

Draft Downtown Pompano Beach Traffic Study



Prepared for:
The City of Pompano Beach
Community Redevelopment Agency

Prepared By:



an Employee Owned Company

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EXECUTIVE SUMMARY

The City of Pompano Beach Community Redevelopment Agency (CRA) has requested Calvin, Giordano & Associates, Inc. to develop a comprehensive traffic analysis for the Downtown Pompano Beach Area. 18 intersections and 41 roadway segments were evaluated in the Downtown area of Pompano Beach. Each of the study intersections and roadway segments were analyzed under the following conditions and during the morning and afternoon peak hours:

- Existing conditions (2010) – Existing conditions as experienced today.
- No Build (2015) – This short term planning scenario considered background traffic but no new major development.
- Build (2015) – This short term planning scenario considered background traffic and proposed development outlined by the Pompano Beach CRA.
- No Build (2030) – This long term planning scenario considered background traffic but no new major development.
- Build (2030) – This long term planning scenario considered background traffic and proposed development outlined by the Pompano Beach CRA.

Intersections

The results of the analysis concluded that for the most part there were only minimal differences between the No Build and Build scenarios. The majority of the intersection degradations were a result of the background traffic projected for years 2015 and 2030 and not the proposed development.

The analysis indicated that only the intersection of Atlantic Boulevard at Dixie Highway is currently operating below the acceptable LOS D threshold. The 2015 analysis resulted in mostly minor degradations for each of the study intersections for the both the No Build and Build scenarios. In addition to the intersection of Atlantic Boulevard at NW Dixie Highway, the intersections of Atlantic Boulevard at NW 6th Avenue and NE 2nd Avenue were shown to operate below LOS D in the 2030 analysis for both the Build and No Build scenarios.

Roadways

Currently, only Atlantic Boulevard from NE 4th Avenue to NE 5th Avenue is overcapacity. The 2015 link analysis demonstrates that Atlantic Boulevard from NW 7th Avenue to NW 6th Avenue will be overcapacity in addition to Atlantic Boulevard from NE 4th Avenue to NE 5th Avenue. There were no additional failing segments between the No Build and Build scenarios. The 2030 No Build link analysis resulted in the following overcapacity roadway segments:

- Atlantic Boulevard west of NW 7th Avenue
- Atlantic Boulevard from NW 7th Avenue to NW 6th Avenue
- Atlantic Boulevard from NW 6th Avenue to Dixie Highway
- Atlantic Boulevard from Dixie Highway to NE 1st Avenue
- Atlantic Boulevard from NE 1st Avenue to NE 2nd Avenue
- Atlantic Boulevard from NE 3rd Avenue to NE 4th Avenue
- NW 6th Avenue from Atlantic Boulevard from Dr. Martin Luther King Jr. Boulevard

The 2030 Build link analysis resulted in these additional overcapacity roadway segments:

- Dr. Martin Luther King Jr. Boulevard west of NW 7th Avenue (2 lane alternative)
- Dr. Martin Luther King Jr. Boulevard from NW 7th Avenue to NW 6th Avenue (2 lane alternative)
- Dr. Martin Luther King Jr. Boulevard from NW 6th Avenue to Dixie Highway (2 lane alternative)
- Atlantic Boulevard from NE 2nd Avenue to NE 3rd Avenue
- Dixie Highway from Atlantic Boulevard to Dr. Martin Luther King Jr. Boulevard

Proposed Intersection Improvements

The analysis determined that the proposed development did not have a significant influence on the study intersections. The degradation of the intersections was mostly caused by background traffic or existing operational concerns. However, improvements at three intersections have been identified to help alleviate some of the traffic congestion. Please note that it is recommended that the traffic signal timing be optimized for each of the build out years.

Dr. Martin Luther King Jr. Boulevard at Dixie Highway

- Eastbound right turn lane 5-section signal head to allow for a right turn overlap phase
- Extend westbound left turn lane to allow for at least 75 feet of vehicle storage.

Atlantic Boulevard at NW 6th Avenue

- Additional eastbound left turn lane
- Southbound right turn lane 5-section signal head to allow for a right turn overlap phase

Atlantic Boulevard at NE 2nd Avenue/ Cypress Road

- Additional northbound right turn lane
- Reconfigure the northbound approach from one exclusive left turn lane, one shared left turn lane/ through lane, and one right turn lane to two exclusive left turn lanes, one shared through/ right turn lane, and one exclusive right turn lane
- Eastbound right turn lane 5-section signal head to allow for a right turn overlap phase
- Revise signal timing plan from the existing northbound-southbound split phasing to a standard 8-phase signal timing plan

Atlantic Boulevard between Dixie Highway and NE 2nd Avenue

The analysis concluded that reducing Atlantic Boulevard from six lanes to four lanes between Dixie Highway and NE 2nd Avenue would result in extensive vehicular delays and queues. However, the CRA could provide a safer crossing experience by providing a larger center median on Atlantic Boulevard. The most feasible option to provide this would be to remove the eastbound left turn lane on Atlantic Boulevard at NE 1st Avenue. This would redirect an insignificant number of eastbound left turns at the NE 1st Avenue intersection to the NE 2nd Avenue intersection, which is capable of handling the additional left turn movements without exceeding an acceptable level of service with an additional eastbound left turn improvement. Right of way for an additional eastbound left turn at NE 2nd Avenue is available, via a previously striped out left turn bay at the intersection. This improvement would create an approximately 25 foot wide center median on the west leg of Atlantic Boulevard and would not affect access to the proposed Civic Campus. This modification is anticipated to not only increase the performance of the Atlantic Boulevard at NE 1st Avenue intersection, but would provide a wide safe refuge for pedestrians traversing to/from the proposed Civic Campus. Combined with a 2-stage pedestrian crossing at this location, this improvement would allow for pedestrians to cross relatively smaller roadway segments on Atlantic Boulevard at one time.

I-95 Northbound Off Ramp onto Atlantic Boulevard Modifications

The analysis concluded that it is feasible to modify the I-95 Northbound Off Ramp onto Atlantic Boulevard intersection to accommodate a north approach driveway or local roadway. The main downside to this modification is that the westbound Atlantic Boulevard to northbound I-95 free flow lane would have to be converted to signal control. However, the resulting vehicular delays and queues for this approach would be reasonable and not excessive. Another option is to build an exclusive westbound I-95 on ramp overpass bridge over the subject intersection. However, the traffic operational benefits of this scenario do not justify the high costs of this overpass bridge.

Flagler Avenue

At the request of the Pompano Beach CRA, the possibility of modifying Flagler Avenue from a two-lane, two-way roadway to a one-lane, one-way roadway was analyzed. The projected directional peak hour volumes demonstrate that Flagler Avenue could easily be converted to a one-way roadway in either direction between NE 3rd Street and NE 1st Street, without exceeding the acceptable roadway capacity.

