,807	36,249	37,906	74,155	3.27%	35,920	37,874	73,794	2.77%	35,840	37,418	73,258	2.02%
			SB SR 826 on Ramp	SB SR 826 on Ramp	23576	23874	32,453	36,653	69,106	33,425	37,906	71,331	3.22%	33,162	37,874	71,036	2.79%	33,042	37,418	70,460	1.96%
SW 8th Street	23874	23874	SB SR 826 off Ramp	SB SR 826 off Ramp	23874	24843	32,453	24,256	56,709	33,425	24,888	58,313	2.83%	33,162	24,620	57,782	1.89%	33,042	24,477	57,519	1.43%
SW 8th Street	24843	24843	SB SR 826 off Loop Ramp	SB SR 826 off Loop Ramp	24843	27108	35,489	24,256	59,745	36,338	24,888	61,226	2.48%	36,126	24,620	60,746	1.68%	35,968	24,477	60,445	1.17%
SW 8th Street	27108	27108	SB SR 826 on Loop Ramp	SB SR 826 on Loop Ramp	27108	27107	35,489	25,363	60,852	36,338	25,933	62,271	2.33%	36,126	25,709	61,835	1.62%	35,968	25,549	61,517	1.09%
SW 8th Street	27107	27107	NB SR 826 on Loop Ramp	NB SR 826 on Loop Ramp	27107	23577	26,804	25,363	52,167	27,409	25,933	53,342	2.25%	27,259	25,709	52,968	1.54%	27,098	25,549	52,647	0.92%
SW 8th Street	23577	23577	NB SR 826 off Loop Ramp	NB SR 826 off Loop Ramp	23577	23864	26,804	25,034	51,838	27,409	25,586	52,995	2.23%	27,259	25,365	52,624	1.52%	27,098	25,193	52,291	0.87%
SW 8th Street	23864	23864	NB SR 826 off Ramp	NB SR 826 off Ramp	23864	*23873*	34,357	25,034	59,391	34,750	25,586	60,336	1.59%	34,623	25,365	59,988	1.01%	34,356	25,193	59,549	0.27%
SW 8th Street	23873	23873	NB SR 826 on Ramp	NB SR 826 on Ramp	23873	24845	34,357	36,354	70,711	34,750	36,792	71,542	1.18%	34,623	36,619	71,242	0.75%	34,356	36,423	70,779	0.10%
SW 8th Street	24845	24845	SW 75 Ave/Tamiami Canal Road	SW 75 Ave/Tamiami Canal Road	24845	24846	23,408	24,416	47,824	23,708	24,780	48,488	1.39%	23,598	24,572	48,170	0.72%	23,333	24,344	47,677	-0.31%
					24846	26864	23,408	24,416	47,824	23,708	24,780	48,488	1.39%	23,598	24,572	48,170	0.72%	23,333	24,344	47,677	-0.31%
SW 8th Street	26864	26864	SW 74th Ct/Flagami Blvd/cc	SW 74th Ct/Flagami Blvd/cc	26864	24847	21,769	22,897	44,666	22,068	23,151	45,219	1.24%	21,992	23,027	45,019	0.79%	21,733	22,839	44,572	-0.21%

Table 4 – Travel Demand Model Runs (Build Alternative) –Major Cross Streets

Corridor	Crossroad: Node Number Reference 2005, 2014, & 2025	Crossroad: Node Number Reference 2035 & 2045	Crossroad: Road Name	Segment From: Road Name	A	Segment To: Road Name	B	2025 No Build* A-B	2025 No Build* B-A	2025 No Build* TOTAL	2025 Build* A-B (North Bound)	2025 Build* B-A (South Bound	2025 Build* TOTAL	% Difference Between No-Build and Build	2025 Build First Rerun A-B (North Bound)	2025 Build First Rerun B-A (South Bound)	TOTAL	% Difference Between No-Build and Build	2025 Build Second Rerun A-B (North Bound)	2025 Build Second Rerun B-A (South Bound)	TOTAL	% Difference Between No-Build and Build
SW 122 Ave	25048	25048	SW 122 Ave	Segment South of SW 8th Street	25048	SW 8th Street	24823	15,322	16,039	31,361	15,200	16,022	31,222	-0.44%	15,200	16,022	31,222	-0.44%	15,307	15,995	31,302	-0.19%
SW 122 Ave	24823	24823	SW 122 Ave	SW 8th Street	24823	Segment North of SW 8th Stree	27360	12,489	11,674	24,163	12,408	11,504	23,912	-1.04%	12,408	11,504	23,912	-1.04%	12,340	11,241	23,581	-2.41%
Sw 107th Ave	26801	26801	SW 107th Ave	Segment South of SW 8th Street	26801	SW 8th Street	24831	27,059	24,945	52,004	26,818	24,579	51,397	-1.17%	26,818	24,579	51,397	-1.17%	26,351	23,792	50,143	-3.58%
Sw 107th Ave	24831	24831	SW 107th Ave	SW 8th Street	24831	Segment North of SW 8th Stree	24830	31,460	30,062	61,522	31,681	30,180	61,861	0.55%	31,681	30,180	61,861	0.55%	32,162	30,650	62,812	2.10%
SW 97th Ave	25063	25063	SW 97th Ave	Segment South of SW 8th Street	25063	SW 8th Street	24835	10,019	8,455	18,474	10,061	8,494	18,555	0.44%	10,061	8,494	18,555	0.44%	10,022	8,368	18,390	-0.45%
SW 97th Ave	24835	24835	SW 97th Ave	SW 8th Street	24835	Segment North of SW 8th Stree	24833	16,950	15,564	32,514	17,327	15,623	32,950	1.34%	17,327	15,623	32,950	1.34%	17,071	15,449	32,520	0.02%
SW 87th Ave	25069	25069	SW 87th Ave	Segment South of SW 8th Street	25069	SW 8th Street	24840	22,132	19,770	41,902	21,963	20,046	42,009	0.26%	21,963	20,046	42,009	0.26%	21,748	19,900	41,648	-0.61%
SW 87th Ave	24840	24840	SW 87th Ave	SW 8th Street	24840	Segment North of SW 8th Stree	24838	25,173	26,221	51,394	26,314	25,125	51,439	0.09%	26,314	25,125	51,439	0.09%	26,566	25,168	51,734	0.66%

Development of Growth Rates

From the No-Build and Build Alternatives results, a growth rate was estimated. These growth rates are shown in **Appendix A**. One growth rate was estimated for the No-Build Alternative and one for the Build Alternative. **Table 5** summarizes the growth rate for the No-Build and Build Alternatives as agreed to with the MPO.

Using these growth rates, the existing conditions volumes were increased using an exponential growth equation.

Several meetings with the MPO were conducted in order to agree on the final projected peak hour volumes (for the Build and No-Build Alternatives). From these meetings, it was agreed that instead of using three different growth rates (one from SW 122nd Avenue to SW 107th Avenue, another from SW 107th Avenue to SW 87th Avenue and the last one from SW 87th Avenue to east of SR 826/Palmetto Expressway), only two growth rates would be used, one from SW 122nd Avenue to SW 107th Avenue and another one from SW 107th Avenue to SW 87th Avenue.

Table 5 – Estimated & Applied Growth Rates

From	To	Estimated Growth Rates		Applied Growth Rates	
		No-Build	Build	No-Build	Build
SW 122nd Avenue	SW 107th Avenue	0.8%	0.9%	0.8%	0.9%
SW 107th Avenue	SW 87th Avenue	0.3%	0.4%	0.6%	0.6%
SW 87th Avenue	East of SR 826/Palmetto Expressway	0.6%	0.6%		

Development of Projected Peak Hour Volumes (2025 & 2045 No-Build/Build Alternatives)

The growth rates listed in Table 5 were used to grow the existing (2014) peak hour volumes in the morning and afternoon peak hours. Projected peak hour volumes are included in **Appendix B**.

In order to estimate the peak hour volumes for the Build Alternative, several assumptions were made. These assumptions were needed so the volume of traffic taking the at-grade option and the volume of traffic taking the elevated structure could be estimated. Figures included in **Appendix B** list the assumptions used to estimate the traffic entering the signalized intersection and the traffic using the elevated structure.

The assumptions for the <u>intersection of SW 107th Avenue</u> were as follows:

Eastbound Direction

It was assumed that 10 percent of the projected through movement will use SW 105th Avenue and SW 103rd Street; therefore, this traffic will go through the signalized intersection (for the year 2025 about 150 vph (AM) and 130 vph (PM) and for the year 2045 about 180 vph (AM) and 150 vph (PM)). Traffic traveling on the elevated option will not have the opportunity to access SW 105th Avenue and SW 103rd Court.

Also, it was assumed that the right-turn volume at the intersection with SW 102nd Avenue will also travel on the at-grade option of SW 8th Street.

Westbound Direction

It was assumed that about 100 vph trying to access SW 105th Avenue will make a U-turn at the intersection with SW 107th Avenue. Therefore, the westbound to southbound volume at this intersection is expected to increase. These 100 vph were subtracted from the sink node located east of SW 107th Avenue. The rest of the volume is assumed to use the median opening at SW 103rd Court.

The left-turn volume at the intersection of SW 112th Avenue was also assumed to travel on the at-grade option at the intersection of SW 107th Avenue. Otherwise, vehicles heading to SW 112th Avenue that would like to make a left-turn at this intersection would have to cross traffic from the elevated portion in order to perform the desired maneuver.

The assumptions for the intersection of SW 87th Avenue were as follows:

Eastbound Direction

The volume shown as a source node, west of the intersection with SW 87th Avenue (in the No-Build scenario) was divided by three and one/third of the volume was assumed to use the elevated structure and the rest (2/3) was assumed to travel at the at-grade option. Since the elevated structure starts separating from the ground level at the intersection with SW 89th Avenue, it was assumed that traffic entering at this intersection and at the intersection with SW 88th Avenue will use the signalized intersection at SW 87th Avenue, while the traffic entering at SW 90th Avenue will use the bridge over SW 87th Avenue to continue through along SW 8th Street.

Westbound Direction

The sink node shown west of SW 82nd Avenue had to be eliminated since the grade separation at SW 87th Avenue will eliminate access to the south side of SW 8th Street. Therefore, the traffic at this source node was distributed assuming that 50 percent of the traffic will be turning at SW 82nd Avenue (increasing the westbound to southbound volume at this intersection). The other 50 percent of the traffic was assumed to be using the left-turn movement at the intersection of SW 87th Avenue.

In addition, 20 percent of the through traffic at the SW 87th Avenue intersection (without the grade separation) was assumed to go through the signalized intersection in order to access SW 89th Avenue and SW 88th Avenue. Each intersection (SW 89th Avenue and SW 88th Avenue) was assumed to attract about 10 percent of the total through traffic at the intersection with SW 87th Avenue.

The assumptions for the Intersection of SW 8th Street and SW 74th Avenue were as follows:

There was a source node in the westbound direction just east of SR 826/Palmetto Expressway. This source node accounted for the volume observed at the intersection of SW 8th Street and SW 76th Avenue. Since the median opening for the northbound to westbound movement at the intersection of SW 8th Street and SW 76th Avenue was assumed to be closed (explained in detail in Section 2.2.1.3), the volume for this source node was diverted to the northbound left-turn movement at the intersection of SW 8th Street and SW 74th Avenue.

2.2 Future Conditions Traffic Operational Analysis

In order to perform the traffic operational analysis a No-Build Alternative and a Build Alternative were evaluated for two different years: 2025 and 2045. The morning and afternoon peak hour conditions were evaluated using Synchro/SimTraffic as the traffic analysis tool. Each SimTraffic Scenario was run 10 times in order to account for the stochastic nature of the model.

The No-Build and Build alternatives from the traffic operations perspective slightly differ from the travel demand perspective. Improvements on transit routes were not modeled in the traffic operational analysis. Impacts of the proposed transit routes on traffic patterns are accounted for in the travel demand model. Additional transit routes that led to a “mode shift” would be reflected in the traffic volumes produced by the travel demand model results. In addition, the improvements to geometry at the SW 117th Avenue intersection are minor striping changes that do not impact the model but were included in the No-Build Alternative for operations analysis.

The following sections describe the scenarios analyzed from the traffic operational perspective.

2.2.1 Alternatives

2.2.1.1 2025-2045 - No-Build Alternative

The No-Build Alternative incorporated all of the programmed projects within the limits of the study area (from west of SW 122nd Avenue to east of SW 74th Avenue) that considered changes in geometry.

The projects included in the No-Build Alternative were as follows:

- Widening of SW 107th Avenue from West Flagler Street to SW 11th Street
- Improved Access to the new FIU Terminal. Exclusive bus lanes in the eastbound as well as in the westbound directions are proposed between SW 109th Avenue and SW 112th Avenue. These exclusive bus lanes will allow westbound Miami-Dade Transit Buses to perform an u-turn maneuver at the intersection of SW 112th Avenue to enter the FIU terminal. Then, these westbound buses will also perform a u-turn maneuver at the intersections with SW 109th Avenue in order to continue their route to the west.
- Florida Turnpike improvements at the interchange with SW 8th Street
- Improvements at SW 8th Street and SW 117th Avenue intersection

2.2.1.2 No-Build Scenario (2025) – Without the Improved Access to the new FIU Terminal

In addition to the two scenarios previously described, there was an additional No-Build Scenario analyzed only for the year 2025, in order to assess the sensitivity to traffic operations along the corridor without the proposed MDT/FIU bus lanes. This additional No-Build Scenario considered all roadway improvements listed in Section 2.2.1, except for the exclusive bus lanes proposed between SW 109th Avenue and SW 112th Avenue.

2.2.1.3 2025-2045 - Build Alternative

At the direction of the MPO, the composite Build Alternative ultimately analyzed included all the projects listed in the No-Build alternative, except for the exclusive bus lanes between SW 109th Avenue and SW 112th Avenue. The decision to not include these lanes in the Build Alternative stemmed from the fact that the lanes have not officially been approved for implementation by FDOT. However, the potential impacts of the exclusive lanes were analyzed in the 2025 No Build scenario described in 2.2.1.2. and results are provided in this technical memorandum.

An additional roadway improvement included in the Build Alternative is the closing of the northbound to westbound movement at the intersection with SW 76th Avenue which allows extending the eastbound to northbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road.

Also, the exclusive westbound left-turn lane at the intersection of SW 8th Street and SW 82nd Avenue was lengthened from 145 feet to 345 feet. This was done to accommodate the increased demand for this movement since several median openings will be closed as a result of the grade separations and drivers will need alternate access to reach their destination on the south side of SW 8th Street.

Lastly, the Build Alternative includes the two grade separations at the intersections of SW 107th Avenue and SW 87th Avenue.

<u>SW 87th Avenue Grade Separation</u>

The proposed grade separation will provide two lanes in each direction for the east/west through traffic as seen in Figure 19 below. Two lanes will remain at grade for local access and turning movements. The bridge portion will be on structure and the required number of turn lanes at the intersection can be accommodated under the bridge. By removing the east-west through-traffic from the signal cycle, more green time can be provided to the congested north/south movements and all of the other at-grade movements. This will improve the operations of the at-grade intersection. This alternative does not have any right-of-way impacts and does not require any additional right-of-way. **Figure 9** graphically depicts the grade separation over SW 87th Avenue.

The SW 87th Avenue grade separation was listed as an unfunded project in the 2035 LRTP and therefore not included in the No-Build scenario consistent with this study's approved methodology. The recently adopted 2040 LRTP lists this project as funded in Priority II (pre-engineering, right-of-way, and construction).

<u>SW 107th Avenue Grade Separation</u>

The second grade separation included in the Build Alternative was SW 8th Street over 107th Avenue. Based on coordination with FDOT, FIU, and the MPO, multiple concept designs were developed and considered for this location. Major factors considered during design were the location of the touch down of the western end of the grade separation, existing and proposed turning movements, access into the FIU campus from SW 8th Street, and the future pedestrian bridge that is proposed to span SW 8th Street just west of SW 109th Avenue.

After much review and discussion with study partners, it was determined that the alternative design to be included in the composite Build analysis is a grade separation from SW 105th Avenue to SW 109th Avenue with two grade separated lanes in both the eastbound and westbound directions, as illustrated in Figure 19 (Alternative #1). Considering the future growth anticipated in the Sweetwater and FIU area, this grade separation alternative prioritizes existing access into FIU as well as accommodates vehicular capacity, both for the existing and future conditions.

In order to maintain the left turn bays accessing FIU at SW 109th and SW 112th Avenues, this alternative proposes that the westbound grade separated lanes are constructed over the northern side of the roadway while the eastbound grade separated lanes are constructed over the median. Two at-grade lanes are provided in both directions between SW 105th and SW 109th Avenues.

Based on this preferred alternative, the westbound approach of the SW 107th Avenue intersection will have two left turn lanes (westbound to southbound), two grade separated westbound through lanes, two at-grade westbound through lanes, and one at-grade exclusive right turn lane (westbound to northbound). This design proposes four total westbound through lanes (two at-grade and two grade separated), which is one more through lane than what is currently provided. After passing through this intersection, two at-grade westbound through lanes will be maintained to accommodate future capacity needs, and to receive northbound-to-westbound turning traffic from SW 107th Avenue, as well as southbound-to-westbound turning traffic from SW 107th Avenue.

The eastbound approach of the intersection at SW 107th Avenue will maintain the existing left turn bays (eastbound to northbound), albeit both turning lanes being slightly shortened to 200’ to accommodate the grade separation. Two at-grade eastbound through lanes are proposed, which when combined with the two grade separated lanes, results in one more eastbound through lane than what currently exists. The existing exclusive right turn lane (eastbound to southbound) is also maintained.

The western touch down of the grade separation will land just east of SW 109th Avenue. In order to receive the two at-grade and two grade separated westbound lanes, the segment of SW 8th Street between SW 109th and SW 112th Avenues would be widened to four lanes. SW 8th Street will then be tapered back down to three westbound through lanes prior to reaching the intersection at SW 112th Avenue. This touch down and typical section configuration will not have any adverse impacts on the proposed pedestrian bridge since the pedestrian bridge is now being designed to touch down north of the Tamiami Canal, thus not impacted by any road widening.

This preferred grade separation concept will require varying widths of right of way on the north side of SW 8th Street east of SW 109th Avenue. The maximum right of way width needed is 12 feet, although this width is less in other areas. The estimated length of right of way impact is just over 1700 feet. None of the right of way needed encroaches into the Tamiami Canal, although secondary impacts to the canal can be expected due to construction.

Operationally, at-grade right turning movements at SW 109th Avenue (westbound to northbound) cannot be accommodated because of the touch down of the grade separated lanes. Access to SW 109th Avenue for westbound vehicles wanting to travel northbound is limited to grade separated traffic only. Additional wayfinding signs will have to be provided to alert drivers wanting to access northbound SW 109th Avenue. This alternative also limits business access along SW 8th Street between SW 107th Avenue and SW 105th Place. Westbound traffic wishing to access businesses here must take an alternative route, such as making a U-turn at SW 107th Avenue / SW 8th Street.

A grade separation at SW 107th Avenue and SW 8th Street was listed as an unfunded project in the 2035 LRTP and therefore not included in this study's No-Build scenario. However, a grade separation project is listed as a funded Priority II project (pre-engineering, right-of-way, and construction) in the recently adopted 2040 LRTP.

Figure 10 graphically depicts the proposed grade separation for the intersection of SW 107th Avenue.

The following sections describe the detailed technical analysis conducted in order to evaluate the impact that the grade separations along SW 8th Street will have on the traffic patterns.