For the short term and long term planning horizons, several recommendations when the development types and locations are finally determined:

- **Keep Dr. Martin Luther King Jr. Boulevard at 4 lanes divided during the PM peak hours, approximately 4PM to 6PM.** However, Dr. Martin Luther King Jr. Boulevard could be modified to serve as a two-lane divided roadway and accommodate on-street short term parking during non-peak hours (9 AM to 4 PM and 6 PM to 6 AM) and be utilized as four-lane roadway during peak hours. The city may also examine parking strategies, such as potential metered parking during the non-peak hours as an option to regulate parking.
- **When determining the location for future development, encourage the use of Dr. Martin Luther King Jr. Boulevard.** Dr. Martin Luther King Jr. Boulevard as a four lane divided roadway is anticipated to be significantly under capacity in future conditions while Atlantic Boulevard is expected to be very congested and overcapacity. Traffic congestion can be reduced in the Downtown area by picking development locations adjacent to Dr. Martin Luther King Jr. Boulevard as opposed to Atlantic Boulevard.
- **Promote the use of all adjacent parallel north/south roadways as alternatives other than Dixie Highway when traveling from Dr.**

Martin Luther King Jr. Boulevard/ NE 3rd Street to Atlantic Boulevard. The intersection of Atlantic Boulevard at Dixie Highway is the most heavily congested intersection within the study area. Excessive vehicular delays and queues will be experienced by all approaches in future conditions at this intersection.

The use of all adjacent parallel north/south roadways other than Dixie Highway should be promoted, such as NE 2nd Avenue and NE 1st Avenue because of their close proximity to Dixie Highway and signalization at Atlantic Boulevard. However, if more vehicles utilize these north/south facilities, then green time for the eastbound and westbound approaches on Atlantic Boulevard will need to be reduced, which may cause increased eastbound and westbound vehicular queuing, but will improve intersection operations at the Atlantic Boulevard at Dixie Highway intersection.

Some ways to encourage the use of adjacent parallel north/south roadways include installing lighting facilities and sidewalks on both sides of the street on segments in which they are missing. Additionally, surface treatments such as stamped concrete can be utilized at both unsignalized and signalized intersections to promote pedestrian safety and also increase the aesthetics of the intersection.

The intersections should be modified so that only the eastbound and westbound approaches are under stop control for the parallel facilities between MLK and Atlantic Boulevard. This will increase the speed and efficiency of the northbound and southbound traffic flow along these facilities. Also, the existing traffic signals along these corridors should be examined for justification. Removal of a traffic signal could decrease intersection delay and improve overall operations.

- **Implement 2-stage pedestrian crossings on Atlantic Boulevard at NE 1st Avenue.** 2-stage pedestrian crossings are created by having a refuge

islands located in the middle of the street or as part of the center median. These pedestrian crossing islands increase safety by allowing pedestrians to only have to cross half the roadway at a time. The crosswalk across Atlantic Avenue is just over 100 feet. Signage (R9/R10 Series) should be installed to direct pedestrians where and how to cross Atlantic Boulevard near the proposed Civic Campus.

These islands could be supplemented with a crosswalk surface treatment such as stamped concrete. These improvements would enhance pedestrian safety, be aesthetically pleasing, and create a sense of a walkable community. Additionally, this improvement can tie in to the recommendations of removing the eastbound left turn lane on Atlantic Boulevard at NE 1st Avenue and promoting the use of the north/south facilities as opposed to Dixie Highway if this pedestrian enhancement is implemented.

- **Develop a traffic plan to minimize local impacts during the phases of construction.** A carefully planned traffic plan will help reduce traffic congestion and motorist confusion during roadway and development construction.
- **Implementing the proposed intersection improvements identified in this report.**
- **Conduct an additional traffic study to determine the feasibility of extending NW 9th Avenue to connect with the intersection of Atlantic Boulevard at the I-95 northbound off ramp.**

A preliminary analysis concluded that the extension of NW 9th Avenue to Atlantic Boulevard is a feasible scenario and can provide direct access from northbound I-95 to the redevelopment area, without placing traffic on Atlantic Boulevard. This scenario is anticipated to provide extensive

relief to NW 6th Avenue, between Atlantic Boulevard and MLK. However, extensive coordination with the FDOT will be necessary. First, a Methodology Letter of Understanding (MLOU) will need to be prepared to coordinate with FDOT to perform an Interchange Justification Report (IJR) /Interchange Modification Report (IMR) along with additional detailed analysis of all the I-95 ramps will most likely be required to justify the need for the ramp modification. The applicant is responsible for the collection of all data, performing all required analysis and development of the required documentation consistent with the requirements and agreements in the MLOU. An IJR/IMR requires FHWA approval and must be consistent with and adequately address FHWA policies and regulations. The approval of all new or modified access on the Interstate Highway System by FHWA is considered a Federal Action. As such, this requires the approval of both the IJR or IMR document and project National Environmental Policy Act (NEPA) approval obtained through the Department's Project Development and Environment (PD&E) process study. These are two separate federally required actions requiring two separate documents and FHWA approval processes.

There are seven (7) steps involved with the interchange justification process by FDOT, as listed:

1. Development of Project Study Design and Methodology Letter of Understanding (MLOU)
2. Department Review and Approval of the MLOU
3. Development of Preliminary Interchange Proposal
4. Department and Approval Authority Review of Preliminary Interchange Report
5. Development of Interchange Proposal for Approval Decision
6. Interchange Proposal Processing and Approval Decision
7. Project Implementation Activities

This approval process can be expected to last approximately two (2) years and may be joint funded with FDOT or fully funded by the City of Pompano.

1.0 INTRODUCTION

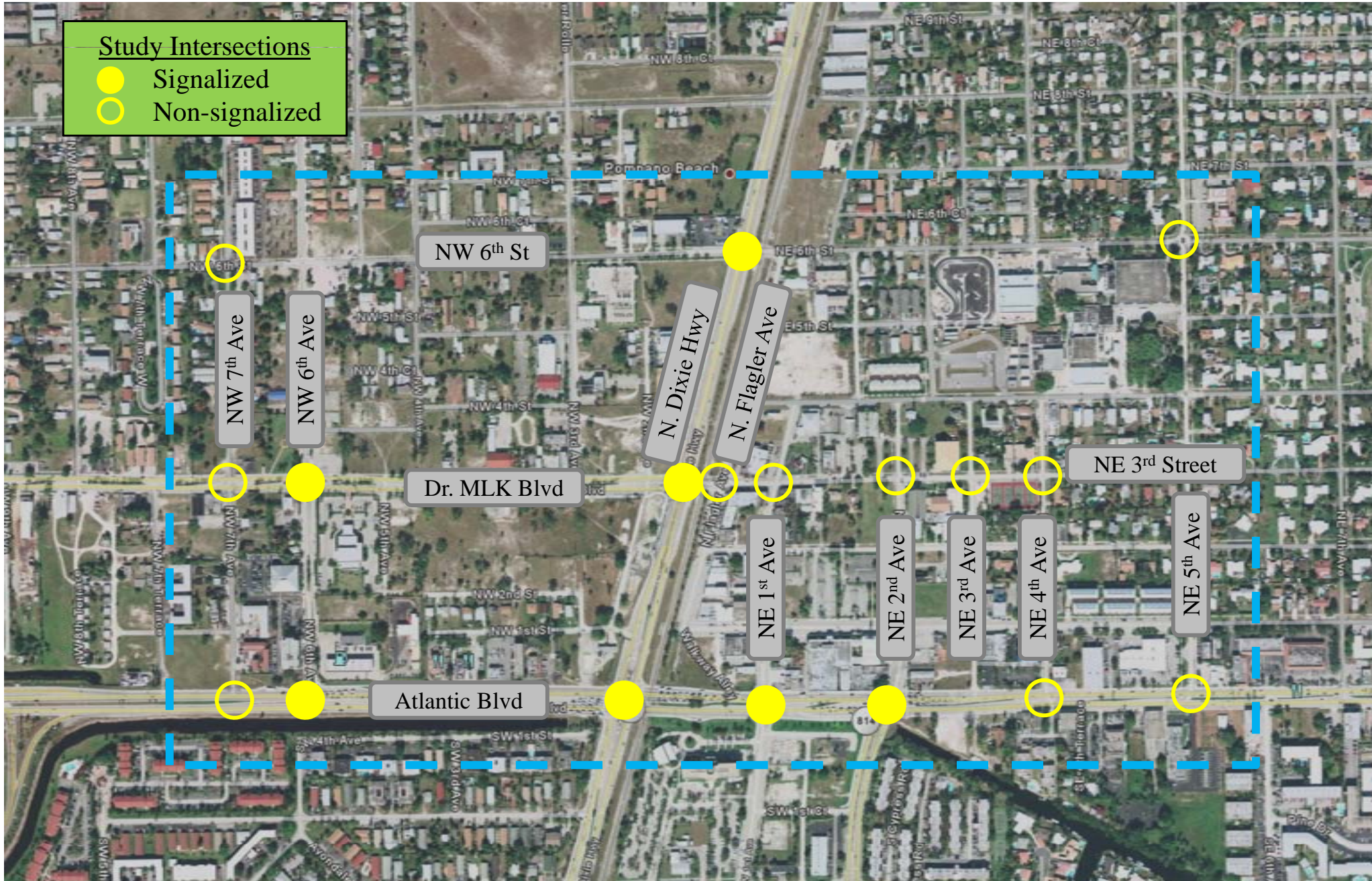
The City of Pompano Beach Community Redevelopment Agency (CRA) has requested Calvin, Giordano & Associates, Inc. to develop a comprehensive traffic analysis for the Downtown Pompano Beach Area. The City of Pompano Beach is bounded by the City of Coconut Creek to the west, the City of Deerfield Beach to the north, the City of Lighthouse Point to the east, and the City of Fort Lauderdale to the south. The City of Pompano Beach which encompasses 22.15 square miles is home to approximately 104,000 residents on a permanent basis.

1.1 Study Area/General Description

The study area is bounded by NW 7th Avenue to the west, NE 5th Avenue to the east, NW 6th Street to the north, and Atlantic Boulevard to the south. The study area is depicted in **Figure 1**. A total of 18 intersections are analyzed as part of the Downtown study. Out of the eighteen study intersections, seven are under signalized control, ten are under stop control, and one intersection is a roundabout. A list of the study intersections is provided below:

- NW 6th Street at NW 7th Avenue, Dixie Highway, and NE 5th Avenue
- Dr. Martin Luther King Jr. Boulevard at NW 7th Avenue, NW 6th Avenue, and Dixie Highway,
- NE 3rd Street at N. Flagler Avenue, NE 1st Avenue, NE 2nd Avenue, NE 3rd Avenue, and NE 4th Avenue
- Atlantic Boulevard at NW 7th Avenue, NW 6th Avenue, Dixie Highway, NE 1st Avenue, NE 2nd Avenue, NE 4th Avenue, and NE 5th Avenue

Figure 1 – Study Area



1.2 Project Scope

The scope of this study includes the analysis of the roadways and intersections outlined in the study area for the existing conditions (2010), short term planning horizon (2015), and long term planning horizon (2030). Future potential development at several locations within the study area is also included in future planning years in addition to background traffic. The potential future development densities and locations were determined by the Pompano Beach CRA.

2.0 EXISTING CONDITIONS

2.1 Existing Roadway Network

The three major roads that are included within the study area are Atlantic Boulevard, Dr. Martin Luther King Jr. Boulevard, and Dixie Highway.

Atlantic Boulevard

Atlantic Boulevard, also known as State Road 814, is an east-west principle arterial that runs throughout Broward County. Atlantic Boulevard is six lanes divided from the western limit of the study area to just east of NE 2nd Street where it transitions to four lanes divided to the eastern limit of the study area.

Dr. Martin Luther King Jr. Boulevard

Dr. Martin Luther King Jr. Boulevard, also known as Hammondville Road, is an east-west minor arterial that runs from State Road 7 to Dixie Highway. Dr. Martin Luther King Jr. Boulevard is four lanes divided from the western limits of the study area to where the road terminates at Dixie Highway. Dr. Martin Luther King Jr. Boulevard becomes NE 3rd Street east of Dixie Highway.

Dixie Highway

Dixie Highway, also known as State Road 811, is a north-south minor arterial within the study area and is a prominent roadway throughout South Florida. Dixie Highway is six lanes divided within the Downtown study area.

Other Roadways

The remaining roadways within the study area consist of mostly two lane local and collector roadways that do not have a regional impact.

2.2 Existing Transit Routes

There are currently four bus routes within the Downtown study area. The bus routes primarily utilize Atlantic Boulevard, Dixie Highway, Cypress Creek Road, Dr. Martin Luther King Jr. Boulevard, and NW 6th Avenue. Bus routes 20 and 42 have headways of 30 minutes while bus routes 50 and 60 have headways of 20 minutes. A map of the existing bus transit routes is provided in **Appendix A**. Additionally, CSX train tracks run north-south just east and parallel to Dixie Highway.

2.3 Existing Traffic Data

As part of the Downtown Pompano Beach traffic study, Average Annual Daily Traffic (AADT), peak hour bi-directional counts, and turning movement counts were collected.

2.3.1 AADT Volumes

AADT counts were taken from the 2009 FDOT Florida Traffic Information (FTI) DVD at the following locations inside or just outside the study area:

- FDOT Count Station 86-7773: Dr. Martin Luther King Jr. Boulevard west of NW 15th Avenue
- FDOT Count Station 86-7171: Dr. Martin Luther King Jr. Boulevard west of Dixie Highway
- FDOT Count Station 86-0174: Atlantic Boulevard west of I-95
- FDOT Count Station 86-5054: Atlantic Boulevard west of Dixie Highway
- FDOT Count Station 86-0071: Atlantic Boulevard west of SE 9th Avenue
- FDOT Count Station 86-9562: NW 6th Avenue north of Dr. Martin Luther King Jr. Boulevard

- FDOT Count Station 86-0025: Dixie Highway south of Atlantic Boulevard
- FDOT Count Station 86-7424: Cypress Road south of Atlantic Boulevard
- FDOT Count Station 86-7194: NE 5th Avenue north of NE 10th Street
- FDOT Count Station 86-7191: NE 5th Avenue north of Atlantic Boulevard

The historical FDOT AADTs were utilized to evaluate historical trend analysis on the aforementioned roadways. The results of the historical trend analysis provided unreliable results due to the inconsistent traffic volumes over the last 10 years. Therefore, the trend analysis developed as part of this study is for informational purposes only and not utilized to determine future growth in the study area. A summary of the historical AADTs and trend analysis is shown on **Table 1**. The applicable data from the 2009 FDOT FTI DVD and the trend analysis spreadsheets are included in **Appendix B**.