Figure 9 – Grade Separation Alternative at SW 87th Avenue

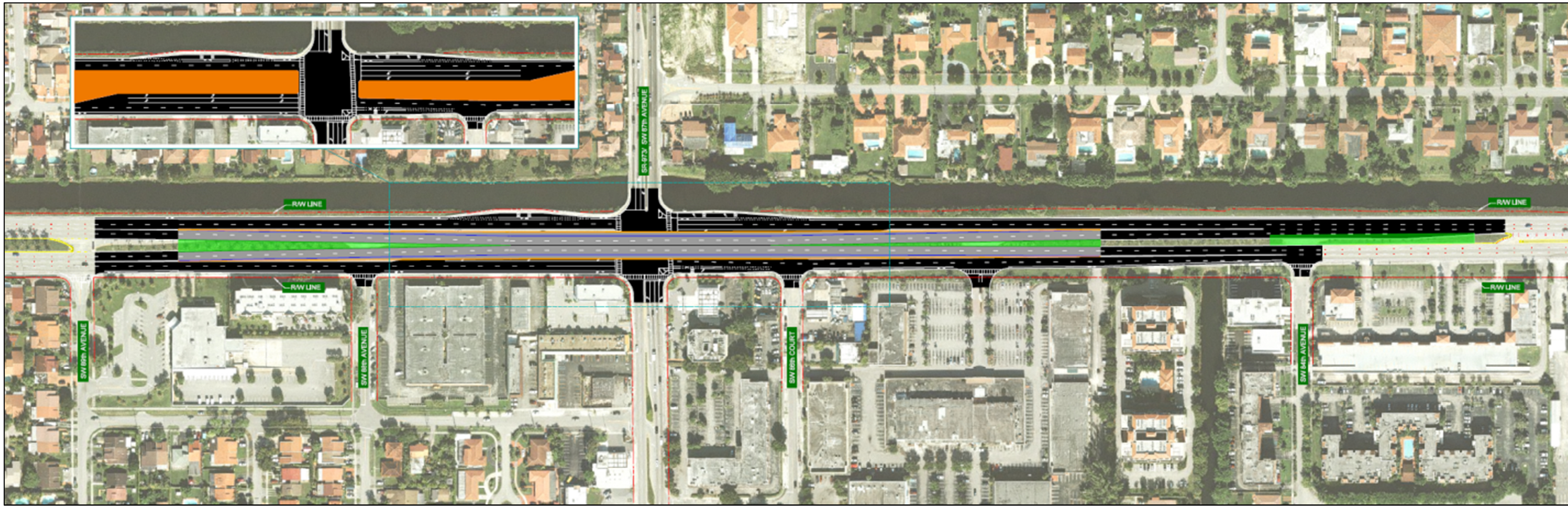
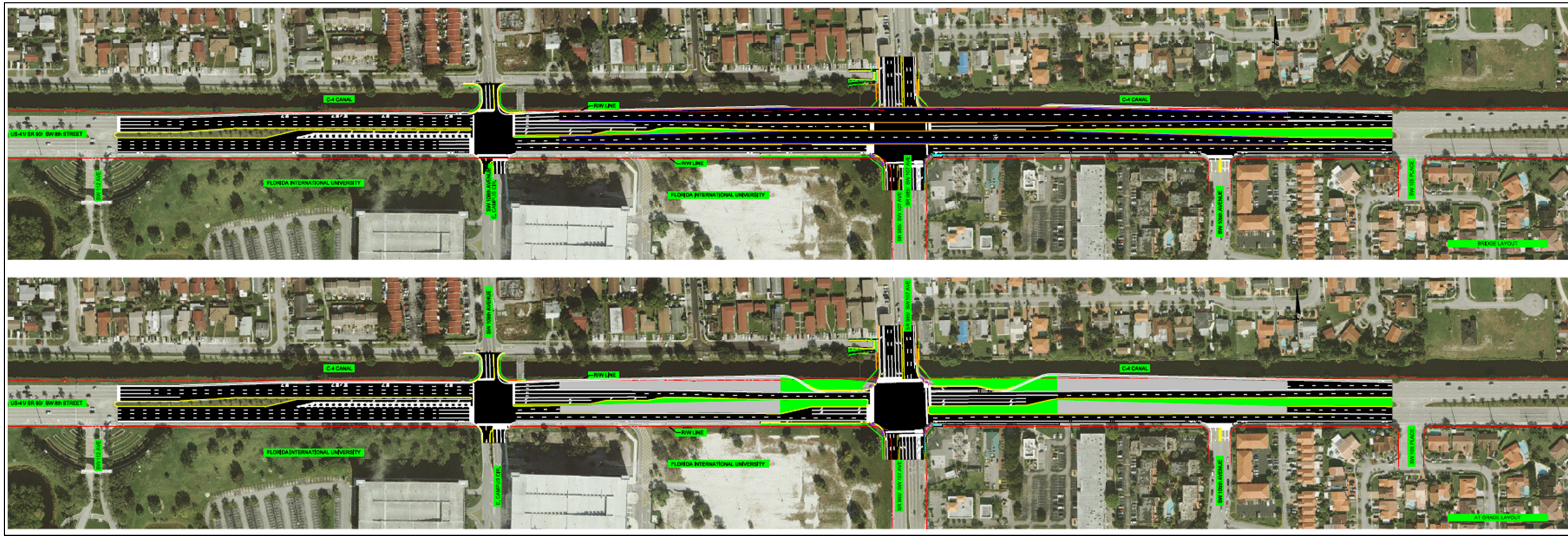


Figure 10 – Grade Separation Alternative at SW 107th Avenue (Alternative #1)



2.2.2 Traffic Operational Analysis Development

The traffic operational analysis started with the analysis of the No-Build Alternative for the year 2025 and 2045 for the AM and PM Peak Hour. Existing conditions files for the AM and PM peak hours were updated in order to incorporate programmed future projects. In addition, traffic volumes were updated according to the forecasting of the respective years. Signal timings were optimized and each scenario was run 10 times to account for the stochastic nature of the software. Once the No-Build Alternative was finalized, a new No-Build (only for 2025) analysis without the exclusive bus lanes between SW 109th Avenue and SW 112th Avenue was conducted. A comparison was made between these two No-Build Scenarios.

In order to evaluate the operations of the exclusive bus lanes between SW 109th Avenue and SW 112th Avenue, several assumptions were made. It was assumed that the exclusive bus lanes will create a new "approach" at the intersections with SW 109th Avenue and SW 112th Avenue. This was done in order to be able to assign a new phase at these intersections. For the intersection of SW 112th Avenue a "southbound" approach was implemented and for the intersection of SW 109th Avenue a "northeast" approach was incorporated. Also, to prevent general traffic from using the extra lane along SW 8th Street, a 100 percent truck traffic factor was assumed for these specific lanes. The cycle lengths at the intersections were kept constant (as in existing conditions); however, a minimum amount of green time was assumed for the "new phases" for the buses. The new phases for the buses were set to actuated, by that meaning that only when vehicles are stopped at the approaches the signal will turn green.

After testing the No Build 2025 Alternatives with and without the bus lanes, the Build Alternative (for 2025 and 2045) was analyzed. The Build Alternative did not include the bus lanes between SW 109th Avenue and SW 112th Avenue for any of the two years analyzed. However, from the comparison of the 2025 No-Build Alternative (with/without exclusive bus lanes) and the 2025 Build Alternative without bus lanes, the impact that the bus lanes will have in 2045 could be inferred. Based on the analysis results, implementation of the bus lanes in the 2045 No-Build would produce more delay along the corridor. The following sections describe in detail the analysis for all different scenarios.

2.2.2.1 2025 Analysis

<u>**Synchro and HCM Analysis**</u>

Appendix F includes the summary tables for the HCM analysis conducted for the intersections along SW 8th Street for all future year scenarios, for the morning and afternoon peak hours. These results need to be carefully interpreted because this analysis is based on the deterministic approach and does not consider complex vehicle interactions as a micro-simulation analysis does.

However, the analysis presented herein focuses on the SimTraffic (Micro-simulation) which accounts for complex vehicles interactions/traffic patterns along SW 8th Street.

SimTraffic (Micro-simulation) Analysis

The following sections summarize the results for the AM and PM Peak Hours. Three measures of effectiveness were used to make comparisons among the alternatives. The three measures of effectiveness were as follows: Processed Volume Comparison, Delay Comparison and Average Speed Comparison.

AM Peak Hour

Volume Comparison

Once the micro-simulation models were run, the first step was to check how the theoretical demand volumes were being processed through the intersections.

2025 No-Build Scenario (with exclusive bus lanes between SW 109th Avenue and SW 112th Avenue)

From the analysis results and information included in **Appendix C** (2025 No-Build with Bus Lanes Scenario) it appears that most of the intersections/segments are able to process the theoretical demand volumes. However, from west of SW 82nd Avenue, the eastbound direction processes about 85 percent of the demand volume (as shown in **Table 6**). Due to the capacity reduction of SW 8th Street east of the SR 826/Palmetto Expressway, the number of vehicles that can be processed through the roadway is limited. Therefore, similar to the conditions observed during field visits in the morning peak hour, a queue forms in the vicinity of the SR 826/Palmetto Expressway Interchange and extends back to west of SW 82nd Avenue, almost reaching the intersection with SW 87th Avenue. It can be inferred that the capacity of SW 8th Street, east of the interchange with SR 826/Palmetto Expressway is approximately 2,400 vph. This volume is similar to the volume processed during existing conditions. As mentioned in Technical Memorandum No. 3, there are other factors affecting the traffic flow along SW 8th Street, east of the SR 826/Palmetto Expressway, besides the reduction in number of lanes. One factor is a pedestrian actuated-signal located east of SW 75th Avenue. In addition, there is a median opening providing access from eastbound SW 8th Street to northbound Tamiami Canal Road and from southbound Tamiami Canal Road to eastbound SW 8th Street. Although the southbound to eastbound movement is extremely low, the eastbound to northbound movement is in high demand. Vehicles trying to make this movement, on some occasions, block the through vehicles along SW 8th Street. Moreover, underneath the SR 826/Palmetto Expressway bridge, there is a relatively wide shoulder (on the right hand side) that some aggressive drivers use as a by-pass lane to get to the eastbound to northbound loop ramp. In addition, the northbound SR 826/Palmetto Expressway to eastbound SW 8th Street ramp enters just east of SR 826/Palmetto Expressway bridge and merges with the two lanes from SW 8th Street. All these conditions together cause that drivers slow-down in the vicinity of SR 826/Palmetto Expressway interchange.

Results also indicate that the intersection of SW 8th Street and SW 109th Avenue is not able to process the projected demand on the southbound approach. The major factor affecting the operation of this intersection is the presence of the exclusive bus lanes that will allow the westbound MDT bus to enter the FIU proposed terminal. These westbound buses will need to make a U-turn at the intersection of

SW 8th Street and SW 109th Avenue to continue westbound to their destination. Therefore, this intersection will be directly impacted by the operations of the exclusive bus lanes. The southbound approach will be significantly impacted since some of the green time assigned to this approach will be re-distributed to allow the green phase for the buses. Because the southbound approach at SW 109th Avenue is not able to process the estimated theoretical demand, the westbound volume reaching the intersection with SW 112th Avenue is slightly lower than the theoretical forecasted demand.

The intersection of SW 8th Street and SW 112th Avenue is moderately impacted as well, due to the presence of the exclusive bus lanes. A new phase was added to this intersection, by re-distributing a minimum time for the phase to accommodate the buses. Based on the SimTraffic results, it appears that the westbound direction (off-peak direction during the morning peak hour), is also impacted by the U-turning buses. Westbound traffic is metered at this intersection and in turn, the westbound approach for the intersections of SW 117th Avenue and SR 821/Turnpike (NB Ramps) do not receive the entire estimated demand. Vehicles queued at the intersections of SW 109th Avenue and SW 112th Avenue cause the downstream intersections to not receive the expected demand. Therefore, these downstream intersections are not able process the whole estimated demand for the westbound approach. **Table 7** shows summarized results of processed volumes at these two intersections (SW 112th Avenue and SW 109th Avenue).

2025 No-Build Scenario (without exclusive bus lanes between SW 109th Avenue and SW 112th Avenue)

For the 2025 No-Build Scenario without the Bus Lanes, between SW 109th Avenue and SW 112th Avenue, the same comparison of theoretical demand vs. processed volumes was performed. Results to the 2025 No-Build Scenario with bus lanes were obtained. All of the segments/intersections are able to process the estimated demand volumes, including the intersections of SW 8th Street/SW 109th Avenue and SW 8th Street/SW 112th Avenue. Traffic volumes at these two intersections were impacted in the previous scenario by the implementation of the bus lanes between SW 109th Avenue SW 112th Avenue. In addition, the westbound approach for the intersections of SW 117th Avenue and SR 821/Turnpike (NB Ramps) are able to process the complete estimated demand for the westbound approach.

Similar to the 2025 No-Build Scenario with Bus Lanes, for the segment of SW 8th Street in the vicinity of SR 826/Palmetto Expressway, the eastbound theoretical demand volumes are not fully processed. The SW 8th Street constrained roadway section, together with the factors described in the previous scenario, prevent the continuous traffic flow along the SW 8th Street eastbound direction. **Table 6** summarizes the results for the intersection east of SR 826/Palmetto Expressway and **Table 7** at the SW 112 and SW 109 Avenue intersections**.**

Table 6 – 2025 No-Build (with/without bus lanes) AM - Processed Volumes Comparison Intersections east of SR 826/Palmetto Expressway

Intersection	Approach	2025 No-Build with Bus Lane AM Peak Hour		2025 No-Build No Bus Lane AM Peak Hour	
		Theoretical Projected Volume (vph)	Processed Volume (vph)	Theoretical Projected Volume (vph)	Processed Volume (vph)
SW 8 Street and SR 826 NB	EB	2700	2314	2700	2386
	WB	1900	1899	1900	1900
	NB	1100	1090	1100	1060
	Overall	**5700**	**5303**	**5700**	**5346**
SW 8 Street and SW 75 Avenue/Tamiami Canal Road	EB	2700	2417	2700	2163
	WB	1900	1911	1900	1911
	NB	30	30	30	29
	SB	100	98	100	100
	Overall	**4730**	**4456**	**4730**	**4203**
SW 8 Street and SW 74 Court **(Ped-Signal Only)**	EB	2400	2159	2400	2195
	WB	1800	1806	1800	1804
	NB	24	27	24	25
	SB	150	150	150	145
	Overall	**4374**	**4142**	**4374**	**4169**
SW 8 Street and SW 74 Avenue	EB	2400	2160	2400	2196
	WB	1500	1510	1500	1524
	NB	530	487	530	480
	SB	280	287	280	289
	Overall	**4710**	**4444**	**4710**	**4489**

Table 7 – 2025 No-Build (with/without bus lanes) AM - Processed Volumes Comparison Intersections with SW 112th Avenue and with SW 109th Avenue

Intersection	Approach	2025 No-Build with Bus Lane AM Peak Hour		2025 No-Build with Bus Lane AM Peak Hour	
		Theoretical Projected Volume (vph)	Processed Volume (vph)	Theoretical Projected Volume (vph)	Processed Volume (vph)
SW 8 Street and SW 112 Avenue	EB	3523	3531	3523	3475
	WB	1900	1775	1900	1907
	NB	165	159	165	165
	Exclusive Bus Lane	23	22		
	Overall	**5611**	**5487**	**5588**	**5547**
SW 8 Street and SW 109 Avenue	EB	2955	2984	2955	2901
	WB	1600	1599	1600	1599
	NB	205	196	205	205
	SB	844	640	844	850
	Exclusive Bus Lane	15	15		
	Overall	**5619**	**5434**	**5604**	**5555**

2025 Build Scenario

Overall, the theoretical demand volumes for the Build Scenario are higher than for the No-Build Scenario. Although it appears that the grade-separations do not cause a significant traffic attraction to SW 8th Street, they do attract more demand (about one/two percent higher), particularly for the segment between SW 122nd Avenue and SW 87th Avenue.

When the theoretical demand volumes were compared against the processed volumes most of the segment/intersections were able to process the entire demand between SW 122nd Avenue and SW 87th Avenue.

Traffic conditions in the vicinity of SR 826/Palmetto Expressway are different when compared to the No-Build Scenarios. In the Build Alternative, it was assumed that the median opening for the intersection of SW 8th Street and SW 76th Avenue, allowing the northbound to westbound movement was closed, and the eastbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road was extended from 100 feet to 400 feet (approximately). These improvements helped to alleviate some of the traffic friction that was experienced in this segment in the No Build. The improvements appear to smoothen the traffic flow along the segment of SW 8th Street between SW 82nd Avenue and SW 74th Avenue. An eastbound queue is still observed within the vicinity of the SR 826/Palmetto Expressway's interchange, this queue extends west to the proximity of the intersection with SW 82nd Avenue. However, is not as critical as in the No-Build condition.

Although extending the eastbound left-turn bay at the intersection of SW 8th Street with Tamiami Canal Road helps improve traffic operations within this segment, the capacity of SW 8th Street is still constrained by the two-lane roadway section. Maximum processed eastbound volume at the intersection with SW 74th Avenue is approximately 2,300/2,400 vph. In the No-Build condition eastbound volumes at this intersection were 2,200 vph. This confirms that the SW 8th Street roadway reduced typical section is what continues to control the capacity of the roadway.

Detailed results for the grade separation improvements in the Build scenario are provided in **Appendix C**. **Table 8** shows the summary of results for the intersections of SW 107th Avenue and SW 87th Avenue.

- Overall, the intersection of SW 8th Street with SW 107th Avenue processes a total of 7,185 vph processed vehicles in the Build Alternative. In the No-Build Alternative (with bus lanes) a total of 7,034 vph are being processed, about one percent more than the Build Alternative. In the No-Build Alternative (without bus lanes) a total of 7,067 vph, about two percent more than the Build Alternative). As evidenced in the analysis, the Build Alternative option operates slightly more efficiently through this intersection. It should be noted that although the difference in processed volumes is minimal between the No-Build (no bus lanes) and Build; the delay at the intersection is significantly reduced with the grade separation option. This will be explained in more detail in a subsequent section of this report.

- For the intersection of SW 8th Street with SW 87th Avenue, the Build Alternative processed a total of 7,249 vph. The No-Build Alternative (with bus lanes) processes a total of 6,822 vph. The No-Build Alternative (no-bus lanes processes a total of 6,830 vph). In this case, the improvements on the processed traffic volumes is due to the grade separation implementation together with the improvement east of SR 826/Palmetto Expressway in relation to extending the eastbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road. However, the delay at this intersection has been greatly reduced as well as a result of the grade separation.

Table 8 – SW 107th Avenue and SW 87th Avenue Intersections Processed Volumes

Intersection	Approach	Movement	2025 No-Build with Bus Lane AM Peak Hour		2025 No-Build no Bus Lane AM Peak Hour		2025 Build AM Peak Hour	
			Theoretical Projected Volume (vph)	Processed Volume (vph)	Theoretical Projected Volume (vph)	Processed Volume (vph)	Theoretical Projected Volume (vph)	Processed Volume (vph)
SW 8 Street and SW 107 Avenue	EB	At-Grade	2409	2326	2409	2387	1338	1328
		Elevated					1113	1110
		Total					*2451*	*2438*
	WB	At-Grade	1800	1800	1800	1800	1174	1158
		Elevated					727	701
		Total					*1901*	*1859*
	NB		1800	1807	1800	1781	1800	1785
	SB		1099	1101	1099	1099	1100	1103
	Overall		**7108**	**7034**	**7108**	**7067**	**7252**	**7185**
SW 8 Street and SW 87 Avenue	EB	At-Grade	3056	2986	3056	2958	1339	1330
		Elevated					1762	1760
		Total					*3101*	*3090*
	WB	At-Grade	1600	1588	1600	1634	923	900
		Elevated					993	959
		Total					*1916*	*1859*
	NB		1400	1397	1400	1378	1440	1440
	SB		857	851	857	860	860	860
	Overall		**6913**	**6822**	**6913**	**6830**	**7317**	**7249**

Delay Comparison

Another measure of effectiveness used to determine the impact of the grade separation on the traffic flow along SW 8th Street was average delay at the intersections. Similar to the volume comparison, all three scenarios for 2025 (No-Build (with bus lanes), No-Build (without bus lanes) and Build were compared. Tables summarizing delays at all intersections within the study area are included in **Appendix D**.

2025 No-Build Scenario (with exclusive bus lanes between SW 109th Avenue and SW 112th Avenue)

A brief comparison was made between the existing conditions results obtained for the overall average intersection delay for the morning peak hour and the results for the 2025 No-Build (with exclusive bus lanes) scenario. From this comparison six intersections resulted in lower delays than for existing conditions, these intersections were:

1. SW 8th Street and Turnpike (SB Ramps)
2. SW 8th Street and Turnpike (NB Ramps)
3. SW 8th Street and SW 107th Avenue
4. SW 8th Street and SW 97th Avenue
5. SW 8th Street and SW 92nd Avenue
6. SW 8th Street and SW 74th Avenue

The first three intersections delay improvements are attributable to the programmed roadway improvements at SW 107th Avenue and at the Turnpike. The configuration of the intersection of SW 8th Street and Turnpike (SB Ramps) will be modified to provide a triple right-turn movement for the southbound SR 821/Turnpike to eastbound SW 8th Street ramp. In addition, the westbound through lanes will all be signalized in order to prevent conflict with the southbound SR 821/Turnpike to westbound SW 8th Street ramp. This ramp will also be converted to a triple-right ramp; therefore, requiring the implementation of a traffic signal to ensure the safety of the drivers.

The intersection of the SR 821/Florida's Turnpike (NB Ramps) will also be modified. Currently, the northbound approach at this intersection only provides one signalized lane for the northbound to westbound movement. The northbound to eastbound movement is provided via a free-flow lane. In the future, this northbound approach will be modified to provide two right-turn and two left-turn signalized movements at this intersection.

Although both intersections (the one for the SB Florida's Turnpike Ramps and the one for the NB Florida's Turnpike Ramps) are proposing to convert free-flow movements into signalized movements, more capacity is being provided with the number of lanes; therefore, conditions are improving at these two intersections and drivers will be potentially experiencing lower delays.

A similar situation is observed for the intersection of SW 8th Street and SW 107th Avenue. Lower delays are being estimated for the future. SW 107th Avenue will be widened from two to three lanes (in each direction). In addition, dual left-turns will also be provided for the northbound and southbound approaches. These improvements will certainly add more capacity to the intersections and although some of the channelized/free flow right-turn movements will be converted to signalized movements, the additional capacity will potentially reduce the delay that drivers experience at this intersection.

For the remaining intersections on the list (SW 8th Street/SW 97th Avenue, SW 8th Street/SW 92nd Avenue and SW 8th Street/SW 74th Avenue), the reduction in delay appears to be related to the optimization of the traffic signal. No major improvements are being proposed for these intersections.

The rest of the intersections along SW 8th Street experience an increase in delay from the existing conditions scenario to the 2025 No-Build (with bus lanes) alternative; two intersections that were carefully evaluated were the intersections of SW 8th Street/SW 109th Avenue and SW 8th Street/SW 112th Avenue. These two intersections will be directly impacted by the exclusive bus lanes that will allow westbound busses to access the FIU terminal located on the south side of SW 8th Street.

The intersection of SW 8th Street and SW 112th Avenue experiences an increase in delay of approximately 48 percent (from 13.3 sec./veh. to 19.7 sec./veh.). The northbound and eastbound approaches are the most affected. Eastbound corresponds to the peak hour during the morning peak and with the implementation of the new signal phase for the U-turning buses, the green time needs to be re-distributed. Therefore, these two approaches will be impacted by the presence of the exclusive bus lanes. In addition, the right-turn-on-red at all of the approaches will need to be prohibited in order to avoid conflict between the buses and the regular vehicular traffic.

For the intersection of SW 8th Street and SW 109th Avenue, the increase in delay is of approximately 62 percent, when compared to existing conditions (from 44 sec./veh. to 71.4 sec./veh.). This intersection is more significantly impacted than the intersection of SW 8th Street and SW 112th Avenue. The intersection of SW 8th Street and SW 109th Avenue is already a four-approach intersection; by adding the exclusive bus lane and the corresponding signal phasing, the timing for the other four approaches is reduced. Similar to the intersection of SW 8th Street/SW 112th Avenue, in order to ensure no conflict will occur between regular vehicular traffic and the buses, all the right-turn-on-red at this intersection will need to be prohibited. The characteristics of this intersection differ from the intersection of SW 8th Street/SW 112th Avenue in that SW 112th Avenue had a little more flexibility to "accommodate" a new phase given the fact that this intersection is currently a three-approach intersection (a T-intersection).

The increase in delay for the rest of the intersections ranges from 2 sec./veh. to 60 sec./veh. The intersections that experience some of the highest increase in delay are the intersections located east of the SR 826/Palmetto Expressway Interchange. This confirms that these intersections are already operating at saturated conditions and signal optimization will not be sufficient to alleviate congestion in this area.