2.3.2 Turning Movement Counts

Turning movement counts were collected during the AM and PM peak hours between June 15, 2010 and July 14, 2010 for each of the study intersections with the exception of Atlantic Boulevard at NW 6th Avenue and Atlantic Boulevard at Dixie Highway. The turning movement counts for these two intersections were taken from previous collected counts by the Broward County Traffic Engineering Department.

Generally, the peak periods for the study area ranged from 8:00 AM to 9:00 AM and 4:45 PM to 5:45 PM for the AM and PM peak periods, respectively. Peak season factors ranging from 1.06 to 1.09 from the 2009 FDOT FTI DVD were applied to the raw turning movement counts to establish the existing traffic volumes for each of the study intersections. The adjusted existing traffic volumes during the AM and PM peak hours are shown in **Figures 2 & 3**, respectively. The collected raw traffic counts are included in **Appendix C**.

Table 1 - Summary of Historical AADTs

Year	86-7773	86-7171	86-9562	86-0174	86-5054	86-7191	86-0071	86-7424	86-0025	86-7194
	Hammondville Rd, W. of NW 15th Ave	Hammondville Rd, W. of Dixie Hwy	NW 6th Avenue, N. of Hammondville Rd	Atlantic Blvd, W. of I-95	Atlantic Blvd W. of Dixie Hwy	NE 5th Ave, N. of Atlantic Blvd	Atlantic Blvd, W. of SE 9th Ave	Cypress Rd, S. of Atlantic Blvd	Dixie Hwy, S. of Atlantic Blvd	NE 5th Ave, N. of NE 10th St
2009	18,000	12,800	7,500	62,500	44,500	2,800	39,000	19,500	23,000 ⁽¹⁾	3,300
2008	18,500	11,900	7,700	60,000	51,000	2,600	43,500	21,000	25,000	4,000
2007	22,000	13,000	9,200	62,000	51,500	2,700	44,500	22,000	25,000	4,100
2006	29,500	15,700	8,700	60,500	57,500	2,800	43,500	21,500	24,500	4,400
2005	24,000	16,500	6,200	59,500	55,500	2,900	49,000	22,000	25,500	4,200
2004				58,500	59,000		46,500		25,000	
2003				52,000	57,500		44,500		24,500	
2002				52,500	54,500		44,500		24,000	
2001				55,000	56,500		46,500		23,500	
2000				61,000 ⁽¹⁾	57,000		45,000		24,000	
Historical LGR	-8.52%	-6.94%	2.33%	2.33%	-1.75%	-0.89%	-0.98%	-2.47%	0.73%	-4.55%
R^2	60.32%	78.46%	4.73%	74.47%	51.00%	30.77%	28.54%	70.35%	57.03%	69.14%

Removed from Trend Analysis⁽¹⁾

Figure 2 - AM Peak Hour Existing Turning Movement Counts

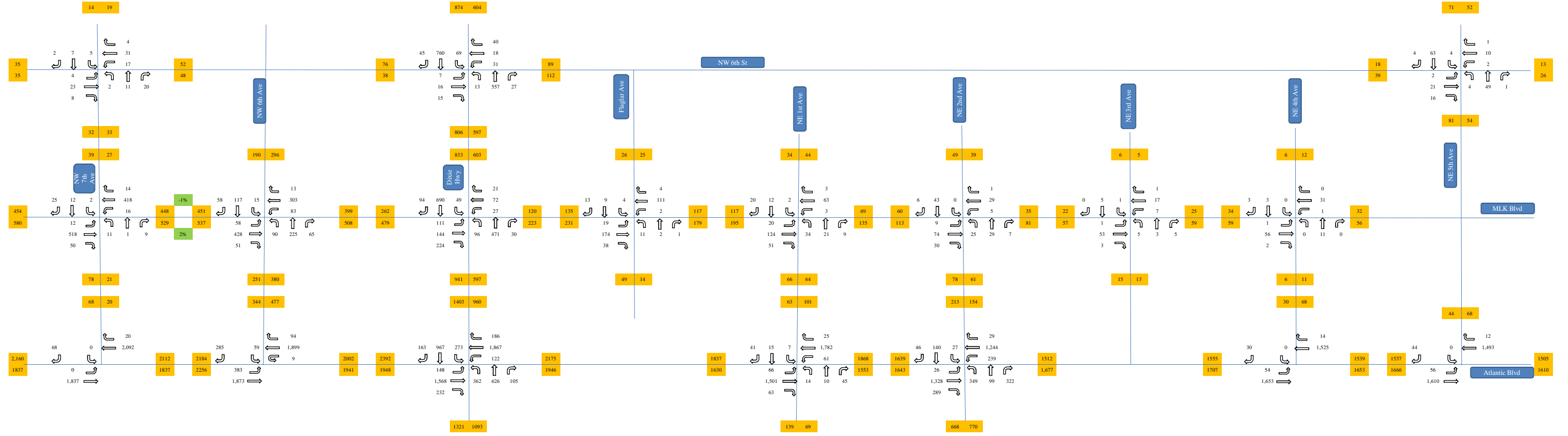
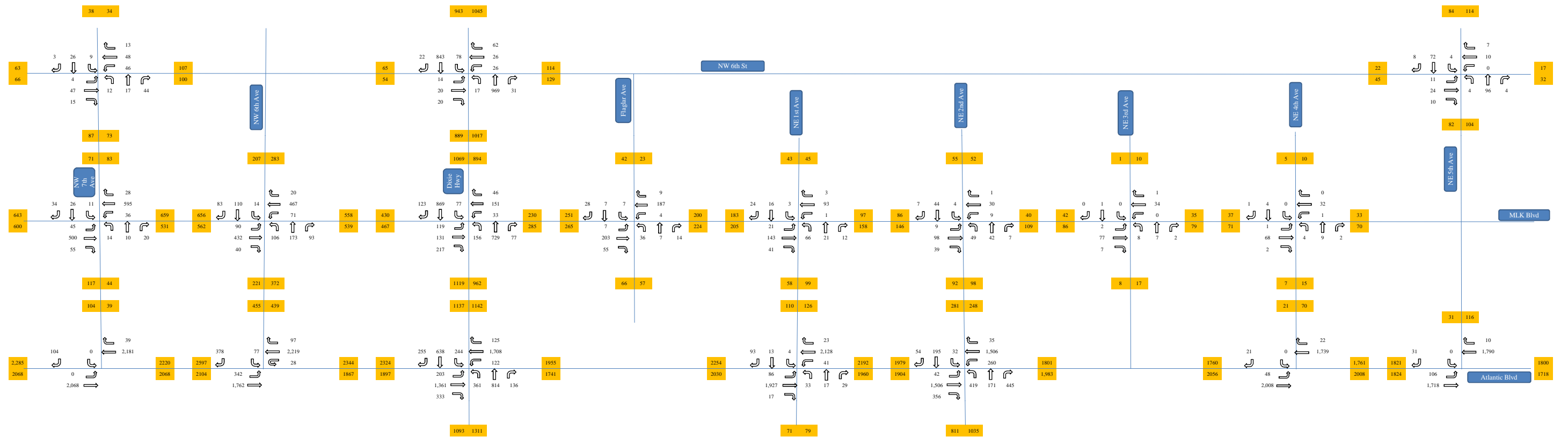


Figure 3 - PM Peak Hour Existing Turning Movement Counts



2.3.3 Peak Hour Bi-Directional Volumes

The peak season adjusted turning movement counts were utilized to determine the peak hour bi-directional volumes for each of the study roadway segments. The peak hour directional volumes during the AM and PM peak hours are also shown in **Figures 2 & 3**, respectively.