2025 No-Build Scenario (without exclusive bus lanes between SW 109th Avenue and SW 112th Avenue)

In order to analyze the impact that the exclusive bus lanes along SW 8th Street will have on the traffic flow, an overall average delay comparison was performed. The comparison concentrated mostly on the intersections directly impacted by the presence of the bus lanes (SW 8th Street/SW 109th Avenue & SW 8th Street/SW 112th Avenue).

The intersection of SW 8th Street & SW 112th Avenue, experiences a slight reduction in delay when compared to the alternative with the bus lanes (about five percent less delay). The approach mostly affected by the implementation of the bus lanes is the northbound. When the bus lanes are implemented this approach experiences a delay of approximately 59.9 sec./veh. while the alternative without the bus lanes reports a delay of approximately 33.8 sec./veh. However, since the northbound approach corresponds to the minor street, the reduction in delay gets diluted and the overall average delay only experiences a reduction of about 5 percent.

The intersection of SW 8th Street & SW 109th Avenue experiences a significant reduction in delay without the bus lanes. Overall delay at this intersection results in a value of approximately 41.5 sec./veh. (in the no bus lane scenario) from a value of 71.4 sec./veh. (in the bus lane option). The total reduction in delay is of approximately 42 percent. **Table 9** summarizes the results of the delay comparison for the intersections of SW 8th Street/SW 109th Avenue and SW 8th Street/SW 112th Avenue.

Table 9 – 2025 No-Build SW 109th Avenue and SW 112th Avenue - Summary of Delay Intersections (AM Peak Hour)

Intersection	Approach	2025 No-Build with Bus Lane AM Peak Hour			2025 No-Build No Bus Lane AM Peak Hour		
		Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)	Expected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)
SW 8 Street and SW 112 Avenue	EB	3523	3531	21.2	3523	3475	19.5
	WB	1900	1775	12.4	1900	1907	15.9
	NB	165	159	59.9	165	165	33.8
	Exclusive Bus Lane	23	22	85.4			
	Overall	**5611**	**5487**	**19.7**	**5588**	**5547**	**18.7**
SW 8 Street and SW 109 Avenue	EB	2955	2984	41.8	2955	2901	31.2
	WB	1600	1599	55.9	1600	1599	48.6
	NB	205	196	388.7	205	205	46.6
	SB	844	640	132.6	844	850	61.6
	Exclusive Bus Lane	15	15	154.5			
	Overall	**5619**	**5434**	**71.4**	**5604**	**5555**	**41.5**

SW 8th Street and SW 117th Avenue is another intersection that might be indirectly impacted by the presence of the bus lanes. The delay at this intersection in the scenario without the bus lanes results in a value of 19.7 sec./veh. while the delay in the scenario with the bus lanes is reported to be 25.4 sec./veh.

Comparison of the delay for the rest of the intersections resulted in values very similar to the No-Build Scenario (with bus lanes). No major differences were observed.

2025 Build Scenario

In the case of the Build Scenario, the major difference in results is attributable to the implementation of the grade separations over SW 107th Avenue and SW 87th Avenue. These two intersections experience a significant reduction in overall delay when the vehicles traveling along the elevated structure are considered.

In both of the 2025 No-Build Scenarios the delay for the intersection of SW 107th Avenue ranges from 48.8 sec./veh. (bus lanes scenario) to 51.1 sec./veh. (no bus lanes scenario). In the case of the Build scenario the overall delay resulted in a value of approximately 47.8 sec./veh. In the No-Build scenarios all vehicles experience this average delay (about 7,300 vph). However, in the case of the Build Scenario only the vehicles actually crossing the signalized intersection experience delay (about 75 percent of the total volume). The rest of the vehicles (about 25 percent of the total volume – about 1,800 vph) will benefit by the grade separation by experiencing zero delay. **Table 10** summarizes the results for the intersection with SW 107th Avenue.

For the intersection of SW 8th Street and SW 87th Avenue, the reduction in delay is even more significant than for the intersection of SW 8th Street and SW 107th Avenue. The overall delay at the intersection with SW 87thAvenue went from 81.5 sec./veh. (for the scenario with bus lanes) and 98.2 sec./veh. (scenario without bus lanes) to 51.4 sec./veh. in the Build Alternative. The reduction in delay at this intersection is not only attributable to the grade separation but also to the improvement to the eastbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road.

With the improvement at the intersection of SW 8th Street and Tamiami Canal Road, the eastbound queue that formed at the vicinity of the SR 826/Palmetto Expressway Interchange and extended west of SW 82nd Avenue was reduced. Therefore, the queue that eastbound drivers found when crossing the intersection of SW 87th Avenue was minimized and this may have caused average speeds at the intersection with SW 87th Avenue to increase and the delay to be reduced.

The overall delay for drivers using the signalized intersection at SW 87th Avenue (49.7 sec./veh.) is only experienced by approximately 62 percent of the total traffic crossing the intersection. The other 38 percent experiences no delay by taking the elevated structure.

Table 10 – 2025 Delay Comparison (SW 107th Avenue and SW 87th Avenue Intersections) AM Peak Hour

Intersection	Approach	Movement	2025 No-Build with Bus Lane AM Peak Hour			2025 No-Build no Bus Lane AM Peak Hour			2025 Build AM Peak Hour		
			Theoretical Projected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)	Theoretical Projected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)	Theoretical Projected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)
SW 8 Street and SW 107 Avenue	EB	At-Grade	2400	2326	60.7	2400	2387	67	1338	1328	41.6
		Elevated							1113	1110	0
		Total							*2451*	*2438*	
	WB	At-Grade	1800	2021	35	1800	2038	36.3	1173	1158	43.2
		Elevated							727	701	0
		Total							*1900*	*1859*	
	NB		1800	1807	41.6	1800	1781	38.8	1800	1785	44.5
	SB		1100	1101	61.1	1100	1099	63.9	1100	1103	65.1
	Overall		**7100**	**7255**	**48.8**	**7100**	**7305**	**51.1**	**7251**	**7185**	**47.8**
SW 8 Street and SW 87 Avenue	EB	At-Grade	3100	2986	107.8	1339	1330	49.8	1339	1330	49.8
		Elevated							1762	1760	0
		Total							*3101*	*3090*	
	WB	At-Grade	1600	1588	44.8	922	900	56.5	922	900	56.5
		Elevated							993	959	0
		Total							*1915*	*1859*	
	NB		1400	1397	72	1440	1440	54.6	1440	1440	54.6
	SB		860	851	69	860	860	43.3	860	860	43.3
	Overall		**6960**	**6822**	**81.5**	**4561**	**4530**	**51.4**	**7316**	**7249**	**51.4**

Other intersections that experience a significant reduction in delay in the Build condition are:

1. SW 8th Street and SW 82nd Avenue
2. SW 8th Street and SR 826/Palmetto Expressway (SB Ramps)
3. SW 8th Street and SR 826/Palmetto Expressway (NB Ramps)

As these three intersections are located east of SW 87th Avenue, the reduction in overall delay is mostly due to the reduction in the overall eastbound delay. This seems to indicate that the improvement of the eastbound to northbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road contributed to the lower delay reported in the Build Scenario. By eliminating friction in the vicinity of the SR 826/Palmetto Expressway interchange a more efficient traffic flow in the eastbound direction will be possible. However, it is recommended that before implementing the improvement at the intersection of SW 8th Street and Tamiami Canal Road a more detailed analysis be performed.

Speed Comparison

Average speeds were also analyzed for the No-Build Alternative and Build Alternatives. A graph summarizing average speeds by segment along the eastbound direction was developed. **Figure 11** shows the graphs developed for SW 8th Street intersection facility (at-grade option) and **Figure 12** shows the average speeds for the grade-separated facility (at the intersections of SW 107th Avenue and SW 87th Avenue).

Figure 11 – Eastbound Average Speed (AM Peak Hour Comparison - Signalized Intersection (At-grade Option)

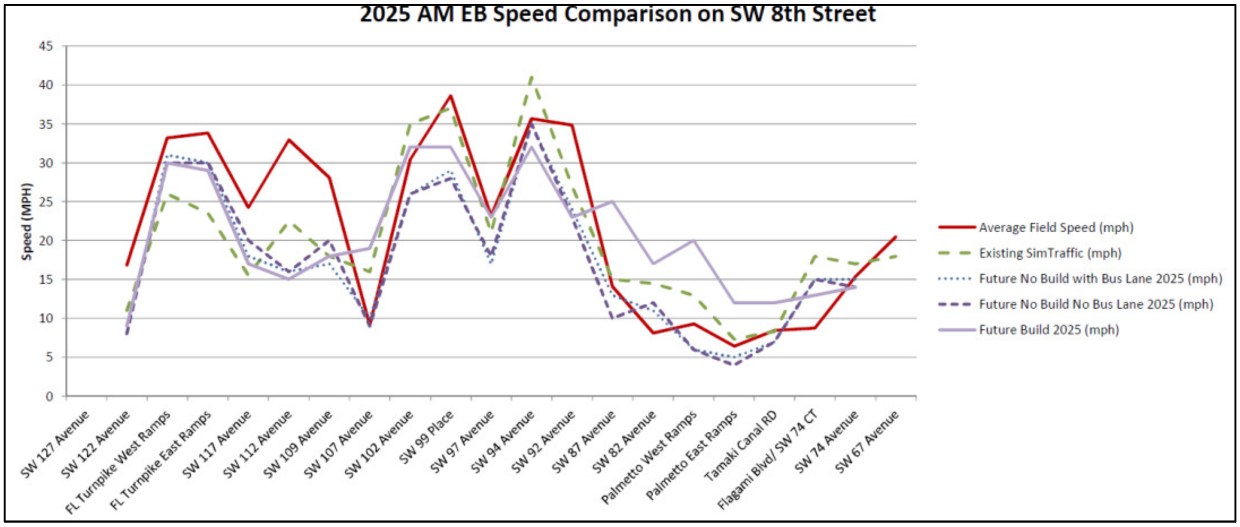
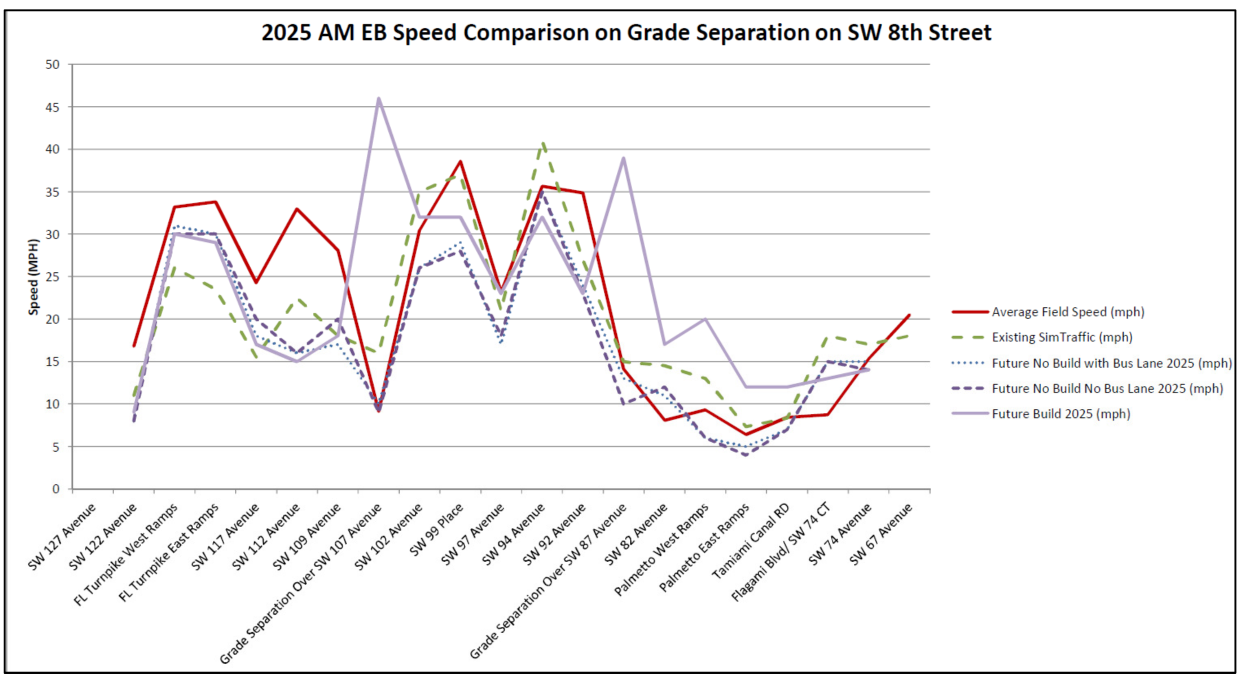


Figure 12 - Eastbound Average Speed (AM Peak Hour Comparison - with Grade Separations at SW 107th Avenue and SW 87th Avenue)



As evident in the graphs, the No-Build and Build average speeds for the segment between SW 122nd Avenue and SW 117th Avenue improve when compared to the simulated existing conditions (green dotted line). This seems to be related to new configuration for the intersections with the NB/SB ramps from SR 821/Florida's Turnpike. The proposed configuration seems to positively affect traffic flow along this segment.

For the segment between SW 117th Avenue and SW 107th Avenue, average speeds decrease when compared to existing conditions. This seems to indicate that the re-timing of the intersection with SW 107th Avenue might slow down vehicles in the area; however, the overall traffic flow through the intersection (as a whole) improves as described in the volume comparison. Average speeds for the No-Build Scenario (no bus lanes) are slightly higher than the speeds of the No-Build Scenario (with bus lanes). However, average speeds for the Build Scenario in this segment (between SW 117th Avenue and SW 109th Avenue) are slightly lower than for the No-Build Scenarios. These lower average speeds seem to be related to the positioning of the vehicles in the appropriate lane (grade-separation vs. at-grade option). Animation in the traffic analysis program shows that vehicles change lanes, and therefore slow down, just west of the intersection with SW 109th Avenue. The lower speeds (in the vicinity of SW 109th Avenue) seem to impact average eastbound speeds at SW 112th Avenue and SW 117th Avenue. However, the increase in average speeds is very significant just east of SW 109th Avenue where the slope of the line representing the Build conditions is steeper upward when compared to the No-Build Alternatives.

These higher speeds (east of SW 109th Avenue) are maintained until just east of SW 94th Avenue where average speeds for the Build Scenario decrease when compared to the No-Build Scenarios. These lower speeds seems to be due to the lane changing maneuvers that drivers start performing when approaching the entrance to the grade separation for the intersection of SW 87th Avenue. Similar to the case of the grade separation at SW 107th Avenue, these lower speeds are observed for the segment just west of the entrance to the grade separations. Once vehicles pass the entrance to the grade-separation average speeds pick-up and are higher than the No-Build Scenarios.

As previously described in the delay comparison section of this report, an additional factor that is favoring the traffic operations in the eastbound direction just east of SW 87th Avenue is the lengthening of the left-turn bay for the eastbound to northbound movement at the intersection of SW 8th Street with Tamiami Canal Road. Therefore, average speeds of the Build Scenario are much higher than for the No-Build Alternatives in the segment east of SW 87th Avenue.

Since no major improvements were proposed for the segment between SW 102nd Avenue and 92nd Avenue (except for the optimization of the signals), average speeds for this segment decrease when compared to the average simulated speeds for existing conditions.

Figure 13 and **Figure 14** graphically depict the profile for the average speeds along the westbound direction (off-peak direction). **Figure 13** shows the average speed profiles for drivers taking the at-grade signalized intersections (once the grade separations at SW 87th Avenue and SW 107th Avenue are implemented). As indicated in this graph, the segment between SW 74th Avenue and SW 82nd Avenue experiences an increase in speeds for all three future scenarios (No-Build with bus lanes, No-Build without bus lanes and Build) when compared to the existing conditions simulated speeds.

One particular observation is that the No-Build Scenarios actually show higher speeds than the Build Alternative. In the case of the Build Scenario, the westbound direction might be impacted by the higher number of vehicles turning eastbound to northbound at the intersection of SW 8th Street and Tamiami Canal Road. As mentioned in previous sections of this report, the eastbound to northbound left-turn bay was assumed to be lengthened in the Build Alternative. This lengthening of the exclusive let turn bay allows more vehicles to queue at this intersection and wait for the adequate gap in westbound direction (conflicting direction) in order to perform the desired movement. In the existing conditions analysis, vehicles lined-up to perform this movement spilled back and blocked the flow of the through eastbound movement. For the Build Alternative it can be observed how the lengthening of the eastbound to northbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road positively impact the flow in the eastbound direction, but it has some slight negative impacts in the westbound direction.

Figure 13 - Westbound Average Speed (AM Peak Hour Comparison - Signalized Intersection Facility)

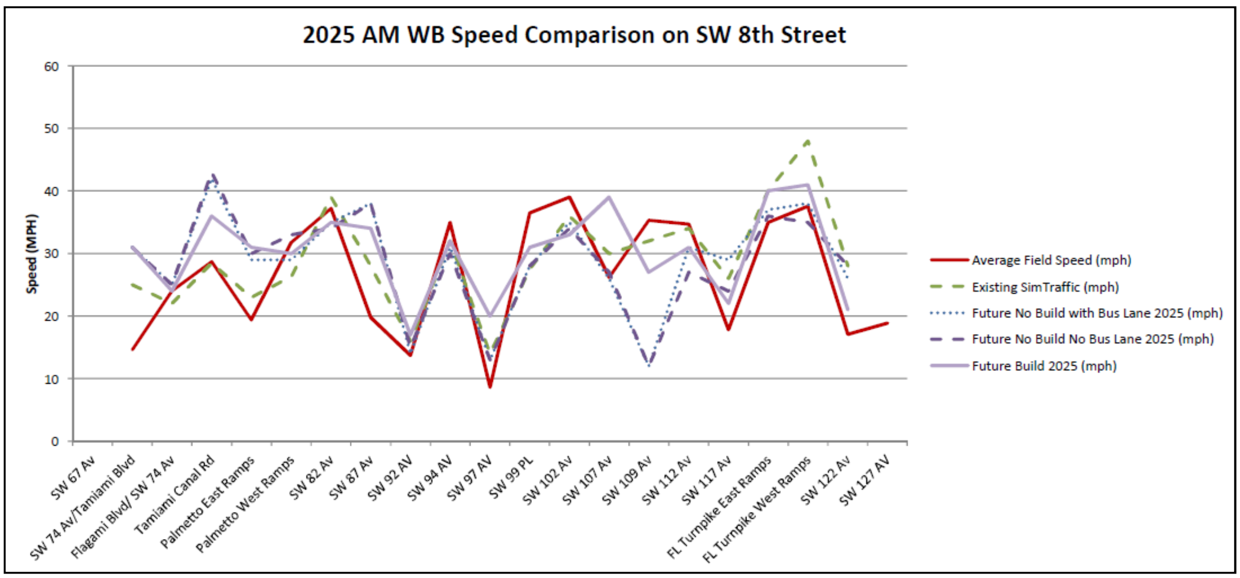
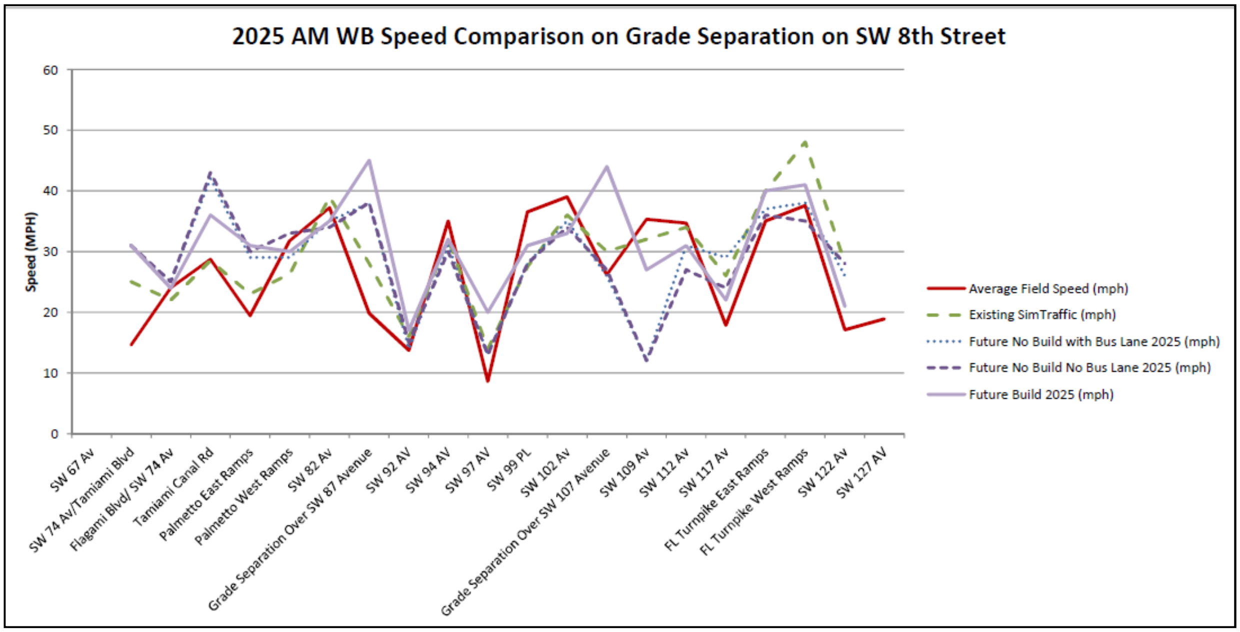


Figure 14 - Westbound Average Speed (with Grade Separations at SW 107th Avenue and SW 87th Avenue)



Higher speeds in the future scenarios are also observed east of SW 82nd Avenue up until SW 92nd Avenue for all future Alternatives when compared to existing conditions. These higher speeds may be the result of the signal optimization that was conducted for the future conditions alternatives. It has to be pointed out that the Build Alternative reported lower speeds than the No-Build Alternatives for the segment just east of SW 87th Avenue. The reason that the speeds for the Build Alternative result in slightly lower speeds may be that vehicles tend to slow down at the entrance to the grade-separation structure. Drivers have to slow down in order to position themselves in the appropriate lane that will lead them to the elevated structure and final destination.