2.4 Existing Operational Analysis

2.4.1 Intersection Operational Analysis

To compute intersection Levels of Service (LOS), an intersection operational analysis was completed for all eighteen study intersections in the Downtown study area using Synchro 7 software. Level of Service (LOS) is defined within the Highway Capacity Manual (HCM) as a qualitative measure describing operational conditions within a traffic flow, and the perception of these conditions by drivers or passengers. These conditions include factors such as travel time, freedom to maneuver, traffic interruptions, comfort, convenience and safety. LOS is given letter designations, from A to F, with LOS A representing the best operating conditions (free flow, little delay) and LOS F the worst (congestion, long delays). Generally, LOS A and B are high, LOS C and D are moderate and LOS E and F are low conditions of serviceability.

Synchro 7.0 software was used for the intersection operational analysis for both signalized and unsignalized intersections. The Synchro model was constructed based on the existing field conditions and roadway characteristics. The peak hour factors (PHF) and heavy vehicles percentages were derived from the collected traffic data and available FDOT data. The existing signal timing for each of the signalized intersections were based on the Broward County Traffic Engineering Signal Timing Sheets. The Broward County Traffic Engineering Signal Timing Sheets are included in **Appendix D**.

2.4.1.1 Unsignalized Intersections

The HCM analysis demonstrated that each of the ten study intersections under stop control are currently operating at an acceptable level of service with minimal

delays during both the AM and PM peak hours. However, the HCM methodology and software limitations do not give an accurate portrayal for the intersection of NE 3rd Street at N. Flagler Avenue. The close proximity of this intersection in relation to the intersection of Dr. Martin Luther King Jr. Boulevard at Dixie Highway creates additional delays and queues that are not documented in the HCM analysis. Additionally, the westbound stop bar at the intersection of NE 3rd Street at Dixie Highway is offset approximately 50 feet to the east of the intersection to provide clearance for the railroad tracks that run north-south immediately east of Dixie Highway. Therefore, the northbound, southbound, and westbound approaches for the intersection of NE 3rd Street at N. Flagler Avenue experience additional delays and vehicular queuing whenever one or two vehicles are queued for the westbound approach at NE 3rd Street and Dixie Highway. During the worst conditions observed, the vehicular queuing for the westbound approach at NE 3rd Street at Dixie Highway and N. Flagler Avenue extended close to NE 1st Street for a very short period of time.

The northbound, southbound, and westbound approaches are currently under stop control while the eastbound approach is free flow for the intersection of NE 3rd Street at NE 1st Avenue. The HCM methodology does not allow for analysis at intersections with this arrangement of stop control. Therefore, this intersection was analyzed under four way stop control in order to provide HCM results. There were no observed operational problems at this intersection other than for a very short amount of time the westbound vehicular queue on NE 3rd Street at Dixie Highway extended close to this intersection.

The intersection of NE 6th Street at NE 5th Street is currently a roundabout where each approach yields to vehicles within the roundabout. The HCM does not provide a methodology to analyze roundabouts using average delay and LOS as it does for signalized and unsignalized intersections. Therefore, the minimum and maximum v/c ratios calculated using the Synchro software were used to determine operational efficiency at this intersection. There were no observed operational problems at this intersection.

2.4.1.2 Signalized Intersections

Each of the seven study intersections are currently part of a coordinated traffic system. Traffic signal systems that have interconnectivity with other intersections allow the corridor to operate more efficiently by improving traffic progression for the traffic mainline. This reduces vehicular delay, queuing, time travel, and greenhouse gas emissions. Within the study area, Dixie Highway, Atlantic Boulevard, and Dr. Martin Luther King Boulevard are each under a coordinated system.

It should be noted that the close proximity of the signalized intersections of Atlantic Boulevard at Dixie Highway, NE 1st Street, and NE 2nd Street are not ideal. Because of the short distance between these intersections, the operations of one intersection can potentially be greatly affected by the adjacent signalized intersection. Therefore, at times the actual delays and queues may be worse than the reported HCM results. It is possible for the vehicular queue caused by waiting at a red light to extend to the upstream traffic signal. For these reasons, it is imperative that these three intersections are part of a coordinated system.

NW 6th Street at Dixie Highway

Currently, the eastbound and westbound approaches are operating at LOS E during the AM and PM peak hours at the intersection of NW 6th Street and Dixie Highway. The northbound and southbound approaches and the overall intersection are operating at LOS C or better during both peak hours. The high average vehicle delay and low LOS for the eastbound and westbound approaches are caused by the long signal cycle length. A high signal cycle length is used to keep favorable progression along the heavier congested Dixie Highway. Since the traffic volumes and queues for the eastbound and westbound approaches are low, there are not any major operational concerns at the intersection of NW 6th Street at Dixie Highway.

Dr. Martin Luther King Jr. Boulevard at NW 6th Avenue

Currently, the northbound approach is operating at LOS E during the PM peak hour at the intersection of Dr. Martin Luther King Jr. Boulevard at NW 6th Avenue. The remaining approaches and overall intersection are operating at LOS D or better during both peak hours.

Dr. Martin Luther King Jr. Boulevard at Dixie Highway

The westbound approach is operating at LOS E during the AM and PM peak hours and the eastbound approach is operating at LOS E during the AM peak hour at the intersection of Dr. Martin Luther King Jr. Boulevard at Dixie Highway. The remaining approaches and the overall intersection are operating at LOS D or better during both peak hours. The high average vehicle delay and low LOS for the eastbound and westbound approaches are caused by the long signal cycle length to keep favorable progression along Dixie Highway.

Atlantic Boulevard at NW 6th Avenue

Currently, the southbound approach is operating at LOS F during the AM and PM peak hours and the eastbound approach is operating at LOS F during the PM peak hour. The remaining approaches and the overall intersection are operating at LOS D or better for both peak hours.

Atlantic Boulevard at Dixie Highway

Currently, the northbound approach is operating at LOS F during the AM and PM peak hour and the southbound approach is operating at LOS F during the AM peak hour at the intersection of Atlantic Boulevard at Dixie Highway. The overall intersection during both peak hours and the southbound approach during the PM peak hour are operating at LOS E. The eastbound and westbound approaches are operating at LOS D during both peak hours.

Atlantic Boulevard at NE 1st Avenue

Currently, the southbound approach and the northbound approach are operating at LOS E during the AM and PM peak hours at the intersection of Atlantic Boulevard at NE 1st Avenue. The remaining approaches and the overall

intersection are operating at LOS B or better. The high average vehicle delay and low LOS for the northbound and southbound approaches are caused by the long signal cycle length. A high signal cycle length is used to keep favorable progression along the heavier congested Atlantic Boulevard.

Atlantic Boulevard at NE 2nd Avenue

Currently, the southbound approach during both the AM and PM peak hours and the eastbound approach during the PM peak hour are operating at LOS E at the intersection of Atlantic Boulevard at NE 2nd Avenue. The remaining approaches and the overall intersection are operating at LOS D or better.

2.5 Existing Link Analysis

A peak hour link capacity analysis was also performed for each of the roadway segments within the study area. The peak hour turning movement counts collected for this study were utilized to determine the peak hour two-way volumes. The two-way peak hour roadway volumes were then compared to the applicable thresholds set forth in the 2009 FDOT Generalized Level of Service Tables. Each of the roadway links was given a LOS grade of either “D or better” or “F”. A LOS of “D or better” represents that the roadway segment is operating at an acceptable LOS and is not overcapacity. A LOS of “F” represents that the roadway segment is operating at an unacceptable LOS and is overcapacity.

The results of the link analysis demonstrate that only Atlantic Boulevard from NE 4th Avenue to NE 5th Avenue during the PM peak hour is overcapacity. The remaining study roadway segments during both peak hours are operating at an acceptable LOS of D or better. The results of the existing link analysis are shown on **Table 2**. It should be noted that many of the Atlantic Boulevard study segments have been overcapacity in past years. However, traffic volumes have decreased over the last few years in the entire region. Therefore, the lower traffic volumes on Atlantic Boulevard experienced over the last few years are mostly now below capacity thresholds.

Table 2

2010 Peak Hour Volume Level Of Service Analysis						
LOCATION	Roadway Type*	PH LOS "D" Volume*	AM PEAK HOUR		PM PEAK HOUR	
			Existing Peak Hour (PH) Volume**	Existing Peak Hour LOS	Existing Peak Hour (PH) Volume**	Existing Peak Hour LOS
NW 6 Street - West of NW 7 Avenue	2LU	1,040	70	D or better	129	D or better
NW 6 Street - East of NW 7 Avenue	2LU	1,040	100	D or better	207	D or better
NW 6 Street - West of Dixie Highway	2LU	1,040	114	D or better	119	D or better
NW 6 Street - East of Dixie Highway	2LU	1,040	201	D or better	243	D or better
NW 6 Street - West of NE 5 Avenue	2LU	1,040	57	D or better	67	D or better
NW 6 Street - East of NE 5 Avenue	2LU	1,040	39	D or better	49	D or better
Martin Luther King Boulevard - West of NW 7 Avenue	4LD	2,898	1,034	D or better	1,243	D or better
Martin Luther King Boulevard - from NW 7 Avenue to NW 6 Avenue	4LD	2,898	985	D or better	1,221	D or better
Martin Luther King Boulevard - from NW 6 Avenue to Dixie Highway	4LD	2,898	907	D or better	1,097	D or better
Martin Luther King Boulevard - from Dixie Highway to to Flagler Avenue	2LU	1,040	366	D or better	516	D or better
Martin Luther King Boulevard - from Flagler Avenue to NE 1 Avenue	2LU	1,040	312	D or better	424	D or better
Martin Luther King Boulevard - from NE 1 Avenue to NE 2 Avenue	2LU	1,040	204	D or better	255	D or better
Martin Luther King Boulevard - from NE 2 Avenue to NE 3 Avenue	2LU	1,040	116	D or better	149	D or better
Martin Luther King Boulevard - from NE 3 Avenue to NE 4 Avenue	2LU	1,040	93	D or better	108	D or better
Martin Luther King Boulevard - from NE 4 Avenue to NE 5 Avenue	2LU	1,040	88	D or better	103	D or better
Atlantic Boulevard - West of NW 7 Avenue	6LD	4,880	3,997	D or better	4,353	D or better
Atlantic Boulevard - from NW 7 Avenue to NW 6 Avenue	6LD	4,880	4,440	D or better	4,701	D or better
Atlantic Boulevard - from NW 6 Avenue to Dixie Highway	6LD	4,880	4,340	D or better	4,241	D or better
Atlantic Boulevard - from Dixie Highway to to NE 1 Avenue	6LD	4,880	4,121	D or better	4,284	D or better
Atlantic Boulevard - from NE 1 Avenue to NE 2 Avenue	6LD	4,880	3,511	D or better	4,152	D or better
Atlantic Boulevard - from NE 2 Avenue to NE 3 Avenue	6LD	4,880	3,189	D or better	3,784	D or better
Atlantic Boulevard - from NE 3 Avenue to NE 4 Avenue	6LD	4,880	3,262	D or better	3,816	D or better
Atlantic Boulevard - from NE 4 Avenue to NE 5 Avenue	4LD	3,220	3,205	D or better	3,829	F
NW 7 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	99	D or better	161	D or better
NW 7 Avenue - from MLK to NW 6 Street	2LU	1,040	66	D or better	154	D or better
NE 1 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	167	D or better	126	D or better
NE 1 Avenue - from MLK to NW 6 Street	2LU	1,040	78	D or better	88	D or better
NE 2 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	367	D or better	529	D or better
NE 2 Avenue - from MLK to NW 6 Street	2LU	1,040	88	D or better	107	D or better
NE 3 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	28	D or better	25	D or better
NE 3 Avenue - from MLK to NW 6 Street	2LU	1,040	11	D or better	11	D or better
NE 4 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	98	D or better	91	D or better
NE 4 Avenue - from MLK to NW 6 Street	2LU	1,040	18	D or better	15	D or better
NE 5 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	112	D or better	147	D or better
NE 5 Avenue - from MLK to NW 6 Street	2LU	1,040	135	D or better	186	D or better
NW 6 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	821	D or better	894	D or better
NW 6 Avenue - from MLK to NW 6 Street	2LU	1,040	486	D or better	490	D or better
Flagler Avenue - from Atlantic Boulevard to MLK	2LU	1,040	63	D or better	123	D or better
Flagler 6 Avenue - from MLK to NW 6 Street	2LU	1,040	51	D or better	65	D or better
Dixie Highway - from Atlantic Boulevard to MLK	4LD	3,220	2,363	D or better	2,279	D or better
Dixie Highway - from MLK to NW 6 Street	4LD	3,220	1,436	D or better	1,963	D or better

* - From FDOT Generalized Level of Service Tables, GENERALIZED PEAK HOUR TWO-WAY VOLUMES FOR FLORIDA, URBANIZED AREAS

** - 2010 Collected or Adjusted Traffic Data, Typical Weekday

3.0 FUTURE YEAR TRAFFIC FORECASTING

3.1 Programmed Roadway Improvements

3.1.1 Broward County MPO TIP 2010-2014

There are no roadway or intersection capacity improvements for the downtown Pompano Beach study area planned for in the Broward County Metropolitan Planning Organization's (MPO) 2010-2014 Transportation Improvement Program (TIP).

3.1.2 2035 Long Range Transportation Plan

The 2035 Broward County Long Range Transportation Plan calls for Atlantic Boulevard from Cypress Road to US-1 to be restriped to accommodate a six lane divided highway by year 2020. Currently, Atlantic Boulevard transitions from a six lane divided highway to a four lane divided highway just east of Cypress Road/ NE 2nd Avenue.