For the segment between SW 92nd Avenue and SW 97th Avenue, the No-Build Alternative displays similar speeds as for existing conditions. The Build Alternative however, displays higher speeds than existing conditions and No-Build Alternatives in the vicinity of the intersection with SW 97th Avenue. These higher speeds may be the result of the implementation of the grade separation at SW 107th Avenue, whose starting point is near the intersection with SW 103rd Place, in the westbound direction. These higher speeds are maintained until the intersection of SW 109th Avenue, where they drastically drop below existing conditions speeds, but they are still higher than the speeds for the No-Build Alternatives.

When the speeds for the No-Build Alternative (with the bus lanes) are compared against the speeds for the No-Build Alternative (without the bus lanes), no significant difference is observed. The two lines almost follow the same pattern, which seems to indicate that the bus lanes do not have much impact on the traveling speeds along this segment (similar to the eastbound direction). The reason why the difference in speeds is not that significant could be the fact that there are several closely spaced intersections within this segment that might not allow for vehicles to speed up. Therefore, difference in speeds is minimal.

However, the clear impact of the bus lanes is on the delay experienced at the intersections as the result of phase timing re-distribution.

Travel for the segment west of SW 109th Avenue in the future alternatives all display similar speeds. The Build Alternative shows somewhat higher speeds than the No-Build Alternatives.

PM Peak Hour

Volume Comparison

Similar to the AM Peak Hour, once the micro-simulation models were run, the first step was to check how the theoretical demand volumes were being processed through the intersections.

2025 No-Build Scenario (with exclusive bus lanes between SW 109th Avenue and SW 112th Avenue)

Appendix C includes a detailed summary of the processed volumes by approach for each of the intersections being analyzed within the study area. Analysis results indicate that most of the intersections west of SW 107th Avenue are not able to process the entire demand for the westbound direction. This seems to be mostly related to the presence of the bus lanes between the intersections of SW 109th Avenue and SW 112th Avenue.

Intersection signal timings were modified in order to accommodate the actuated phase that would allow buses to perform the corresponding U-turn movements at the respective intersections. These new signal timings are metering the traffic that travel through the intersections of SW 109th Avenue and SW 112th Avenue.

In the afternoon, the pattern seems to be more predominant than in the morning because total volumes through these intersections are higher. Therefore, the impacts are more significant. The westbound traffic (peak direction) gets impacted first by the intersection of SW 109th Avenue and then by the intersection of SW 112th Avenue, causing fewer cars to be processed through the intersection. However, since overall volumes are higher than the in morning, and the signal splits are already optimized, no more green time can be assigned without increasing the cycle lengths for the intersections. Therefore, the impacts of the bus lanes are more significant in the afternoon than in the morning.

The intersection that is mostly metering the traffic is the intersection of SW 8th Street and SW 109th Avenue. The northbound/southbound approaches at this intersection are queued and since the entire demand cannot be processed, the westbound volume reaching the intersection of SW 112th Avenue is less than the theoretical demand. In addition, since the northbound approach at the intersection with SW 112th Avenue is not able to process the entire demand either, the impacts are even more significant for the westbound approaches of the intersections west of SW 112th Avenue.

Some of the intersections impacted by the presence of the bus lanes are:

1. SW 8th Street and SW 117th Avenue
2. SW 8th Street and SR 821/Florida's Turnpike NB Ramps
3. SW 8th Street and SR 821/Florida's Turnpike SB Ramps
4. SW 8th Street and SW 122nd Avenue (this last intersection is not able to process the entire demand for its southbound approach).

Most of the intersections to the east of SW 107th Avenue are able to process the entire demand. Except for some intersections in which the minor street approaches still have difficulty processing the entire demand. Some of these intersections are:

1. SW 8th Street and SW 97th Avenue
2. SW 8th Street and SW 87th Avenue
3. SW 8th Street and Tamiami Canal Road

2025 No-Build Scenario (without exclusive bus lanes between SW 109th Avenue and SW 112th Avenue)

Appendix C also shows results for the 2025 No-Build Alternative without the bus lanes. In this case, the intersections west of SW 107th Avenue are able to process most of the demand volumes.

The intersection of SW 8th Street and SW 109th Avenue still does not process the entire demand for the northbound approach. However, it does process a higher volume for this approach than the alternative with bus lanes.

Similar to the No-Build Alternative (with bus lanes), the intersection of SW 8th Street and SW 122nd Avenue is not able to process the entire demand.

The same pattern as for the No-Build Alternative (with bus lanes) was found. The intersections to the east that are not processing the entire demand include:

1. SW 8th Street and SW 97th Avenue
2. SW 8th Street and SW 87th Avenue
3. SW 8th Street and Tamiami Canal Road

2025 Build Scenario

As mentioned in the previous scenarios analyzed, the volumes during the afternoon peak hour are (in general) higher than in the morning. Therefore, traffic operations in some segments of SW 8th Street are more critical than in the morning.

In addition, because of the proposed grade separation improvements, several of the mid-block median openings will have to be removed. By removing these median openings, traffic diversion will occur to the adjacent intersections and will result in a potential increase in either right turns, left turns or U-turns at certain intersections.

For instance, by closing the access from northbound SW 76th Avenue to westbound SW 8th Street, drivers wanting to perform this movement will need to divert to the intersection of SW 74th Avenue. In the morning, no significant impact is observed when this traffic diversion occurs because the number of vehicles performing this movement is negligible. However, in the afternoon the traffic diversion to the intersection of SW 8th Street and SW 74th Avenue could potentially impact traffic operations along SW 8th Street. The northbound approach at SW 74th Avenue is already operating at capacity during the afternoon. By adding the vehicles being re-routed from the intersection of SW 8th Street and SW 76th Avenue, the northbound volume at SW 74th Avenue will increase by approximately 400 vph (for a total of about 698 vph). Out these 698 vph, about 560 vph will be tuning left from the SW 74th Avenue northbound approach. Signal splits at this intersection were optimized in order to process the highest number of vehicles through the intersection; however, due to the intersection configuration and the number of through lanes along SW 8th Street, the total intersection demand is not being processed.

Because of the condition mentioned above, most of the intersections west of SW 74th Avenue are not able to process the theoretical demand for the westbound approach. The eastbound approach is also being affected. Signal timing is giving priority to the peak direction and the eastbound direction (off-peak direction) does not have sufficient green time to process its demand for the afternoon peak.

In addition, for the intersection of SW 8th Street and SW 82nd Avenue, the westbound left-turn lane was extended to 345 feet in order to accommodate the traffic diversion that will take place when the median openings between SW 82nd Avenue and SW 87th Avenue are closed. The closure of the median openings is necessary in order to implement the grade separation.

By lengthening the westbound left-turn lane at the intersection of SW 8th Street and SW 82nd Avenue, the queue of the projected demand is contained within the exclusive left-turn lane.

For the intersection of SW 8th Street and SW 87th Avenue, the Build Alternative allows processing approximately 2.5 percent higher volumes than the No-Build Alternative. The Build Alternative allows processing most of the volumes for the northbound/southbound approaches at this intersection. The real benefit of the Build Alternative in comparison to the No-Build Alternatives, is the reduction in delay experienced by the drivers taking the grade separation.

In general, the westbound approach for most of the intersections within the study area display relatively lower processed volumes than the theoretical demand. The main factor affecting this is the limited capacity of SW 8th Street, east of SR 826/Palmetto Expressway that meters the traffic being fed to the rest of the network.

In the case of the intersection of SW 8th Street and SW 107th Avenue, the Build Alternative processed the entire demand for the northbound and southbound approaches. However, since in the Build Alternative the eastbound exclusive right-turn lane needs to be converted to a shared through/right, the entire demand of the right-turn vehicles is not able to be processed through the intersection. Through vehicles stopped in front of right-turning vehicles prevent the eastbound to southbound movement to be performed.

The intersection of SW 8th Street and SW 109th Avenue operates similar to the No-Build Alternatives. The southbound/northbound approaches are not able to process the entire demand. In turn, the westbound approaches for the intersections located west of SW 109th Avenue do not process the theoretical forecasted demand.

Table 11 and 12 summarizes the results for both intersections.

Table 11 – 2025 - SW 109th Avenue and SW 112th Avenue Volume Comparison (AM Comparison)

Intersection	Approach	2025 No Build with Bus Lane PM Peak Hour		2025 No Build No Bus Lane PM Peak Hour		2025 Build PM Peak Hour	
		Theoretical Projected Volume (vph)	Processed Volume (vph)	Expected Volume (vph)	Processed Volume (vph)	Theoretical Projected Volume (vph)	Processed Volume (vph)
SW 8 Street and SW 112 Avenue	EB	2400	2339	2400	2321	2450	2366
	WB	3000	2662	3000	2837	3030	2689
	NB	680	684	680	683	740	729
	Exclusive Bus Lane	23	19				
	Overall	**6103**	**5704**	**6080**	**5841**	**6220**	**5784**
SW 8 Street and SW 109 Avenue	EB	2350	2341	2350	2296	2400	2372
	WB	2244	2197	2244	2153	2280	2209
	NB	1110	745	1110	970	1120	715
	SB	680	466	680	671	680	523
	Exclusive Bus Lane	15	15				
	Overall	**6399**	**5764**	**6384**	**6090**	**6480**	**5819**

Table 12 - 2025 - SW 107th Avenue and SW 87th Avenue Volume Comparison (AM Comparison)

Intersection	Approach		2025 No Build with Bus Lane PM Peak Hour		2025 No Build No Bus Lane PM Peak Hour		2025 Build PM Peak Hour	
			Theoretical Projected Volume (vph)	Processed Volume (vph)	Expected Volume (vph)	Processed Volume (vph)	Theoretical Projected Volume (vph)	Processed Volume (vph)
SW 8 Street and SW 107 Avenue	EB	At-Grade	2200	2167	2200	2288	1418	1291
		Elevated					882	799
		Total					*2300*	*2090*
	WB	At-Grade	2550	2550	2550	2550	1427	1346
		Elevated					1234	1177
		Total					*2661*	*2523*
	NB		1900	1902	1900	1908	1930	1937
	SB		2100	2112	2100	2118	2100	2092
	Overall		**8750**	**8731**	**8750**	**8864**	**8991**	**8642**
SW 8 Street and SW 87 Avenue	EB	At-Grade	2500	2403	2500	2458	798	772
		Elevated					1702	1648
		Total					*2500*	*2420*
	WB	At-Grade	3100	3000	3100	3030	1263	1141
		Elevated					2104	1888
		Total					*3367*	*3029*
	NB		1400	1376	1400	1375	1400	1406
	SB		1200	1073	1200	1077	1200	1202
	Overall		**8200**	**7852**	**8200**	**7940**	**8467**	**8057**

Delay Comparison

A comparison of the delay was conducted for all intersections within the area of analysis for the PM peak hour. All three scenarios for 2025 (No-Build (with bus lanes), No-Build (without bus lanes) and Build) were compared. Tables summarizing delays at all intersections within the study area are included in **Appendix D**.

2025 No-Build Scenario (with exclusive bus lanes between SW 109th Avenue and SW 112th Avenue)

To start the analysis and estimate how the traffic conditions will change from existing conditions, a brief comparison of the 2025 No-Build Alternative (with bus lanes) was performed.

From this comparison it was determined that four intersections will experience lower delays than for existing conditions. These four intersections are:

1. SW 8th Street and SR 821/Florida's Turnpike (SB Ramps)
2. SW 8th Street and SW 107th Avenue
3. SW 8th Street and SW 92nd Avenue
4. SW 8th Street and SW 87th Avenue

As previously explained, the intersection of SW 8th Street and SR 821/Florida's Turnpike (SB Ramps) will undergo major improvements focused on minimizing the delays on the ramps to/from SR 821/Florida's Turnpike southbound. Therefore, these improvements together with signal optimization definitely have positive impacts on the traffic flow through this segment.

Similarly, the intersection of SW 8th Street and SW 107th Avenue will undergo major improvements that will facilitate the traffic flow through this intersection. Together with the signal optimization performed as part of the SW 8th Street Corridor Study, traffic operations will improve through this intersection resulting in an overall lower delay.

For the last two intersections (SW 8th Street/SW 87th Avenue, SW 8th Street/SW 92nd Avenue), the reduction in delay appears to be related to the optimization of the traffic signal. No major improvements are being proposed for these intersections.

The intersection of SW 8th Street and SW 112th Avenue experiences an increase of delay of approximately 97 percent (from 19.0 sec./veh. to 37.5 sec./veh.). All of the approaches are impacted at this intersection by the presence of the bus lanes. In addition, because of the bus lanes all of the right-turn-on-red at this intersection will need to be prohibited in order to avoid conflict between the buses and the regular vehicular traffic.

For the intersection of SW 8th Street and SW 109th Avenue, the increase in delay is of approximately 49 percent, when compared to existing conditions (from 54.7 sec./veh. to 81.3 sec./veh.). The intersection of SW 8th Street and SW 109th Avenue is already a four-approach intersection and by adding the exclusive bus lane and the corresponding signal phasing, the timing for the other approaches is reduced. In addition, similar to the intersection of SW 8th Street/SW 112th Avenue, in order to ensure no conflict will occur between regular vehicular traffic and the buses, all the right-turn-on-red at this intersection will need to be prohibited. The northbound and southbound approaches at the SW 109th Avenue intersection are not able to process the entire demand.

The increase in delay for the rest of the intersections ranges from 2 sec./veh. to 30 sec./veh. No other significant changes in traffic operations from existing conditions were observed at the remaining intersections.

Similar to the condition observed in existing conditions (AM peak hour) and the 2025 No-Build Alternatives, as the eastbound volumes increase higher than 2,400 vph, in the vicinity of the SR 826/Palmetto Expressway, a queue in the eastbound direction west of SR 826/Palmetto Expressway starts to form. For the year 2025 this eastbound queue extends west of SW 82nd Avenue.

2025 No-Build Scenario (without exclusive bus lanes between SW 109th Avenue and SW 112th Avenue)

In order to analyze the impact that the exclusive bus lanes along SW 8th Street will have on the traffic flow, an overall average delay comparison was performed. The comparison concentrated mostly on the intersections directly impacted by the bus lanes (SW 8th Street/SW 109th Avenue & SW 8th Street/SW 112th Avenue).

For the intersection of SW 8th Street & SW 112th Avenue, the delay slightly increased (from 37.5 sec./veh. to 40.3 sec./veh.). This increase in delay needs to be carefully interpreted because in the No-Build Alternative (with the bus lane) the volumes reaching this intersection from the upstream intersection (SW 109th Avenue) are lower. Therefore, the queued vehicles at the northbound/southbound approaches of SW 109th Avenue are not able to reach the intersection of SW 112th Avenue and an ‘’apparent” lower delay for SW 8th Street/SW 112th Avenue is reported. **Table 13** summarizes results for the intersections of SW 8th Street/SW 112th Avenue and SW 8th Street/SW 109th Avenue.

The intersection of SW 8th Street & SW 109th Avenue experiences a significant reduction in delay. Overall delay at this intersection results in a value of approximately 64.5 sec./veh. (no bus lane scenario) from a value of 81.3 sec./veh. (with bus lanes). The total reduction in delay is of approximately 20 percent. In addition, the processed volumes at this intersection increase from 5,764 vph (no bus lane alternative) to 6,090 vph (with bus lanes).

Comparison of the delay for the rest of the intersections resulted in values very similar to the No-Build Scenario (with bus lanes). No major differences were observed.

Table 13 – 2025 Delay Comparison SW 109th Avenue and SW 112th Avenue Intersection (PM Peak Hour)

Intersection	Approach	2025 No Build with Bus Lane PM Peak Hour			2025 No Build No Bus Lane PM Peak Hour			2025 Build PM Peak Hour		
		Theoretical Projected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)	Expected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)	Theoretical Projected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)
SW 8 Street and SW 112 Avenue	EB	2400	2339	46	2400	2321	37.9	2450	2366	53.4
	WB	3000	2662	24.4	3000	2837	43.6	3030	2689	37.2
	NB	680	684	57.2	680	683	34.6	740	729	39.8
	Exclusive Bus Lane	23	19	87.7						
	Overall	**6103**	**5704**	**37.5**	**6080**	**5841**	**40.3**	**6220**	**5784**	**44.2**
SW 8 Street and SW 109 Avenue	EB	2350	2341	49.6	2350	2296	46.2	2400	2372	29.4
	WB	2244	2197	70.5	2244	2153	63.2	2280	2209	58.5
	NB	1110	745	146.1	1110	970	104	1120	715	151.3
	SB	680	466	177.7	680	671	71.9	680	523	126.8
	Exclusive Bus Lane	15	15	111.6						
	Overall	**6399**	**5764**	**81.3**	**6384**	**6090**	**64.5**	**6480**	**5819**	**64.6**

2025 Build Scenario

As mentioned in the explanation for the morning peak hour comparison, the main difference between the No-Build Alternatives and the Build Scenario is the implementation of grade separations at the intersections with SW 107th Avenue and SW 87th Avenue.

For the No-Build Alternative (with bus lanes) the delay at the intersection with SW 107th Avenue was report as 64.3 sec./veh. The delay for the No-Build Alternative (without bus lanes) was report as 63.9 sec./veh. The delay for the Build Alternative was reported as 62.4 sec./veh. It has to be mentioned that this delay is only experienced by 76 percent of the traffic volumes crossing the intersection. The other 24 percent (approximately 2,100 vph) cross the intersection with no delay by using the free-flow overpasses provided as part of the grade separation. Summary of results are shown in **Table 14**.

For the intersection of SW 8th Street and SW 87th Avenue, the reduction in delay is even more significant. The Build Alternative reported an overall delay of approximately 48.5 sec./veh. The No-Build Alternatives reported a delay of 95.7 sec./veh. and 97.4 sec./veh (with bus lanes and no-bus lanes, respectively). Similar to the intersection of SW 8th Street and SW 107th Avenue, the drivers experiencing the overall delay are the ones crossing the intersection using the signalized (at-grade) option (about 45 percent of the total volume crossing the intersection). The majority of the traffic does not experience any delay (about 55 percent – 4,660 vph).

Table 14 – 2025 SW 107th Avenue and SW 87th Avenue Intersections Delay Comparison (PM Peak Hour)

Intersection	Approach		2025 No Build with Bus Lane PM Peak Hour			2025 No Build No Bus Lane PM Peak Hour			2025 Build PM Peak Hour		
			Theoretical Projected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)	Expected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)	Theoretical Projected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)
SW 8 Street and SW 107 Avenue	EB	At-Grade	2200	2167	53.7	2200	2288	60	1418	1291	79.8
		Elevated							882	799	0
		Total							*2300*	*2090*	
	WB	At-Grade	2550	2550	71.3	2550	2550	68.9	1427	1346	62.9
		Elevated							1234	1177	0
		Total							*2661*	*2523*	
	NB		1900	1902	51	1900	1908	50.2	1930	1937	46.6
	SB		2100	2112	77.8	2100	2118	73.8	2100	2092	65.8
	Overall		**8750**	**8731**	**64.3**	**8750**	**8864**	**63.9**	**8991**	**8642**	**62.4**
SW 8 Street and SW 87 Avenue	EB	At-Grade	2500	2403	83.9	2500	2458	86.7	798	772	69.4
		Elevated							1702	1648	0
		Total							*2500*	*2420*	
	WB	At-Grade	3100	3000	42	3100	3030	41.5	1263	1141	49.6
		Elevated							2104	1888	0
		Total							*3367*	*3029*	
	NB		1400	1376	136.5	1400	1375	144	1400	1406	43.9
	SB		1200	1073	211.8	1200	1077	211.1	1200	1202	39.5
	Overall		**8200**	**7852**	**95.7**	**8200**	**7940**	**97.4**	**4661**	**4521**	**48.5**

The traffic operations at this intersection need to be carefully interpreted. In the No-Build Alternative, the volume in the eastbound direction (off-peak direction), east of SW 87th Avenue increases to approximately 2,400 vph. As stated previously, the capacity of SW 8th Street in the vicinity of SR 826/Palmetto Expressway reduces to approximately 2,400 vph (as determined in the AM existing conditions analysis). Volumes exceeding 2,400 vph, east of SW 87th Avenue, create a queue spillback due to the narrower cross-section receiving the traffic east of SR 826/Palmetto Expressway. Therefore, the spillback formed west of SW 82nd Avenue (in the eastbound direction), impacts operations at the intersection with SW 87th Avenue, causing the delay at the intersection to increase. This condition was not observed in the existing PM analysis because traffic volumes were lower than 2,400 vph in the vicinity of the SR 826/Palmetto Expressway. As volumes increase, the condition identified in the eastbound direction during the AM Peak Hour (eastbound queue in the vicinity of SR 826/Palmetto Expressway Interchange) also occurs in the afternoon.

In the case of the Build Scenario, because of the improvements assumed for the eastbound exclusive left-turn lane at the intersection of SW 8th Street and Tamiami Canal Road, traffic flow progresses more efficiently in the eastbound direction. In addition, with the implementation of the grade separation, traffic flow across SW 8th Street and SW 87th Avenue is smoother. Therefore, the reduction in delay is more significant in the Build Alternative when compared to the No-Build Scenarios.

Other intersections that experience a significant reduction in delay are:

1. SW 8th Street and SW 102nd Avenue
2. SW 8th Street and SW 99th Avenue

Because of the proximity of these two intersections to the grade separation at the intersection with SW 107th Avenue, some of the reduction in delay may be due to the increase speeds that drivers experience in this segment of SW 8th Street in the eastbound direction. East of SW 107th Avenue grade separation merges with the at-grade options, drivers exiting the elevated option travel at higher speeds, causing the eastbound approach delay to be reduced which in turn cause the overall delay at the intersections to be lower than for the No-Build Scenarios.

Intersections that experience an increase in delay when compared to the No-Build Alternatives are as follows:

1. SW 8th Street and SW 122nd Avenue
2. SW 8th Street and SW 112th Avenue
3. SW 8th Street and SW 97th Avenue
4. SW 8th Street and SW 94th Avenue
5. SW 8th Street and SW 92nd Avenue
6. SW 8th Street and SW 82nd Avenue
7. SW 8th Street and SW 74th Avenue

The total increase in delay for the first 5 intersections appears to be related to the increase in traffic volumes. In the Build Scenario the intersections are processing a higher number of vehicles than in the No-Build Alternatives.

For the intersection of SW 8th Street and SW 82nd Avenue, the increase in delay seems to be due to the signal re-timing that was needed in order to accommodate the increase in demand of the westbound to southbound left-turn movement. This movement was assumed to experience a higher demand once the grade-separation is implemented. Westbound median openings will need to be closed in order to build the structure for the bridge over SW 87th Avenue. The closure of these median openings will cause some traffic diversion to the intersection of SW 8th Street and SW 82nd Avenue, specifically to the westbound to southbound movement, in order for the westbound traffic to reach land uses on the south side of SW 8th Street. The signal re-timing gives priority to the major street approaches, and the northbound approach (minor street approach) experiences some excessive delays.

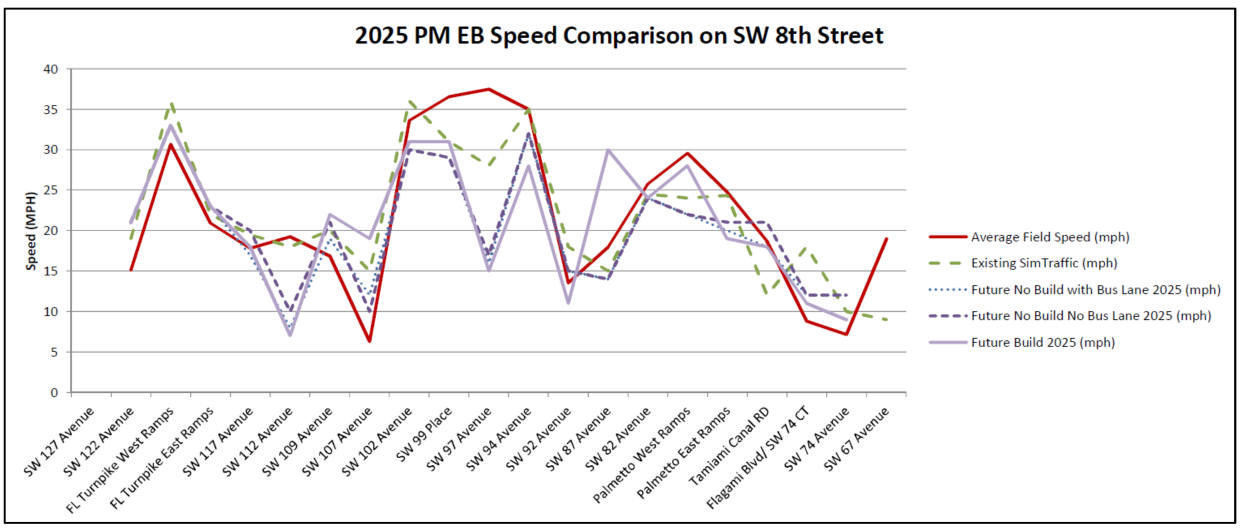
In the case of the intersection of SW 8th Street and SW 74th Avenue, the northbound approach experiences a significant increase in volume due to the traffic diversion that will occur if the northbound to westbound left-turn movement from the intersection of SW 8th Street and SW 76th Avenue is eliminated. This increase in traffic causes the left-turn movement at the intersection of SW 8th Street and SW 74th Avenue to increase by approximately 400 vph. This volume will require a dual left-turn lane. However, right of way is limited along SW 74th Avenue and signal timing is insufficient to allow the entire theoretical demand to be processed. This causes an increase in delay in the overall intersection.

Speed Comparison

In order to evaluate the impacts of the grade separation on the average speeds along SW 8th Street, a comparison among all three alternatives (No-Build with bus lanes, No-Build no bus lanes and Build Alternative) was performed. **Figure 15** shows the speeds for the eastbound direction (off-peak direction during the afternoon peak) along SW 8th Street. This figure shows the average speeds for the drivers traveling through the signalized intersections at SW 107th Avenue and SW 87th Avenue. As observed, the average speeds from SW 122nd Street to SW 117th Avenue are very similar to the existing conditions. Signal optimization might have played a role in keeping the average speeds comparable to existing conditions.

For the segment between east of SW 117th Avenue to SW 109th Avenue, the average speeds drop significantly when compared to existing conditions. Some of the factors affecting average speeds within this segment are: 1) the presence of the bus lanes (in No-Build Alternative with bus lanes) and 2) the entrance to the grade separation in the Build Alternative. The graph indicates that the No-Build Alternative (no-bus lanes) has slightly higher average speeds than the No-Build Alternative (with bus lanes) and the Build Alternative. This seems to indicate that the new signal phasing and the exclusive bus lanes in this segment have an impact on traffic operations within this segment (when the two No-Build Alternatives are compared). Also, since the Build Alternative experiences lower speeds than the No-Build without bus lanes, this seems to indicate that the entrance to the grade separations causes some reduction in speed within this segment.

Figure 15 - Eastbound Average Speed (PM Peak Hour Comparison - Signalized Intersection Facility)



For the segment between SW 109th Avenue and SW 107th Avenue, the No-Build Alternatives experience a drop in average speeds when approaching SW 107th Avenue. On the other the hand, the average speeds for the Build Alternative decreases marginally when compared to the No-Build Alternatives (the speed reduction is about three mph). For the Build Alternative, average speeds tend to be higher than the No-Build Alternative for the segment between SW 107th Avenue and SW 99th Place. The No-Build Alternatives decrease in average speeds at the intersection with SW 107th Avenue. In addition, the average speed profile follows almost the same pattern as for the existing conditions scenario.

For the segment east of SW 99th Place to SW 94th Avenue, the average speeds for all three future alternatives (No-Build and Build) drop when compared to existing conditions profile. This drop in speed might be due to the higher number of vehicles traveling along this segment of SW 8th Street.

For the segment from east of SW 94th Avenue to SW 92nd Avenue, the Build Alternative follows almost the same pattern as the No-Build Alternative; however, average speeds for the Build Alternative are lower than for the No-Build Alternatives. These lower average speeds may be attributable to the entrance of the grade separation located east of SW 92nd Avenue. Vehicles start positioning themselves in the appropriate lane between SW 94th Avenue and SW 92nd Avenue to actually enter the grade separation located between SW 92nd Avenue and SW 87th Avenue.

For the segment between east of SW 94th Avenue and SW 92nd Avenue, the No-Build Alternatives almost follow the existing conditions profile. This pattern is even observed for the sub-sequent segment between SW 92nd Avenue and SW 82nd Avenue. On the other hand, the Build Alternative for the segment between SW 92nd Avenue and SW 82nd Avenue displays average speeds significantly higher than existing conditions and No-Build Alternatives. This improvement in speeds may be due to the presence of the grade separation that reduces the overall average delay at the intersection with SW 87th Avenue and; therefore, it contributes to the higher speeds within this segment. In addition, the Build Alternative assumes that the eastbound exclusive left-turn lane at the intersection of SW 8th Street and Tamiami Canal Road will be lengthened by closing the median opening providing the northbound to westbound movement at the intersection of SW 8th Street and SW 76th Avenue. Therefore, this improvement allows for higher speeds, west of SW 82nd Avenue; which in turn contributes to higher speeds in the eastbound direction.

For the segment east of the southbound ramp from SR 826/Palmetto Expressway to SW 74th Avenue, average speeds for all future alternatives follow a similar pattern to existing conditions.

Figure 16 shows almost the same speed profile as **Figure 15**; the main difference being for the intersections at SW 107th Avenue and SW 87th Avenue, where the average speeds for the drivers traveling on the elevated structure is reported. As shown in **Figure 16,** average speeds for drivers using the grade-separated option increase by approximately double for the intersection of SW 8th Street and SW 107th Avenue (from 19 mph to 42 mph) and by approximately 40 percent for the intersection of SW 8th Street and SW 87th Avenue (from 30 mph to 42 mph).

Figure 16 - Eastbound Average Speed (PM Peak Hour Comparison - with Grade Separations at SW 107th Avenue and SW 87th Avenue)

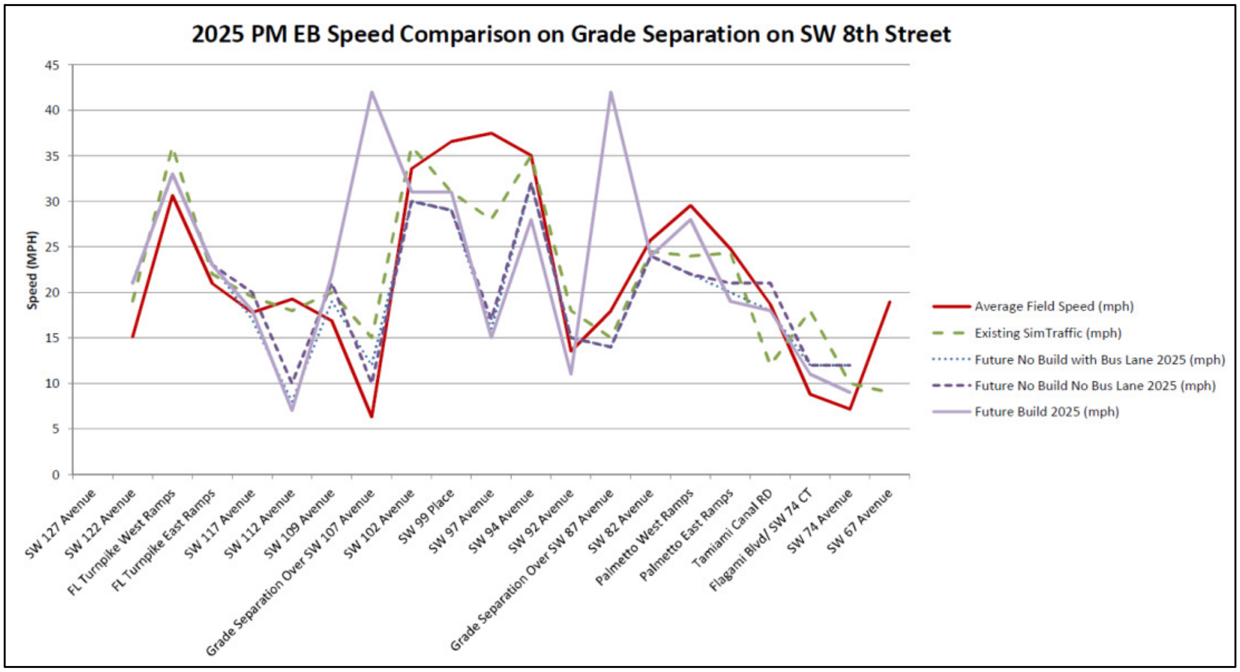


Figure 17 shows the average speed profiles for drivers traveling westbound along SW 8th Street using the at-grade option. **Figure 18** shows the average speed profiles for the drivers traveling along SW 8th Street using the elevated structure at the intersections of SW 8th Street/SW 107th Avenue and SW 8th Street/SW 87th Avenue.

As shown in **Figure 17**, the westbound average speeds for all future alternatives in the segment from SW 74th Avenue to the intersection with Tamiami Canal Road are higher than for existing conditions. One factor that could be influencing these higher speeds is the signal timing optimization causing a smoother traffic flow within this segment. It needs to be pointed out that the Build Alternative results in lower speeds than the No-Build Alternatives. After carefully reviewing the future layout for the Build Alternative, it was determined that the lengthening of the eastbound exclusive left-turn lane at the intersection of SW 8th Street with Tamiami Canal Road could be impacting the westbound direction. A higher number of eastbound to northbound turning vehicles may be crossing in front of the westbound traffic causing these vehicles to slow down. Therefore, average speeds for the Build Alternative result in lower values than for the No-Build Alternatives.

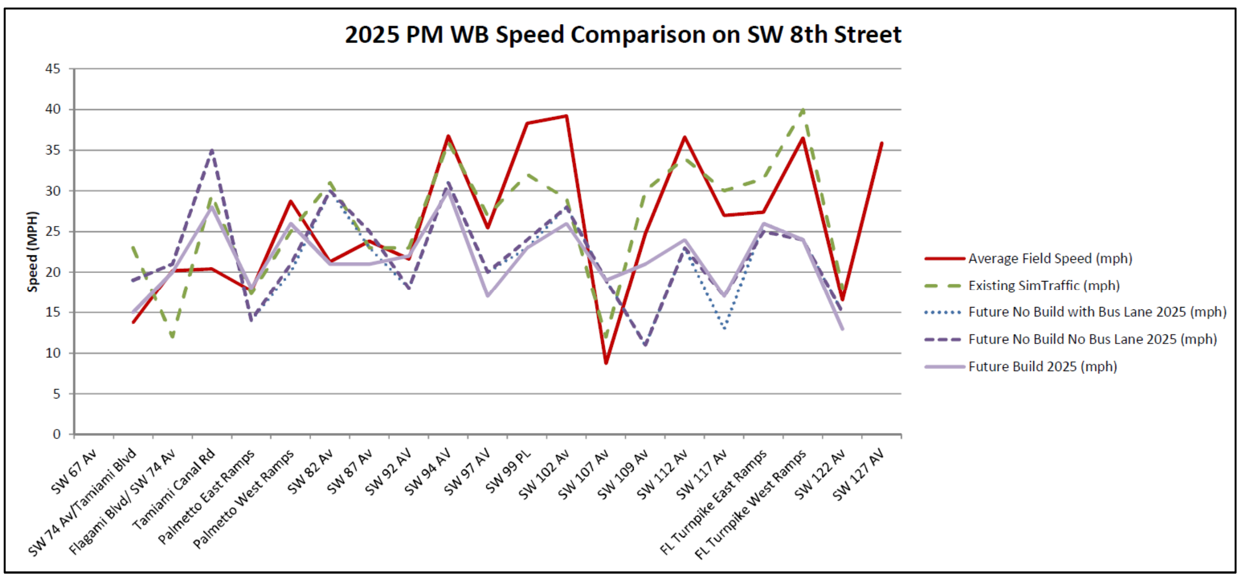
In the segment between Tamiami Canal Road and SW 82nd Avenue, the No-Build Alternative average speeds profile follows almost the same pattern as for existing conditions. However, the Build Alternative depicts lower speeds than the No-Build Alternatives within this segment. Some factors affecting this segment are 1) the increase in westbound left-turning traffic at the intersection with SW 82nd Avenue 2) the entrance to the grade separation which is located west of the intersection of SW 8th Street/SW 82nd Avenue.

A higher number of left-turns will occur at the intersection of SW 8th Street/SW 82nd Avenue because median openings will be closed in the westbound direction in order to accommodate the elevated structure for the grade separation at the intersection with SW 87th Avenue. Also, a higher number of left-turns are expected at the intersection with SW 87th Avenue. Westbound drivers trying to access the land uses along the south side of SW 8th Street, will only be able to do it through u-turns/left-turs at the intersections of SW 8th Street/SW 87th Avenue and SW 8th Street/SW 82nd Avenue.

By having the location of the entrance to the grade separation to the west of SW 82nd Avenue, lower speeds will be reported because drivers are trying to position themselves in the appropriate lane to reach their final destination.

For the segment between SW 87th Avenue and SW 102nd Avenue, the average speeds for all three future alternatives follow very similar patterns (the Build Alternative display slightly lower speeds). The reason for the Build Alternative to report slightly lower speeds is the fact that the entrance to the grade separation is located just west of the intersection of SW 8th Street/SW 102nd Avenue. The lane positioning behavior for the drivers cause lower average speeds in the vicinity of the grade-separation. Lower speeds than existing conditions are displayed due to the increase in volume along this segment.

Figure 17 - Westbound Average Speed (PM Peak Hour Comparison - with Grade Separations at SW 107th Avenue and SW 87th Avenue)



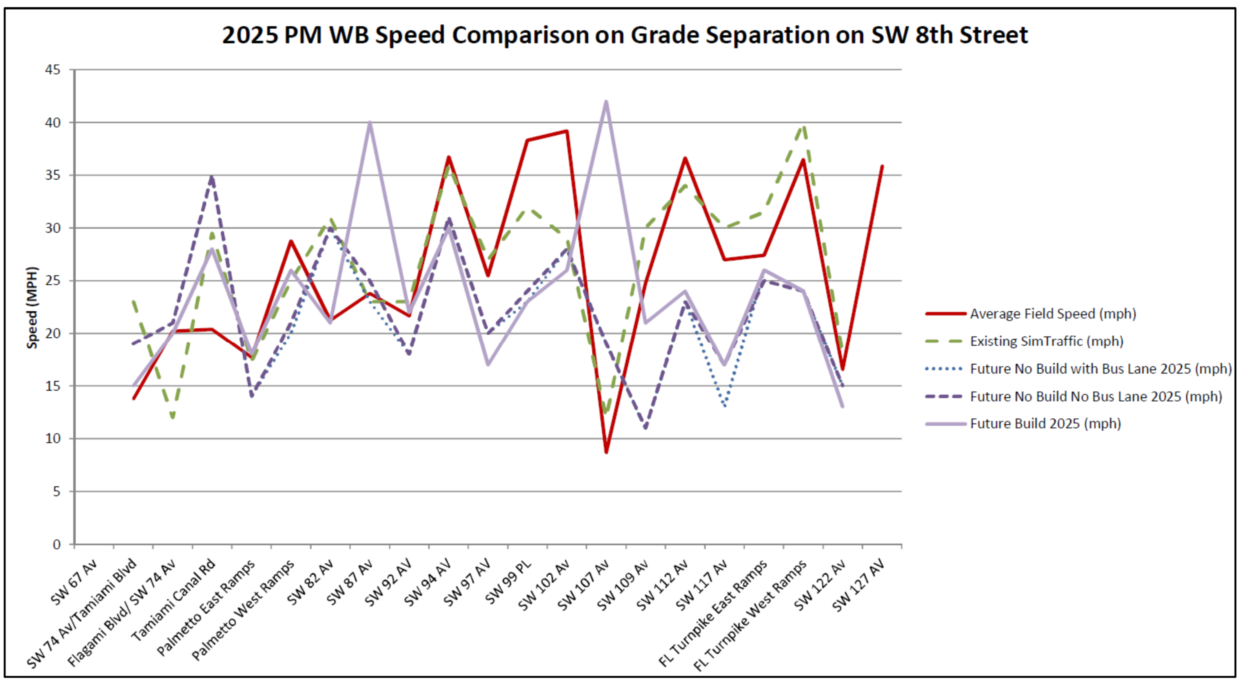
For the segment between SW 107th Avenue and SW 112th Avenue, the Build Alternatives displays higher speeds than all No-Build Alternatives. This is a direct influence of the grade-separation within this segment. The speed profiles of the No-Build Alternatives display significantly lower speeds along this segment than for the existing conditions. This is mainly due to the increase in traffic volumes along this segment.

For the segment west of SW 112th Avenue. No major difference is observed for the No-Build Alternative (with bus lanes) and the No-Build Alternative (no bus lanes).

For the segment between SW 112th Avenue and SW 122nd Avenue, all three future alternatives display similar average speed profiles. The speeds are lower than for existing conditions due to the fact that the intersections of SW 8th Street with SR 821/Florida's Turnpike Ramps (to/from the north and to/from the south) are being modified to full signalized intersections. In the existing conditions scenarios, the intersection of SW 8th Street with the SR 821/Florida's Turnpike (SB Ramps) did not controlled either the westbound through or the southbound to westbound movement. Future layout for this intersection calls for all movements to be signalized.

Figure 18 shows almost the same speed profile than **Figure 17**; the main difference is for the intersections at SW 107th Avenue and SW 87th Avenue, where the average speeds for the drivers traveling on the elevated structure is reported. As depicted in **Figure 18,** average speeds for drivers using the grade-separated option increase by approximately double (from 20 mph to 40 mph) for both intersections (SW 8th Street/SW 87th Avenue and SW 8th Street/SW 107th Avenue).

Figure 18 - Westbound Average Speed (AM Peak Hour Comparison - with Grade Separations at SW 107th Avenue and SW 87th Avenue)



2.2.2.2 2045 Analysis

Synchro and HCM Analysis

Similar to the analysis for the year 2025, **Appendix F** includes the summary tables for the HCM analysis conducted for the intersections along SW 8th Street for all future years scenarios, for the morning and afternoon peak hours. These results need to be carefully interpreted because this analysis is based on the deterministic approach and does not considered complex vehicles interactions as a micro-simulation analysis does.

The analysis presented herein focuses on the SimTraffic (Micro-simulation) which accounts for complex vehicles interactions/traffic patterns along SW 8th Street.

SimTraffic (Micro-simulation) Analysis

For the 2045 Analysis only two scenarios were evaluated: No-Build (with bus lanes) and Build Alternatives. The No-Build Scenario included the exclusive bus lanes providing access to the FIU bus terminal. No additional No-Build Alternative (without the bus lanes) was evaluated. The No-Build Scenario (with the bus lanes) was assumed to be the worst case scenario. The No-Build Scenario was geometrically the same as the 2025 Build Alternative. Grade separations at the intersections of SW 8th Street with SW 107th Avenue and SW 8th Street with SW 87th Avenue were incorporated into the analysis.

In addition, the median providing access from SW 76th Avenue northbound to westbound was assumed to be closed and this northbound turning traffic was assumed to divert to the intersection of SW 8th Street and SW 74th Avenue.

Similar to the analysis conducted for the year 2025, three different comparisons were performed: Volume Comparison, Delay Comparison and Average Speed Comparison.

AM Peak Hour

Volume Comparison

2045 No-Build Scenario (with exclusive bus lanes between SW 109th Avenue and SW 112th Avenue)

In the case of the No-Build Scenario, most of the intersections are not able to process the entire demand. The approach that is most commonly not able to process the entire demand is the eastbound. Differences between theoretical demand volumes and processed volumes in the eastbound direction range from approximately 790 vph (for theoretical approach volumes of approximately 5,300 vph (4,580 vph – processed)) to 232 vph (for theoretical approach volumes of approximately 3,000 vph (2780 vph – processed)).

This difference translates to percentages of about 14 percent to 8 percent. Overall, intersections process between 85 to 95 percent of the theoretical demand volume.

Also, the 2045 No-Build volumes (with bus lanes) were compared to the 2025 No-Build volumes (with bus lanes). This comparison revealed that most of the intersections process higher volumes for the year 2045 than for the year 2025.

In the morning peak hour the eastbound direction is the most predominant direction. When the 2045 volumes for the eastbound direction were compared with the 2025 volumes, it was revealed that this direction is almost operating at capacity. The increase in processed volumes in the eastbound direction was minimal (for most of the intersections within the study area). However, all other approaches process significantly higher volumes than the 2025 No-Build Alternative. This is an indication that additional capacity is still available in all other approaches.