3.2 Growth Rates

To determine the growth rates for Downtown study area, two traffic forecasting methodologies were evaluated:

- Regression analysis of the most recent historical AADTs from FDOT count sites and
- SERPM 6.5 modal zonal analysis of adjacent TAZ employment and population data from the validation year 2005 and 2035 SERPM 6.5 model.

The regression analysis of historical AADTs provided unreliable results for most of the FDOT count stations. This is due to the inconsistent AADTs in the last 10 years and particularly the last 3 years. Therefore, this methodology was not utilized to determine the future growth rates in the study area. However, the trend analysis spread sheets and FDOT data are provided for reference in **Appendix B**.

Growth rates were also evaluated utilizing TAZ employment and population data from the SERPM 6.5. The 2005 data was compared to the 2035 data to determine a linear growth rate for the study area and the immediate area surrounding the study area. The employment and population 2005-2035 growth rates were averaged to derive a linear growth rate of 1.4%. This growth rate of 1.4% was utilized for each of the study roadway segments and intersections. A summary of the TAZ data is included in **Appendix E**.

4.0 FUTURE CONDITIONS

Future conditions analysis was performed for years 2015 and 2030. For each of the future years, a no project and project buildout scenarios were analyzed. The no projects scenarios included only the background growth for the study intersection and roadway segments. The project buildout scenarios included the background traffic along with projected development within the study area.

The 2015 and 2030 future volumes with and without project traffic are included in **Appendix F**.

4.1 Proposed Development

The City of Pompano Beach Community Redevelopment Agency (CRA) has preliminary plans to revitalize the downtown area of the City. Among the proposed improvements include a 120,000 square foot office, 30,000 square foot retail center, and a 250 room hotel. A trip generation analysis utilizing the Institute of Transportation Engineers (ITE) rates was completed for each of the land uses. The project trips were then distributed among the roadway network. The trip generation and assignment for each of the proposed developments is included in **Appendix G**.

4.2 2015 No Build Conditions

4.2.1 Signalized Intersections

The signalized intersections within the study area were analyzed utilizing background traffic only for the year 2015. The existing cycle lengths were not modified from the existing conditions with the exception of Dr. Martin Luther King Jr. Boulevard at NW 6th Avenue. The cycle length for this intersection was reduced in half to provide more a more efficient use. By reducing the intersection cycle length in half, this does not interfere with the general progression along the corridor and is considered an acceptable method of signal timing optimization. The individual phase split timing was optimized for each of the study signalized intersections.

NW 6th Street at Dixie Highway

The intersection of NW 6th Street at Dixie Highway is expected to operate at similar conditions during the 2015 No Build scenario as the existing conditions. The eastbound and westbound approaches will operate at LOS E during the AM and PM peak hours. The northbound and southbound approaches and the overall intersection will operate at LOS B or better during both peak hours. The high average vehicle delay and low LOS for the eastbound and westbound approaches are caused by the long signal cycle length. Since the traffic volumes and queues for the eastbound and westbound approaches are low, there are not any major operational concerns at the intersection of NW 6th Street at Dixie Highway.

Dr. Martin Luther King Jr. Boulevard at NW 6th Avenue

The intersection of Dr. Martin Luther King Jr. Boulevard at NW 6th Avenue will improve its operational efficiency in the 2015 No Build Scenario due to the signal timing adjustment. Each of the approaches and the overall intersection will operate at LOS D or better during both peak hours.

Dr. Martin Luther King Jr. Boulevard at Dixie Highway

The intersection of Dr. Martin Luther King Jr. Boulevard is expected to operate at similar conditions during the 2015 No Build Scenario as the existing conditions. The eastbound and westbound approaches will operate at LOS E during both peak hours. The northbound and southbound approaches and the overall intersection will operate at LOS C or better during both peak hours. The high average vehicle delay and low LOS for the eastbound and westbound approaches are caused by the long signal cycle length to keep favorable progression along Dixie Highway.

Atlantic Boulevard at NW 6th Avenue

The operational efficiency of the intersection of Atlantic Boulevard at NW 6th Avenue actually improves in the 2015 No Build Scenario due to the phase timing optimization. The southbound approach will operate at LOS E during the AM

peak hour and LOS F during the PM peak hour. The remaining approaches and the overall intersection will operate at LOS C or better for both peak hours.

Atlantic Boulevard at Dixie Highway

The operational efficiency of the intersection of Atlantic Boulevard at Dixie Highway improves in some areas and degrades in other areas for the 2015 No Build scenario. During the AM peak hour, the eastbound approach, westbound approach, northbound approach, and the overall intersection will operate at LOS E while the southbound approach will operate at LOS F. During the PM peak hour, the eastbound and westbound approaches will operate at LOS D, the northbound approach will operate at LOS F, and the southbound and the overall intersection will operate at LOS E.

Atlantic Boulevard at NE 1st Avenue

The operational efficiency of the intersection of Atlantic Boulevard at NE 1st Avenue slightly improves in the 2015 No Build scenario due to the phase timing optimization. The eastbound and westbound approaches will operate at LOS E during both peak hours. The eastbound, westbound, and the overall intersection will operate at LOS A during both peak hours. The high average vehicle delay and low LOS for the northbound and southbound approaches are caused by the long signal cycle length. A high signal cycle length is used to keep favorable progression along the heavier congested Atlantic Boulevard.

Atlantic Boulevard at NE 2nd Avenue

The operational efficiency of the intersection of Atlantic Boulevard at NE 2nd Avenue improves in some areas and degrades in other areas for the 2015 No Build scenario. The northbound and southbound approaches will operate at LOS E during both peak hours. The eastbound approach, westbound approach, and the overall intersection will operate at LOS D or better during both peak hours.

4.2.2 Unsignalized Intersections

The unsignalized HCM analysis demonstrated that the 2015 No Build scenario results are similar to the existing analysis results. There are no significant concerns for any of the unsignalized intersections.

4.2.3 Link Analysis

The 2015 No Build scenario link analysis showed that only Atlantic Boulevard from NW 7th Avenue to NW 6th Avenue during the PM peak hour and from NE 4th Avenue to NE 5th Avenue during both peak hours will be operating at LOS F. Every other study roadway segment is expected to operate at LOS D or better during both peak hours.

4.3 2015 Build Conditions

The proposed development vehicle trips consisting of hotel, office, and retail land uses were added to the 2015 background traffic to create the 2015 Build Conditions. The signal timing was not modified from the 2015 No Build Conditions in order to quantify the effects of the proposed development traffic.

4.3.1 Signalized Intersections

There were no additional failing approaches during either peak hour with the addition of the proposed development for the intersections of NW 6th Street at Dixie Highway, Dr. Martin Luther King Jr. Boulevard at NW 6th Avenue, Dr. Martin Luther King Jr. Boulevard at Dixie Highway, Atlantic Boulevard at NW 6th Avenue, Atlantic Boulevard at NE 1st Avenue, and Atlantic Boulevard at NE 2nd Avenue.

Atlantic Boulevard at Dixie Highway

The southbound approach degrades from LOS E for the 2015 No Build scenario to LOS F for the 2015 Build scenario during the PM peak hour. The remaining approaches at this intersection will operate at similar delays and LOS during both peak hours for the 2015 No Build and Build scenarios.