For the intersections of SW 8th Street/SW 112th Avenue and SW 8th Street/SW 109th Avenue, the 2045 processed volumes are higher than the 2025. This seems to indicate that despite the fact that these two intersections will be impacted by the exclusive bus lanes, they will still have some capacity to process higher volumes along SW 8th Street. **Table 15** summarizes the results for the intersections of SW 109th Avenue and SW 112th Avenue for the years 2025 and 2045.

Table 15 – 2025/2045 SW 109th Avenue and SW 112th Avenue Volume Comparison (AM Peak Hour)

Intersection	Approach	2025 No-Build with Bus Lane AM Peak Hour		2045 No-Build with Bus Lane AM Peak Hour	
		Volume (vph)	Processed Volume (vph)	Volume (vph)	Volume (vph)
SW 8 Street and SW 112 Avenue	EB	3523	3531	4100	3639
	WB	1900	1775	2200	1983
	NB	165	159	180	184
	Exclusive Bus Lane	23	22	23	22
	Overall	**5611**	**5487**	**6503**	**5828**
SW 8 Street and SW 109 Avenue	EB	2955	2984	3400	3115
	WB	1600	1599	1900	1883
	NB	205	196	270	190
	SB	844	640	960	589
	Exclusive Bus Lane	15	15	15	13
	Overall	**5619**	**5434**	**6545**	**5790**

When the 2025 No-Build (with bus lanes) was analyzed, it was determined that because of the implementation of a new phase at the intersection of SW 8th Street/SW 109th Avenue, the northbound/southbound approaches at this intersection were not able to process the entire demand. Because not the entire demand was processed, the westbound volumes reaching the intersection of SW 8th Street/SW 112th Avenue were lower than theoretically estimated. A similar pattern occurs for the 2045 No-Build Alternative. The northbound/southbound approaches at the intersection of SW 8th Street/SW 109th Avenue do not process the entire demand; therefore, the volume reaching the westbound approach at the intersection of SW 8th Street/SW 112th Avenue is lower than estimated. However, the two intersections SW 8th Street/109th Avenue and SW 8th Street/SW 112th Avenue process overall higher volumes (as shown in **Table 15**).

Similar to the condition observed in existing conditions and the 2025 No-Build Alternatives, the eastbound volumes increase higher than 2,400 vph in the vicinity of the SR 826/Palmetto Expressway and a queue forms in the eastbound direction west of SR 826/Palmetto Expressway. For the year 2045 this eastbound queue extends west of SW 87th Avenue, slightly affecting the eastbound approach at the intersection with SW 92nd Avenue.

2045 Build Scenario

When the 2045 Build Alternative volumes were compared to the 2045 No-Build Alternatives, all intersections process higher volumes than the No-Build Alternative. In general, the projected Build volumes (for 2025 and 2045) are higher than the No-Build Alternatives. Although the grade separations do not cause a significant change in traffic patterns within the area, it does cause a slight increase in the traffic volumes along SW 8th Street.

As previously mentioned, the Build Alternative includes the closure of the median opening at the intersection of SW 76th Avenue and SW 8th Street (to provide northbound to westbound access), the lengthening of the eastbound exclusive left-turn lane at the intersection of SW 8th Street and Tamiami Canal Road, and the lengthening of the westbound exclusive left-turn lane at the intersection of SW 8th Street and SW 82nd Avenue. These improvements improve traffic flow along SW 8th Street.

For the intersections of SW 8th Street/SW 109th Avenue and SW 8th Street/SW 112th Avenue, the increase in overall processed volumes is approximately 10 percent at each intersection (as shown in **Table 16**). Since the difference between No-Build with bus lanes and No-Build without bus lanes for the year 2025 is between one and two percent, it is expected that the difference in processed volume for the No-Build (no bus lanes) for the year 2045 will be minimal as well. The major difference of the bus lanes is on delay, not so much on processed volumes.

Table 16 – 2045 SW 109th Avenue and SW 112th Avenue Volume Comparison (AM Peak Hour)

Intersection	Approach	2045 No-Build with Bus Lane AM Peak Hour		2045 Build AM Peak Hour	
		Volume (vph)	Volume (vph)	Volume (vph)	Volume (vph)
SW 8 Street and SW 112 Avenue	EB	4100	3639	4300	4007
	WB	2200	1983	2300	2206
	NB	180	184	200	193
	Exclusive Bus Lane	23	22		
	Overall	**6503**	**5828**	**6800**	**6406**
SW 8 Street and SW 109 Avenue	EB	3400	3115	3600	3393
	WB	1900	1883	2000	1925
	NB	270	190	270	249
	SB	960	589	980	879
	Exclusive Bus Lane	15	13		
	Overall	**6545**	**5790**	**6850**	**6446**

For the intersections of SW 8th Street/SW 87th Avenue and SW 8th Street/SW 107th Avenue, the difference between No-Build volumes vs. Build Volumes is approximately 22 percent (for the intersection of SW 8th Street/SW 87th Avenue) and 3 percent (for the intersection of SW 8th Street/SW 107th Avenue). **Table 17** summarizes the processed volumes for these two intersections.

Table 17 – 2045 SW 107th Avenue and SW 97th Avenue Intersections Volume Comparison (AM Peak Hour)

Intersection	Approach	2045 No-Build with Bus Lane AM Peak Hour		2045 Build AM Peak Hour	
		Volume (vph)	Volume (vph)	Volume (vph)	Volume (vph)
SW 8 Street and SW 107 Avenue	EB	2800	2360	1592 1309	1482 1026
				2901	2508
	WB	2100	2283	1305 955	1263 900
				2260	2163
	NB	2065	2077	2200	2190
	SB	1270	1266	1400	1390
	Overall	**8235**	**7986**	**8761**	**8251**
SW 8 Street and SW 87 Avenue	EB	3500	2743	1489 2011	1470 1957
				3500	3427
	WB	1900	1846	1054 1489	955 1470
				2543	2425
	NB	1500	1449	1650	1641
	SB	930	892	980	978
	Overall	**7830**	**6930**	**8673**	**8471**

As mentioned earlier, in the case of the intersection of SW 8th Street/SW 87th Avenue, the higher processed volumes are the result not only of the implementation of the grade separation, but also the improvements east of SR 826/Palmetto Expressway in relation to lengthening the eastbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road.

Delay Comparison

As expected the delay comparison between the 2025 and 2045 No-Build (with bus lanes) scenarios revealed that with the increase in volumes from the year 2025 to the year 2045, an increase in delay will also be observed. With the increase in delay, the theoretical demand will be harder to process through the intersections. However, the overall difference between the processed volumes and theoretical demand for the year 2045 will not be lower than 85 percent.

It is also expected that the reported delays for the intersection of SW 8th Street/SW 112th Avenue and SW 8th Street/SW 109th Avenue will be less if the exclusive bus lanes between SW 109th Avenue and SW 112th Avenue are not constructed. This was confirmed with the comparison of the 2025 No-Build Alternatives (with and without bus lanes). Based on the results from the 2025 No-Build evaluation, it is anticipated that the delay at the intersection of SW 8th Street/SW 112th Avenue will be 5 percent lower than the one reported for the 2045 No-Build (with bus lanes) Scenario (if the bus lanes were not be built) and for the intersection of SW 8th Street/SW 109th Avenue the reduction in delay will be approximately 42 percent.

In the case of the 2045 Build Alternative, the comparison with the 2025 Build Alternative revealed that all of the intersections experience an increase in delay.

When the 2045 Build Alternative was compared to the 2045 No-Build, three intersections resulted in significantly higher delays, three intersections resulted in slightly higher delays, twelve intersections resulted in a reduction in delay and one intersection resulted in delays very similar to the No-Build Alternative.

The intersections that resulted in an increase in delay were as follows:

1. SW 8th Street & SW 122nd Avenue
2. SW 8th Street & SW 107th Avenue (as shown in **Table 18**)
3. SW 8th Street & SW 75th Avenue/Tamiami Canal Road

The increase in delay at the intersection of SW 8th Street and SW 122nd Avenue appears to be the result of an increase in demand on all approaches. Although the intersection processes higher volumes than in the No-Build Alternative, the maximum queue in some of the approaches increases. This could indicate that more vehicles remain queued waiting to go through the intersection.

For the SW 107th Avenue intersection, one factor that is influencing the increase in delay is the fact that all right turns at this intersection are being proposed to be signalized. The eastbound to southbound movement and the northbound to eastbound are currently a free-flow channelized right-turn. However, because of the widening that this intersection is programmed to undergo, all of the right-turns (in the No-Build Alternative and Build Alternatives) will become signal-controlled movements. This will add to the delay at this intersection. In the case of the Build Alternative, the eastbound to northbound movement is becoming a shared/through right signal-controlled. This new intersection configuration definitely contributes to the increase in delay at the intersection. Approximately 75 percent of the total traffic crossing this intersection will experience this delay. The other 25 percent (approximately 2,200 vph) will be able to go through the intersection with no delay.

Table 18 – 2045 SW 107th Avenue Intersection Delay Comparison (AM Peak Hour)

Intersection	Approach	Movement	2045 No-Build with Bus Lane AM Peak Hour			2045 Build AM Peak Hour		
			Volume (vph)	Volume (vph)	Delay (sec./veh.)	Volume (vph)	Volume (vph)	Delay (sec./veh.)
SW 8 Street and SW 107 Avenue	EB	At-Grade	2800	2360	61.5	1592	1482	56.5
		Elevated				1309	1026	0
		Total				2901	2508	
	WB	At-Grade	2100	2283	36.9	1305	1263	43.5
		Elevated				955	900	0
		Total				2260	2163	
	NB		2065	2077	46.1	2200	2190	47.2
	SB		1270	1266	70.6	1400	1390	71.5
	Overall		**8235**	**7986**	**51.9**	**8761**	**8251**	**54**

For the intersection of SW 8th Street and SW 75th Avenue, the increase in delay is due to the fact that the eastbound drivers are reaching this intersection faster and northbound vehicles waiting for an acceptable gap to merge to the eastbound stream of traffic is not able to find sufficient gaps to perform the desired movement.

The intersections that resulted in a slight increase in delay, were as follows:

1. SW 8th Street & SW 117th Avenue
2. SW 8th Street & SW 74th Court
3. SW 8th Street & SW 74th Avenue

Similar to the intersection of SW 107th Avenue, the intersection of SW 8th Street and SW 117th Avenue, is proposed to undergo improvements which consider re-configuring the intersection layout to provide one exclusive left, one shared left/right and one exclusive right. All of the movements will be signalized. The current intersection configuration provides for dual left lanes and one exclusive/channelized/free-flow right. The proposed configuration may be influencing the slightly higher delays at this intersection.

The slight increase in delay at the other two intersections are very minor and may be attributed to the insufficient capacity of the northbound/southbound approaches.

The intersections that resulted in a reduction in delay were as follows:

1. SW 8th Street & SR 821/Florida's Turnpike (SB Ramps)
2. SW 8th Street & SR 821/Florida's Turnpike (NB Ramps)
3. SW 8th Street & SW 112th Avenue
4. SW 8th Street & SW 109th Avenue
5. SW 8th Street & SW 102nd Avenue
6. SW 8th Street & SW 99th Place
7. SW 8th Street & SW 97th Avenue

8. SW 8th Street & SW 94th Avenue
9. SW 8th Street & SW 92nd Avenue
10. SW 8th Street & 87th Avenue
11. SW 8th Street & SW 82nd Avenue
12. SW 8th Street & SR 826/Palmetto Expressway (SB Ramps)
13. SW 8th Street & SR 826/Palmetto Expressway (NB Ramps)

Most of the intersections experiencing a reduction in delay when compared to the No-Build Alternative are related to changes in the configuration of the intersection (to add capacity) such as the intersection of SW 8th Street & SR 821/Florida's Turnpike (SB Ramps), SW 8th Street & SW 82nd Avenue (lengthening of the westbound to southbound exclusive left-turn lane), etc.

All other improvements in delay at most of the intersections are due to the signal retiming.

The intersection of SW 8th Street and SW 87th Avenue experiences a significant reduction in delay not only because of the implementation of the grade separation at this intersection, but also because of the lengthening of the eastbound exclusive left-turn lanes at the intersection of SW 8th Street and Tamiami Canal Road. This latest improvement alleviates the friction formed in the vicinity of the interchange with SR 826/Palmetto Expressway and allows for a more efficient traffic flow along the eastbound direction. This in turn, minimizes the queue that forms in the eastbound direction during the morning peak. These two factors allow for a reduction in delay of approximately 65 percent. The average delay at the intersection of SW 8th Street and SW 87th Avenue reduces from 174.4 sec./veh. to 61.7 sec./veh. As mentioned earlier, the delay at this intersection is only experienced by the drivers using the at-grade option (approximately 62 percent of the overall volume crossing the intersection). **Table 19** shows summary of the results)

Table 19 – 2045 SW 87th Avenue Intersection Delay Comparison (AM Peak Hour)

Intersection	Approach	Movement	2045 No-Build with Bus Lane AM Peak Hour			2045 Build AM Peak Hour		
			Volume (vph)	Volume (vph)	Delay (sec./veh.)	Volume (vph)	Volume (vph)	Delay (sec./veh.)
SW 8 Street and SW 87 Avenue	EB	At-Grade	3500	2743	298.5	1489	1470	55
		Elevated				2011	1957	0
		Total				3500	3427	
	WB	At-Grade	1900	1846	57.5	1054	955	60.4
		Elevated				1489	1470	0
		Total				2543	2425	
	NB		1500	1449	107.9	1650	1641	70
	SB		930	892	108	980	978	58.8
	Overall		**7830**	**6930**	**174.4**	**8673**	**8471**	**61.7**

Speed Comparison

Comparison of the eastbound overall average speeds (along the entire limits of the project) between the 2025 and 2045 Alternatives (No-Build with bus lanes) revealed that average speed reduced by about 28 percent (from 18 mph to 13 mph).

If the Build Alternative is implemented, the reduction in speed from 2025 to 2045 (for the driver using the at-grade option) will be approximately 24 percent (from 21 mph to 16 mph). The reduction in speed for drivers using the elevated structure will be of approximately 17 percent (from 23 mph to 19 mph).

Figure 19 shows the average speed profile for the year 2045 for the drivers using the at-grade option. Unlike the speed profile for the year 2025, where average speeds in some segments of SW 8th Street operated at average speeds slighly higher than existing conditions, the year 2045 shows average speeds lower than existing conditions for the entire limits of project. The only segment in which the Build Alternative depicts average speeds higher than existing conditions is for the segment between SW 87th Avenue and SR 826/Palmetto Expressway

In addition, the No-Build Alternative shows lower average speeds than the Build Alternative for most of the segments of SW 8th Street. This seems to indicate that the Build Condition will provide benefits to the traffic flow along SW 8th Street in the long run.

Figure 20 shows the average speed profile for the drivers traveling SW 8th Street using the grade separations at the intersections of SW 87th Avenue and SW 107th Avenue. As depicted in this graph, average speeds through these intersections (using the elevated option) will remain significantly higher (approximately 40 mph when compared . Reduction in average speed (for drivers using the elevated option) at the intersection at SW 107th Avenue and at the intersection with SW 87th Avenue will minimal when results from the 2025 Build are compared to the 2045 Build.

Figure 19 - Eastbound Average Speed (AM Peak Hour Comparison – At-Grade Option)

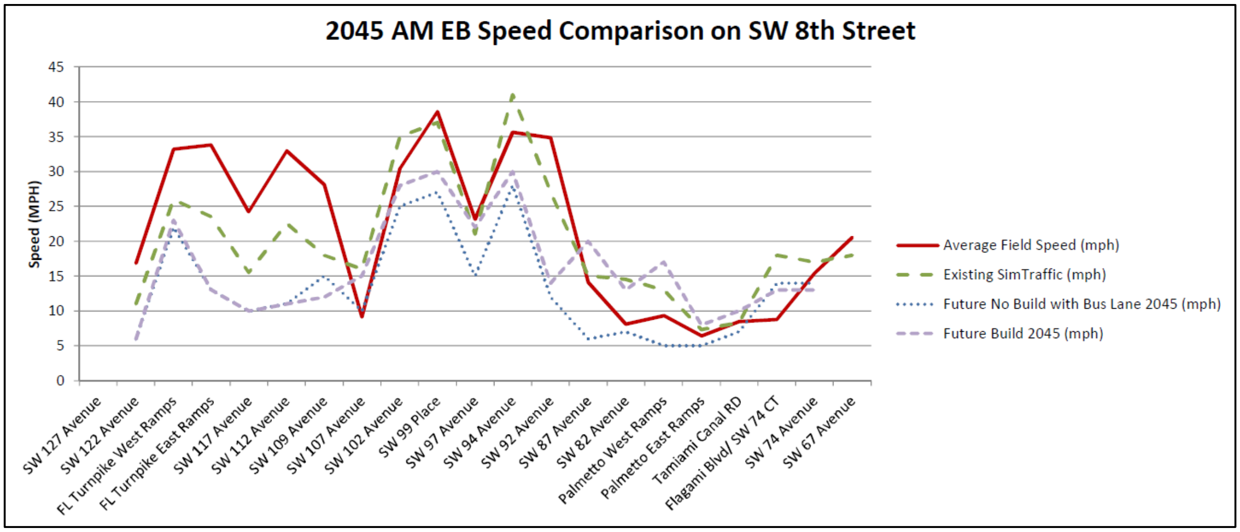


Figure 20 - Eastbound Average Speed (AM Peak Hour Comparison – Elevated Option)

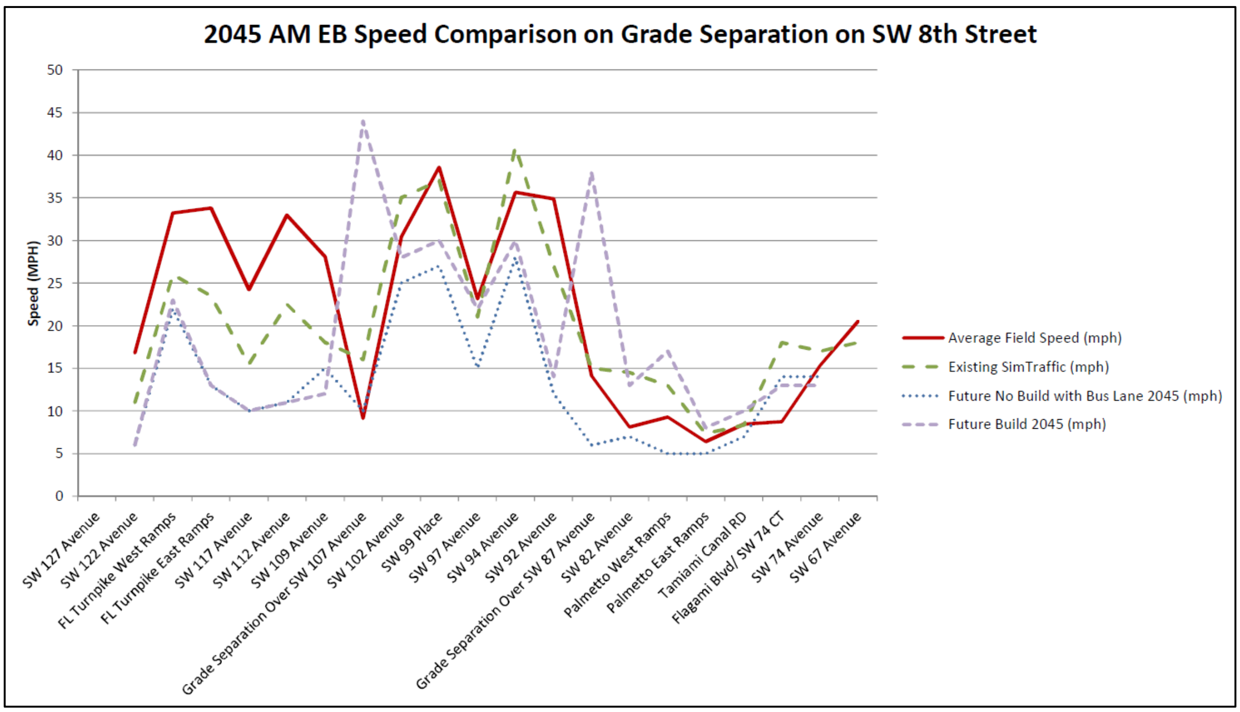


Figure 21 and Figure 22 show the speed profiles for the westbound (off-peak direction) for the year 2045 No-Build and Build Scenario.

As shown in **Figure 21,** the Build Alternative has lower average speeds in the westbound direction between SW 74th Avenue and SW 87th Avenue. These lower speeds are the result of higher volumes being processed through the intersections as well as traffic diversion that will occur once the elevated structure over SW 87th Avenue is implemented. One clear example of the traffic diversion is the potential increase in the westbound to southbound left-turn volume at the intersection of SW

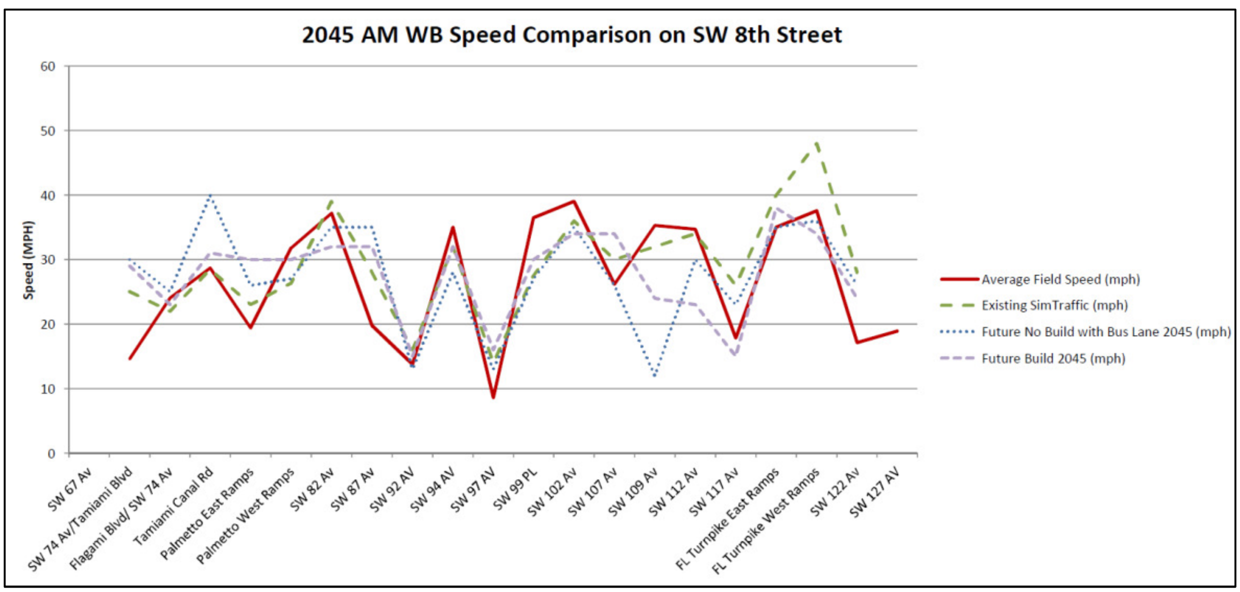
8th Street and SW 82nd Avenue. Several medain openings providing access from westbound SW 8th Street to the business abutting the estbound direction (south side of SW 8th Street) will be closed. These closures will potentially divert traffic to the intersections of SW 8th Street/SW 87th Avenue and SW 8th Street/SW 82nd Avenue for the drivers to be able to reach their destination.
With the increase in westbound to southbound traffic volumes at the intersection of SW 8th Street and SW 82nd Avenue, there is potential for vehicles spilling back from the exclusive left-turn lane and blocking the through lanes, causing the average speeds along the westbound direction to be lower.

Also, the presence of the slip ramp to the elevated structure (grade separation) is located west of SW 82nd Avenue and this geometry is causing some lane positioning/lane change maneuvers that may be causing the reduction in speeds in the vicinity of the entrance to the grade separation.

In addition, the lengthening of the eastbound exclusive left-turn lane at the intersection of SW 8th Street and Tamiami Canal Road may be allowing more frequent eastbound to northbound vehicles to cross in front of the westbound traffic stream causing the reduction in speeds in the segment just east of SR 826/Palmetto Expressway.

Therefore, the segment between SW 74th Avenue and SW 87th Avenue depicts lower average speeds for the Build Alternative than the No-Build Alternative. It needs to be emphasized that the higher speeds of the No-Build Alternative are also related to fewer vehicles traveling along these segments.

Figure 21 - Westbound Average Speed (AM Peak Hour Comparison - Signalized Intersection Facility)

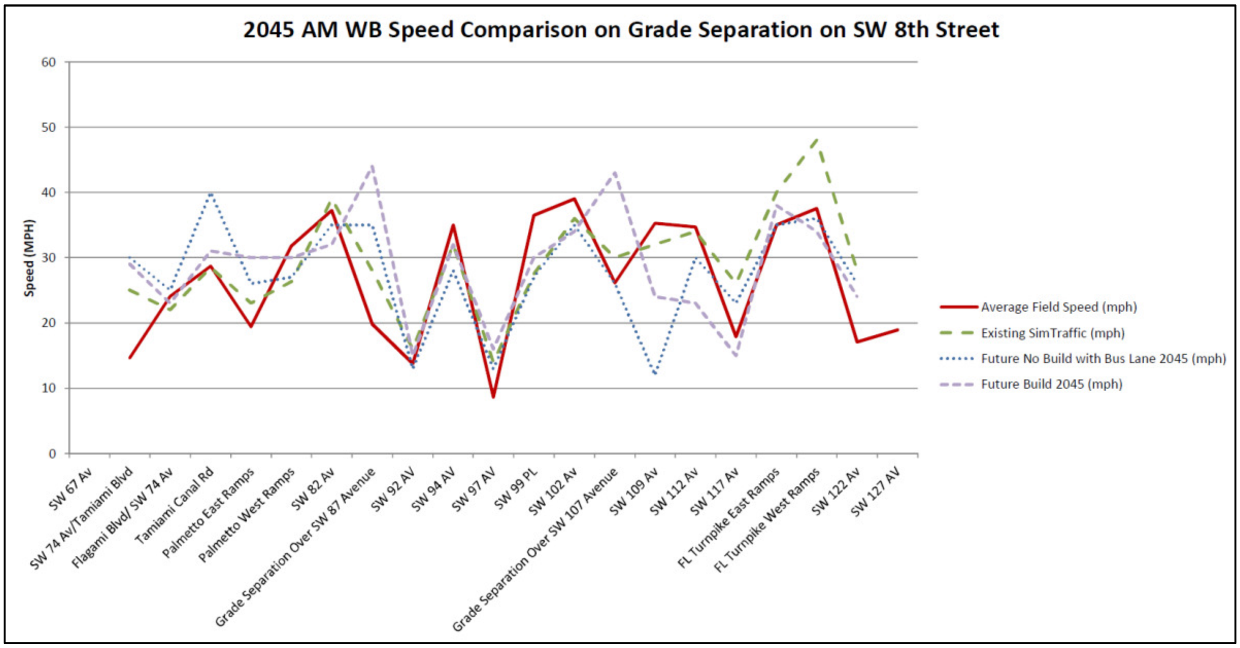


For the segment between SW 92nd Avenue and SW 102nd Avenue, average speed profiles for the westbound direction for the No-Build and Build Alternatives are very similar. A flattening of the Build Alternative speeds in the vicinity of SW 107th Avenue seems to be an indication that lane changes maneuvers (to position themselves in the appropriate lane) are having an influence in the average speeds reported for the Build Alternative.

For the segment between SW 107th Avenue and SW 112th Avenue, average speeds for the Build Alternative are higher than for the No-Build. This seems to be directly related to the implementaion of the grade separation that allows a more efficient traffic flow through this segment.

For the segment between SW 112th Avenue and SW 122nd Avenue, the average speeds for the No-Build and Build Alternatives are very similar. However, the Build Alternative processes higher volumes.

Figure 22 - Westbound Average Speed (AM Peak Hour Comparison - Elevated Facility)



PM Peak Hour

Volume Comparison

2045 No-Build Scenario (with exclusive bus lanes between SW 109th Avenue and SW 112th Avenue)

In the case of the No-Build Scenario, most of the intersections are not able to process the entire demand. The approach that is most commonly not able to process the entire demand is the westbound. Differences between theoretical demand volumes and processed volumes in the eastbound direction range from approximately 100 vph (for theoretical approach volumes of approximately 1,000 vph (917 vph – processed)) to 1,000 vph (for theoretical approach volumes of approximately 3,600 vph (2500 vph – processed)).

Overall, intersections process between 70 to 95 percent of the theoretical demand volume.

Also, the 2045 No-Build volumes (with bus lanes) were compared to the 2025 No-Build volumes (with bus lanes). This comparison revealed that most of the intersections process higher volumes for the year 2045 than for the year 2025.

In the afternoon, the westbound direction is the most predominant direction. When the 2045 volumes for the westbound direction were compared with the 2025 volumes, it was revealed that this direction is almost operating at capacity. The increase in processed volumes in the westbound direction was minimal. However, all other approaches process significantly higher volumes than the 2025 No-Build Alternative. This is an indication that additional capacity is still available in all other approaches.

For the intersections of SW 8th Street/SW 112th Avenue, 2045 processed volumes are higher than for the 2025. However, for the intersection of SW 8th Street/SW 109th Avenue, the 2045 processed volumes are less than for the 2025. This seems to indicate that for the year 2045, if the bus lanes at this intersection are implemented, traffic operations will be critical. The northbound/southbound approaches will be drastically affected in order to keep traffic operations along SW 8th Street somewhat efficient. This will directly impact FIU premises. Additional improvements may be needed in order to alleviate conditions at this intersection.

When the 2025 No-Build (with bus lanes) was analyzed it was determined that, because of the implementation of a new phase at the intersection of SW 8th Street/SW 109th Avenue, the northbound/southbound approaches at this intersection were not able to process the entire demand. Because not the entire demand was processed, the westbound volumes reaching the intersection of SW 8th Street/SW 112th Avenue were lower than theoretically estimated. A similar pattern occurs for the 2045 No-Build Alternative. The northbound/southbound approaches at the intersection of SW 8th Street/SW 109th Avenue do not process the entire demand; therefore, the volume reaching the westbound approach at the intersection of SW 8th Street/SW 112th Avenue is lower than estimated. **Table 20** summarizes the results for the 2025/2045 volume comparison for the intersections of SW 112th Avenue and SW 109th Avenue.

Table 20 – 2025/2045 No-Build Volume Comparison – SW 112th Avenue and SW 109th Avenue Intersections (PM Peak Hour)

Intersection	Approach	2025 No Build with Bus Lane PM Peak Hour		2045 No Build with Bus Lane PM Peak Hour	
		Theoretical Projected Volume (vph)	Processed Volume (vph)	Theoretical Projected Volume (vph)	Processed Volume (vph)
SW 8 Street and SW 112 Avenue	EB	2400	2339	2800	2654
	WB	3000	2662	3500	2500
	NB	680	684	815	814
	Exclusive Bus Lane	23	19	23	18
	Overall	**6103**	**5704**	**7138**	**5986**
SW 8 Street and SW 109 Avenue	EB	2350	2341	2700	2618
	WB	2244	2197	2600	2352
	NB	1110	745	1300	392
	SB	680	466	800	194
	Exclusive Bus Lane	15	15	15	11
	Overall	**6399**	**5764**	**7415**	**5567**

Similar to the condition observed in existing conditions (AM peak hour) and the 2025 No-Build Alternatives, as the eastbound volumes increase higher than 2,400 vph, in the vicinity of the SR 826/Palmetto Expressway, a queue in the eastbound direction west of SR 826/Palmetto Expressway starts to form. For the year 2045 this eastbound queue extends west of SW 87th Avenue, slightly affecting the eastbound approach at the intersection with SW 92nd Avenue.

2045 Build Scenario

When the 2045 Build Alternative volumes were compared to the 2045 No-Build Alternatives, all intersections process higher volumes than the No-Build Alternative. In general, the projected Build volumes (for 2025 and 2045) are higher than the No-Build Alternatives. Although the grade separations do not cause a significant change in traffic patterns within the area, it does cause a slight increase in the traffic volumes along SW 8th Street.

As previously mentioned, the Build Alternative includes the closure of the median opening at the intersection of SW 76th Avenue and SW 8th Street (to provide northbound to westbound access), the lengthening of the eastbound exclusive left-turn lane at the intersection of SW 8th Street and Tamiami Canal Road and the lengthening of the westbound exclusive left-turn lane at the intersection of SW 8th Street and SW 82nd Avenue. These improvements improve traffic flow along SW 8th Street.

For the intersections of SW 8th Street/SW 109th Avenue and SW 8th Street/SW 112th Avenue, the increase in overall processed volumes is approximately 10 percent (for the intersection at SW 112th Avenue) and 16 percent (for the intersection at SW 109th Avenue) in the year 2045 (for the No-Build and Build Alternatives). Since the difference between No-Build (with bus lanes) and No-Build without bus lanes for the year 2025 is between two and 5 percent, it is expected that the difference in processed volume for the No-Build (no bus lanes) for the year 2045 will be minimal as well. The major difference of the bus lanes is on delay, not on processed volumes. **Table 21** summarizes results of the comparison of processed volumes for the intersections of SW 109th Avenue and SW 112th Avenue Intersections.

Table 21 – 2045 No-Build/Build - SW 109th Avenue SW 112th Avenue Intersections Volume Comparison (AM Peak Hour)

Intersection	Approach	2045 No Build with Bus Lane PM Peak Hour		2045 Build PM Peak Hour	
		Theoretical Projected Volume (vph)	Processed Volume (vph)	Theoretical Projected Volume (vph)	Processed Volume (vph)
SW 8 Street and SW 112 Avenue	EB	2800	2654	2900	2728
	WB	3500	2500	3680	3031
	NB	815	814	820	832
	Exclusive Bus Lane	23	18		
	Overall	**7138**	**5986**	**7400**	**6591**
SW 8 Street and SW 109 Avenue	EB	2700	2618	2800	2700
	WB	2600	2352	2760	2538
	NB	1300	392	1300	707
	SB	800	194	810	534
	Exclusive Bus Lane	15	11		
	Overall	**7415**	**5567**	**7670**	**6479**

For the intersections of SW 8th Street/SW 87th Avenue and SW 8th Street/SW 107th Avenue, the difference between No-Build volumes vs. Build Volumes is approximately six percent (for the intersection of SW 8th Street/SW 87th Avenue) and five percent (for the intersection of SW 8th Street/SW 107th Avenue). **Table 22** summarizes the volume comparison for the intersections of SW 107th Avenue and SW 87th Avenue.

Table 22 – 2045 No-Build/Build – SW 107th Avenue and SW 87th Avenue Intersections Volume Comparison (PM Peak Hour Volume)

Intersection	Approach	Movement	2045 No Build with Bus Lane PM Peak Hour		2045 Build PM Peak Hour	
			Expected Volume (vph)	Processed Volume (vph)	Expected Volume (vph)	Processed Volume (vph)
SW 8 Street and SW 107 Avenue	EB	At-Grade	2600	2087	1658	1420
		Elevated			1042	886
		Total			2700	2306
	WB	At-Grade	2950	2834	1658	1482
		Elevated			1542	1376
		Total			3200	2858
	NB		2200	2204	2360	2375
	SB		2500	2323	2600	2426
	Overall		**10250**	**9448**	**10860**	**9965**
SW 8 Street and SW 87 Avenue	EB	At-Grade	2800	2498	870	800
		Elevated			1923	1727
		Total			2793	2527
	WB	At-Grade	3450	3086	1399	1188
		Elevated			2331	2014
		Total			3730	3202
	NB		1500	1362	1510	1503
	SB		1300	1103	1320	1309
	Overall		**9050**	**8049**	**9353**	**8541**

In the case of the intersection of SW 8th Street/SW 87th Avenue, the higher processed volumes are the result not only of the implementation of the grade separation, but also the improvements east of SR 826/Palmetto Expressway in relation to lengthening the eastbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road.

Delay Comparison

As expected, the delay comparison between the 2025 and 2045 No-Build (with bus lanes scenarios) revealed that with the increase in volumes from the year 2025 to the year 2045, an increase in delay will also be observed. With the increase in delay, the theoretical demand will be harder to process through the intersections. However, the overall difference between the processed volumes and theoretical demand for the year 2045 will not be lower than 70 percent.

Based on the 2025 No-Build comparison between the alternative with exclusive bus lanes and without, it could be expected that the reported delays for the intersections of SW 8th Street/SW 112th Avenue and SW 8th Street/SW 109th Avenue will be less if the exclusive bus lanes between SW 109th Avenue and SW 112th Avenue are not constructed. It is anticipated that the reduction in delay at SW 8th Street/SW 109th Avenue intersection will be approximately 20 percent (based on the 2025 analysis). In the case of the intersection of SW 8th Street and SW 112th Avenue (similar to the operations described in the 2025 scenario), the delay may be expected to slightly increase given that higher volumes will be reaching this intersection. If the exclusive bus lanes the intersection of SW 109th Avenue will process higher volume in the northbound/southbound approaches this will translate into more vehicles reaching the intersection with SW 112th Avenue.

In the case of the 2045 Build Alternative comparison with the 2025 Build Alternative, all of the intersections experienced an increase in delay.

When the 2045 Build Alternative was compared to the 2045 No-Build it was determined eight intersections resulted in higher delays, three intersections resulted in slightly higher delays and eleven intersections resulted in a reduction in delay.

The intersections that resulted in an increase in delay were as follows:

1. SW 8th Street & SW 122nd Avenue
2. SW 8th Street & SR 821/Florida's Turnpike (SB Ramps)
3. SW 8th Street & SR 821/Florida's Turnpike (NB Ramps)
4. SW 8th Street & SW 99th Place
5. SW 8th Street & SW 97th Avenue
6. SW 8th Street & SW 94th Avenue
7. SW 8th Street & SW 82nd Avenue
8. SW 8th Street & SW 74th Avenue

The increase in delay at these intersections is mostly due to the increase in traffic demand. Not enough green time is provided for each of the approaches and most vehicles will experience an increase in delay.

The intersections that resulted in a reduction in delay were as follows:

1. SW 8th Street & SW 117th Avenue
2. SW 8th Street & SW 112th Avenue
3. SW 8th Street & SW 109th Avenue
4. SW 8th Street & SW 107th Avenue.
5. SW 8th Street & SW 102nd Avenue

6. SW 8th Street & SW 92nd Avenue
7. SW 8th Street & 87th Avenue
8. SW 8th Street & SR 826/Palmetto Expressway (SB Ramps)
9. SW 8th Street & SR 826/Palmetto Expressway (NB Ramps)
10. SW 8th Street & Tamiami Canal Road
11. SW 8th Street & SW 74th Court

The focus of the analysis was the intersections of SW 8th Street with SW 107th Avenue and the intersection of SW 8th Street with SW 87th Avenue. **Table 23** summarizes the results for the intersections of SW 107th Avenue and SW 87th Avenue.

Table 23 – 2045 –SW 107th Avenue and SW 87th Avenue Intersections Delay Comparison (PM Peak Hour)

Intersection	Approach	Movement	2045 No Build with Bus Lane PM Peak Hour			2045 Build PM Peak Hour		
			Expected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)	Expected Volume (vph)	Processed Volume (vph)	Delay (sec./veh.)
SW 8 Street and SW 107 Avenue	EB	At-Grade	2600	2087	61.4	1658	1420	79.5
		Elevated				1042	886	0
		Total				2700	2306	
	WB	At-Grade	2950	2834	126.1	1658	1482	75.4
		Elevated				1542	1376	0
		Total				3200	2858	
	NB		2200	2204	60	2360	2375	53.4
	SB		2500	2323	172.5	2600	2426	152.4
	Overall		**10250**	**9448**	**108.4**	**10860**	**9965**	**93.8**
SW 8 Street and SW 87 Avenue	EB	At-Grade	2800	2498	85.2	870	800	72
		Elevated				1923	1727	0
		Total				2793	2527	
	WB	At-Grade	3450	3086	38.5	1399	1188	51.9
		Elevated				2331	2014	0
		Total				3730	3202	
	NB		1500	1362	173.4	1510	1503	50.4
	SB		1300	1103	205.9	1320	1309	43.9
	Overall		**9050**	**8049**	**100.1**	**9353**	**8541**	**52.6**

The reduction in delay at the intersection of SW 8th Street and SW 107th Avenue is approximately 13 percent. The northbound/southbound approaches are the ones that benefit the most. The delay at this intersection will only be experienced by 77 percent of the total volume. The other 23 percent will travel through the intersection with no delay.

For the intersection of SW 8th Street and SW 87th Avenue, the reduction in delay is approximately 48 percent. Similar to the intersection at SW 107th Avenue, the northbound/southbound approaches are the movements getting the most benefit from the grade-separation. The delay at this intersection will only be experienced by the drivers traveling through the signalized intersection (approximately 56 percent of the traffic). The rest of the vehicles will be able to cross the intersection with no delay.

All other improvements in delay at most of the intersections seem to be due to the signal retiming.

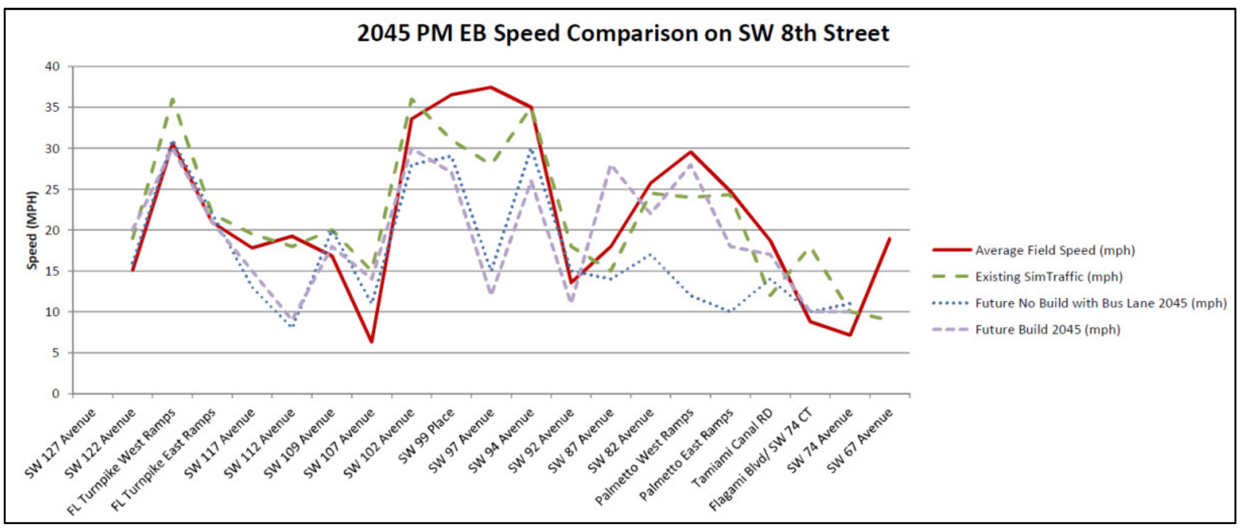
Speed Comparison

Comparison of the eastbound average speeds (along the entire limits of the project) between the 2025 and 2045 Alternatives (No-Build with bus lanes) revealed that average speed reduced by about 22 percent (from 22 mph to 17 mph).

If the Build Alternative is implemented, the reduction in speed from 2025 to 2045 (for the driver using the at-grade option) will be of approximately 14 percent (from 22 mph to 19 mph). The reduction in speed for drivers using the elevated structure will be of approximately 15 percent (from 24 mph to 21 mph).

Figure 23 shows the average speed profile for the year 2045 for the drivers using the at-grade option. Similar the speed profile for the year 2025, most of the segment along SW 8th Street operate at average speeds slightly below existing conditions. Only the segment between SW 92nd Avenue and SW 87th Avenue shows speeds higher than existing conditions for the Build Scenario.

Figure 23 - Eastbound Average Speed (PM Peak Hour Comparison - Signalized Intersection Facility)



In addition, **Figure 23** shows that the Build Alternative results in lower speeds than the No-Build Alternative for most of the segments between SW 122nd Avenue and SW 92nd Avenue. A few segments within the limits of SW 122nd Avenue and SW

92nd Avenue in which the Build Alternative results in slightly higher average speeds than the No-Build are as follows:

1. From east of the SR 821/Florida's Turnpike northbound ramps to SW 112th avenue.
2. From east of SW 109th Avenue to SW 102nd Avenue

From east of SW 112th Avenue to east of SW 109th Avenue, average speeds for the Build Alternative slightly decrease. This short segment correlates with the location where the entrance to the grade separation is located.

The overall parttern for the average speeds of the Build Alternative (for the segment between east of the SW 109th Avenue to SW 102nd Avenue) is higher than the No-Build because of the implementation of the grade separation.

For the segment between SW 99th Place to SW 92nd Avenue, the Build Alternative displays lower speeds than the No-Build Alternative. The factor affecting the speeds within this segment is mostly the signal timing. The No-Build Scenario gives priority to the eastbound/westbound movements while some of the northbound/southbound approaches get penalized. In the case of the Build Alternative, because traffic flows more efficiently in the eastbound/westbound movement, the northbound/southbound approaches are provided longer green times. This in turn affects the average speeds which results in slightly lower values than for the No-Build Alternative.

For the segment east of SW 92nd Avenue until the end of the project (SW 74th Avenue), the Build Alternative displays higher average speeds. These higher speeds are moslty due to the eastbound improvements considered at the intersection of SW 8th Street with Tamiami Canal Road. These improvements allevaite the friction that is found in the vicinity of SR 826/Palmetto Expressway allowing for a more efficient traffic flow.

Figure 24 shows the average speed profile for the drivers traveling SW 8th Street using the grade separations at the intersections of SW 87th Avenue and SW 107th Avenue. As depicted in this graph, average speeds through these intersections (using the elevated option) will remain significantly higher (38 mph to 40 mph). Reduction in average speed (through the elevated option) between the year 2025 and 2045 for the intersections at SW 107th Avenue and SW 87th Avenue will be between 2 to 4 mph.

Figure 24 - Eastbound Average Speed (PM Peak Hour Comparison - Signalized Intersection Facility)

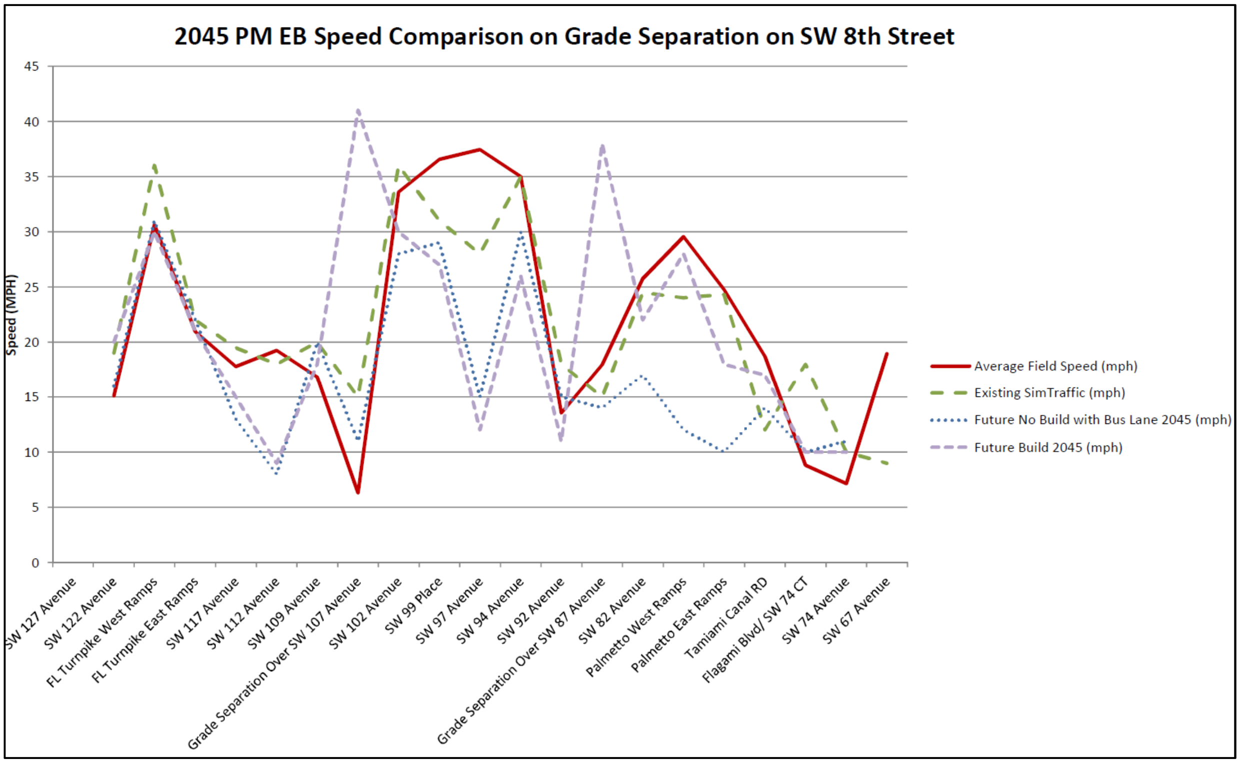


Figure 25 shows average speeds along the westbound direction of SW 8^{th} Street for the entire limits of the project. The overall average speed for the westbound direction decreases by only 1 mph when the 2025 No-Build Alternative with bus lane is compared to the 2045 No-Build Alternative with bus lanes.

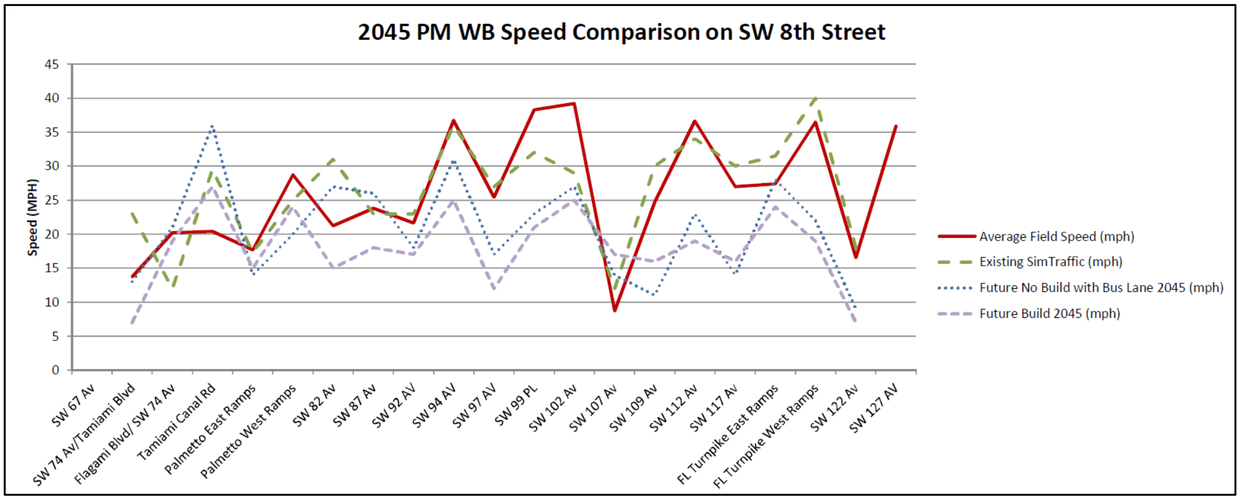
When the 2045 No-Build & Build Alternatives are compared, results indicate that the average speeds for the No-Build Alternative are higher than for the Build. A detailed analysis of this condition was completed and the following observations are provided:

1. For the segment between SW 74^{th} Avenue and the northbound ramps to/from SR 826/Palmetto Expressway, the lower speeds are mostly due to the interruption of the westbound traffic by the eastbound to northbound turning traffic at the intersection of SW 8^{th} Street and Tamiami Canal Road. Because the eastbound exclusive left-turn lane is proposed to be extended, the eastbound traffic has a safer storage lane to wait for an acceptable gap to make the desired movement. Therefore, a higher number of eastbound vehicles are crossing in front of the westbound traffic.

2. For the segment between the southbound SR 826/Palmetto Expressway ramps and SW 8^{th} Street/SW 82^{nd} Avenue intersection, the lower speeds are due to the westbound to southbound turning vehicles that spillback and block the flow of the westbound through traffic. The westbound to southbound left-turn volume at the intersection of SW 8^{th} Street/SW 82^{nd} Avenue is expected to increase due to the traffic diversion that will occur

once the median opening along SW 8th Street is closed to implement the elevated structure for the grade separation.

Figure 25 - Westbound Average Speed (PM Peak Hour Comparison – Signalized Intersection Facility)



3. For the segment east of SW 82nd Avenue to SW 87th Avenue, average spees are affected by the entrance to the grade separation structure, vehicles trying to position themselves in the appropriate lane to access either the elevated structure or the at-grade option, slow down and affect the average speeds along this segment.

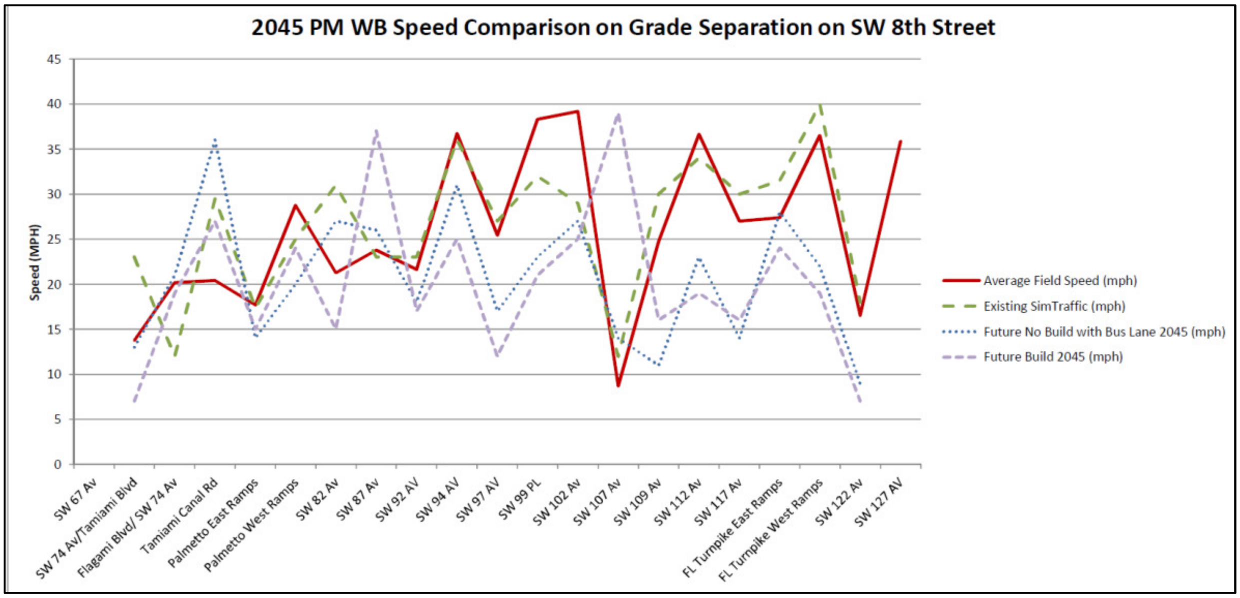
4. For the segment between SW 87th Avenue and SW 99th Place, average speeds do not reach the levels of the No-Build Alternative mostly due to the changes in signal timing. Traffic flow along SW 8th Street is more efficient than in the No-Build Alternative; therefore, it processes the same number of vehicles (or more) than the No-Build. Less green time is required to process vehicles in the eastbound/southbound approaches (which remain stopped for a longer period of time) and more time is given to the northbound/southbound approaches at the minor intersections.

5. For the segment between SW 99th Place and west of SW 109th Avenue, average speeds are higher for the Build than for the No-Build Alternative. This is mostly due to the fact that this segment is pretty-much free-flow because of the Turbo-T intersections. In addition, the entrance to the grade separation is located west of SW 102nd Avenue which contributes to the increase in speeds within this segment.

6. For the segment west of SW 109th Avenue until SW 122nd Avenue, the westbound direction for the Build Alternative processes higher volumes than the No-Build Alternative. Therefore, average speeds results in lower values. The No-Build Alternative at the intersection of SW 8th Street and SW 109th Avenue meters the traffic that continues westbound; therefore, lower volumes result in higher speeds.

Figure 26 shows average travel speeds for the drivers using the elevated structures at the intersections of SW 8th Street/SW 87th Avenue and SW 8th Street/SW 107th Avenue. The difference in average speeds through the intersections for the drivers using the elevated options is negligible when the 2025 Build Alternative is compared to the 2045 Build Alternative (about 1 to 2 mph).

Figure 26 - Westbound Average Speed (PM Peak Hour Comparison - with Grade Separations at SW 107th Avenue and SW 87th Avenue)



3.0 SUMMARY OF FINDINGS

The Travel Demand Forecasting analysis completed for this study indicated that, from an area wide perspective, the grade separations over SW 87th Avenue and SW 107th Avenue do not attract more traffic to SW 8th Street. There will be a slight increase in traffic; however it is not so significant as to relieve congestion in adjacent/parallel facilities. Localized improvements such as these are difficult to analyze and assess an impact using a large regional model.

The implementation of the grade separations over SW 87th Street and SW 107th Avenue showed a minimal increase in the traffic volume growth rate within the area, but the impact of this higher growth does not cause a significant increase in the traffic volumes.

The summary of findings related to the operational analysis is described below.

From the traffic operational analysis conducted it was determined that overall the Build Alternative performs more efficiently than the No-Build Alternative. It has to be pointed out that the Build Alternative included not only the grade separations at the intersections of SW 107th Avenue and SW 87th Avenue; it also included improvements at the intersection of SW 8th Street with Tamiami Canal Road and at the intersection of SW 8th Street with SW 82nd Avenue. The last improvement was necessary because the increase in number of left-turns from westbound SW 8th Street to southbound SW 82nd Avenue.

The No-Build Alternatives included some proposed improvements already included in the cost-feasible plan such as the widening of SW 107th Avenue between Flagler Street to SW 11th Street, improvements at the intersections with the SR 821/Florida Turnpike Ramps (NB/SB) and reconfiguration of the intersection of SW 8th Street with SW 117th Avenue.

From the comparison of the No-Build Alternatives (with and without the bus lanes) for the years 2025 and 2045 (AM and PM peak hours) it was determined that the major impact of the exclusive bus lanes (to be located between the intersections of SW 109th Avenue and SW 112th Avenue) will be on the delay. Implementation of the signal phase for the buses will cause that all of the other approaches at these intersections need to stop. In addition, (for safety reasons) all of the right-turn-on reds will need to be prohibited at the intersections of SW 112th Avenue and SW 109th Avenue. In order to keep the cycle length constant, the phases for the other approaches will need to be shortened to be able to provide the phasing for the U-turning buses. All these factors will cause delay to increase.

The increase in delay also translates in more queued vehicles at these intersections, especially in the northbound/southbound approaches at SW 109th Avenue (the theoretical demand will only be partially processed). These queued vehicles impact the westbound approaches at adjacent intersections such as SW 112th Avenue and SW 117th Avenue. Theoretical demand volumes will not be processed through SW 109th Avenue and in turn not the theoretical demand will reach the intersections at SW 112th Avenue and SW 117th Avenue.

In general, average speeds for the two 2025 No-Build Alternatives (with and without bus lanes) resulted in very similar values, even for the segment between SW 112th Avenue and SW 109th Avenue. These similar speeds between SW 112th Avenue and SW 109th Avenue (in the eastbound and westbound directions for the AM and PM peak hours) seem to be due to the distance between intersections. Since there are several closely spaced intersections within this segment, drivers are not able to speed up. The presence of the exclusive bus lanes between SW 109th Avenue and SW 112th do not have a significant impact on average speeds.

From the comparison of the 2025 No-Build Alternatives (with and without bus lanes) with the 2025 Build Alternative (without bus lanes) it was determined that the Build Alternative offers some improvements in traffic operation over the No-Build Alternatives.

Average delay at the intersections of SW 87th Avenue and SW 107th Avenue (directly impacted by the grade separations) reduces (for the AM and PM peak hours). In addition, a high percentage of vehicles will cross these two intersections experiencing zero delay. It has to be pointed out that the reduction in delay at the intersection with SW 87th Avenue is more significant that the reduction in delay for the intersection with SW 107th Avenue.

Delay at the intersection of SW 87th Avenue was impacted by the eastbound queue that formed along SW 8th Street in the vicinity of SR 826/Palmetto Expressway. This queue extended from the SR 826/Palmetto Expressway Interchange to west of SW 82nd Avenue. Eastbound vehicles crossing the intersection with SW 87th Avenue were slowed down by this queue and contributed to the higher delay at this intersection. The Build Alternative considered the lengthening of the eastbound exclusive left-turn at the intersection with Tamiami Canal Road. This improvement allowed a more efficient traffic flow in the eastbound direction and a reduction in the queue that formed in the No-Build Alternatives. Therefore, this more efficient traffic flow pattern in the eastbound direction allowed for a more significant delay reduction at the intersection with SW 87th Avenue.

The difference in delay at the intersection with SW 107th Avenue is not as significant as for the intersection with SW 87th Avenue. One of the reasons for these results is the fact that as SW 107th Avenue is widened all of the exclusive right turn lanes become signalized. In addition, in the Build Alternative the eastbound right turn lane becomes a shared/through right-turn lane. Eastbound right turn volumes at this intersection are high and the conversion to a shared through/right lane restricts capacity causing the reduction in delay not to be so significant.

Overall, the Build Alternative allowed processing higher volumes along most of the intersections within the area analysis. The intersections of SW 87th Avenue and SW 107th Avenue are able to process the entire theoretical demand for the northbound/southbound approaches.

Average speeds for the Build Alternative also resulted in higher values than for the No-Build Alternatives. Some specific differences that were identified between the average speed profiles of the No-Build Alternatives and the Build were that in the locations of the entrances to the grade separations, average speeds tend to be lower than for the No-Build Alternatives (at those particular locations). This traffic pattern seems to be related to the lane changes maneuvers that drivers have to perform in order to position themselves in the appropriate lane.

Analysis for the year 2045 determined that traffic patterns identified in the year 2025 will still exist for the No-Build and Build Alternatives. In the year 2045, capacity of the cross-streets will be very limited. In addition, limited capacity along SW 8th Street (in the No-Build Alternative) in the eastbound direction in the vicinity of SR 826/Palmetto Expressway will cause a more critical queue that has the potential to affect operations at the intersection with SW 92nd Avenue.

In the case of the Build Scenario the eastbound shared right/through lane at the intersection of SW 107th Avenue might cause the delay to increase (since this volume will not be entirely processed through this intersection).

Before final recommendation for the implementation of the grade separations it will be necessary to perform a cost/benefit analysis in order to quantify the benefits of these improvements when compared to the impacts (such as westbound/eastbound median closures, blocking of the view from the south side of SW 8th Street, traffic diversion due to the closing of the median).

In addition, a public involvement period is recommended in order to obtain feedback from the every-day users of the median opening of SW 8th Street and SW 76th Avenue. A cost/benefit analysis should be performed in order to account for the fact that to extend the eastbound to northbound left-turn bay at the intersection of SW 8th Street and Tamiami Canal Road, the access from northbound SW 76th Avenue to westbound SW 8th Street will need to be closed.

This closure will cause that most the northbound to westbound traffic from SW 76th Avenue be re-routed to SW 74th Avenue in order to perform the desired movement. This traffic diversion might have detrimental impacts to the traffic operations at the intersection of SW 8th Street and SW 74th Avenue. For that reason, a more detailed analysis focused in this specific segment of SW 8th Street (from SR 826/Palmetto Expressway to SW 74th Avenue) should be conducted before any final decision for implementation is made.

The SW 8th street corridor has a morning eastbound peak hour flow. The analysis shows that for the Grade separation alternative (in the year 2045), the build-up of traffic at the Palmetto Expressway (eastbound queue) will extend westward to the west side of the 82nd Avenue intersection. In other words, the traffic coming off the 87th Avenue grade separation will be coming down to grade and will be at the back of the eastbound queue, headed toward the Palmetto Expressway, in stop and go traffic.

The SW 8th Street corridor has a late afternoon westbound peak hour flow. The analysis shows that for the Grade separation alternative (in the year 2045), traffic coming off the 107th Avenue grade separation will be coming down to grade at 109th Avenue and will experience congested conditions at four traffic signals prior to passing the Florida's Turnpike. In other words, there will be virtually no travel time improvement for westbound traffic between 107th Avenue and Florida's Turnpike.

The proposed exclusive bus lanes on SW 8th Street between 109th and 112th Avenues (MDT project to access the Panther Station at FIU) will negatively affect delay and travel times in the afternoon westbound peak hour.

Overall, travel time savings are more significant during the AM peak hour direction (eastbound) than for the PM peak hour direction. As previously mentioned in the report, the afternoon peak hour, shows significantly higher volumes (at all intersections) than the morning peak hour. Therefore, the travel time savings in the afternoon are less noticeable (since more vehicles are traveling along SW 8th Street).

For the year 2025, it was determined that commuters could potentially save approximately five minutes during the morning peak hour in the peak direction (eastbound). In addition, for the year 2045 the travel time savings could potentially be about seven minutes. The reason for the higher travel time savings for the year 2045 than for the year 2025 is the fact that the No-Build average speeds for the year 2045 are significantly lower than for the year 2025. Therefore, the higher difference in speeds causes a higher travel time savings in the year 2045. For instance, average speeds for the year 2025 (for the entire length of the corridor) are: 17 mph (No-Build) vs. 23 mph (Build). For the year 2045, average speeds are 13 mph (No-Build) vs. 19 mph (Build). For the afternoon peak hour the difference in average speeds between the No-Build and Build Alternatives are not that significant.

The minimal improvement in corridor speeds and travel times does not justify the cost of more than $80 million to implement the grade separation projects at this time. The grade separation projects may prove to be viable in the future if implemented systematically throughout the corridor.

Appendix A – No-Build and Build Tables with Estimated Growth Rates

Appendix B – 2025/2045 Projected Peak Hour Volumes (AM and PM) Build & No-Build Alternatives

Appendix C – Processed Volumes Tables

Appendix D – Delay & Queue Comparison Tables

Appendix E – Average Speeds Tables & Graphs

Appendix F – Synchro/HCS Summary Tables