4.3.2 Unsignalized Intersections

Each of the unsignalized intersection will operate at similar delays and LOS during both peak hours for the 2015 No Build and Build scenarios with the exception of Atlantic Boulevard at NE 4th Avenue. The southbound approach degrades to LOS E during the PM peak hour at this intersection for the 2015 Build scenario. However, there are not any major operational concerns at this intersection due to the low traffic volumes and vehicular queuing.

4.3.3 Link Analysis

The 2015 Build scenario link analysis showed that only Atlantic Boulevard from NW 7th Avenue to NW 6th Avenue during the PM peak hour will be operating at LOS F. This roadway segment is failing for both the 2015 No Build and Build scenarios. Every other study roadway segment is expected to operate at LOS D or better during both peak hours. The results of the 2015 link analysis are shown on **Table 3**.

Table 3

2015 Peak Hour Volume Level Of Service Analysis																			
LOCATION	Roadway Type*	PH LOS 'D' Volume*	AM PEAK HOUR		PM PEAK HOUR		Future Roadway Type (2015)					2015 - AM PEAK HOUR				2015 - PM PEAK HOUR			
			Existing Peak Hour (PH) Volume**	Existing Peak Hour LOS	Existing Peak Hour (PH) Volume**	Existing Peak Hour LOS	Programmed Improvements	Future Roadway Type*	Future PH LOS 'D' Volume*	Future PH Volume - without Project**	Future PH LOS	Project Trips***	Future PH Volume - with Project***	Future PH LOS	Future PH Volume - without Project**	Future Peak Hour LOS	Project Trips***	Future PH Volume - with Project***	Future PH LOS
NW 6 Street - West of NW 7 Avenue	2LU	1,040	70	D or better	129	D or better	NO	2LU	1,040	75	D or better	3	78	D or better	138	D or better	4	142	D or better
NW 6 Street - East of NW 7 Avenue	2LU	1,040	100	D or better	207	D or better	NO	2LU	1,040	107	D or better	25	132	D or better	221	D or better	23	244	D or better
NW 6 Street - West of Dixie Highway	2LU	1,040	114	D or better	119	D or better	NO	2LU	1,040	122	D or better	25	147	D or better	127	D or better	23	150	D or better
NW 6 Street - East of Dixie Highway	2LU	1,040	201	D or better	243	D or better	NO	2LU	1,040	215	D or better	7	222	D or better	260	D or better	7	267	D or better
NW 6 Street - West of NE 5 Avenue	2LU	1,040	57	D or better	67	D or better	NO	2LU	1,040	61	D or better	7	68	D or better	72	D or better	7	79	D or better
NW 6 Street - East of NE 5 Avenue	2LU	1,040	39	D or better	49	D or better	NO	2LU	1,040	42	D or better	2	43	D or better	52	D or better	2	54	D or better
Martin Luther King Boulevard - West of NW 7 Avenue	4LD	2,898	1,034	D or better	1,243	D or better	YES	2LD	1,598	1,106	D or better	47	1,153	D or better	1,330	D or better	36	1,366	D or better
Martin Luther King Boulevard - from NW 7 Avenue to NW 6 Avenue	4LD	2,898	985	D or better	1,221	D or better	YES	2LD	1,598	1,054	D or better	156	1,210	D or better	1,306	D or better	59	1,365	D or better
Martin Luther King Boulevard - from NW 6 Avenue to Dixie Highway	4LD	2,898	907	D or better	1,097	D or better	YES	2LD	1,598	970	D or better	412	1,383	D or better	1,174	D or better	303	1,477	D or better
Martin Luther King Boulevard - from Dixie Highway to to Flagler Avenue	2LU	1,040	366	D or better	516	D or better	NO	2LU	1,040	392	D or better	103	494	D or better	552	D or better	77	629	D or better
Martin Luther King Boulevard - from Flagler Avenue to NE 1 Avenue	2LU	1,040	312	D or better	424	D or better	NO	2LU	1,040	334	D or better	103	437	D or better	433	D or better	77	511	D or better
Martin Luther King Boulevard - from NE 1 Avenue to NE 2 Avenue	2LU	1,040	204	D or better	255	D or better	NO	2LU	1,040	218	D or better	73	291	D or better	273	D or better	55	328	D or better
Martin Luther King Boulevard - from NE 2 Avenue to NE 3 Avenue	2LU	1,040	116	D or better	149	D or better	NO	2LU	1,040	124	D or better	27	151	D or better	159	D or better	20	180	D or better
Martin Luther King Boulevard - from NE 3 Avenue to NE 4 Avenue	2LU	1,040	93	D or better	108	D or better	NO	2LU	1,040	100	D or better	27	127	D or better	116	D or better	20	136	D or better
Martin Luther King Boulevard - from NE 4 Avenue to NE 5 Avenue	2LU	1,040	88	D or better	103	D or better	NO	2LU	1,040	94	D or better	9	103	D or better	110	D or better	4	114	D or better
Atlantic Boulevard - West of NW 7 Avenue	6LD	4,880	3,997	D or better	4,353	D or better	NO	6LD	4,880	4,277	D or better	169	4,446	D or better	4,658	D or better	125	4,783	D or better
Atlantic Boulevard - from NW 7 Avenue to NW 6 Avenue	6LD	4,880	4,440	D or better	4,701	D or better	NO	6LD	4,880	4,302	D or better	144	4,446	D or better	5,030	F	91	5,121	F
Atlantic Boulevard - from NW 6 Avenue to Dixie Highway	6LD	4,880	4,340	D or better	4,241	D or better	NO	6LD	4,880	4,644	D or better	51	4,695	D or better	4,516	D or better	38	4,554	D or better
Atlantic Boulevard - from Dixie Highway to to NE 1 Avenue	6LD	4,880	4,121	D or better	4,284	D or better	NO	6LD	4,880	4,409	D or better	104	4,513	D or better	4,584	D or better	77	4,660	D or better
Atlantic Boulevard - from NE 1 Avenue to NE 2 Avenue	6LD	4,880	3,511	D or better	4,152	D or better	NO	6LD	4,880	3,757	D or better	126	3,883	D or better	4,383	D or better	94	4,477	D or better
Atlantic Boulevard - from NE 2 Avenue to NE 3 Avenue	6LD	4,880	3,189	D or better	3,784	D or better	NO	6LD	4,880	3,412	D or better	107	3,519	D or better	4,049	D or better	79	4,128	D or better
Atlantic Boulevard - from NE 3 Avenue to NE 4 Avenue	6LD	4,880	3,262	D or better	3,816	D or better	NO	6LD	4,880	3,490	D or better	107	3,598	D or better	4,083	D or better	79	4,162	D or better
Atlantic Boulevard - from NE 4 Avenue to NE 5 Avenue	4LD	3,220	3,205	D or better	3,829	F	NO	4LD	3,220	3,429	F	125	3,555	F	3,836	F	96	3,931	F
NW 7 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	99	D or better	161	D or better	NO	2LU	1,040	106	D or better	26	132	D or better	172	D or better	34	206	D or better
NW 7 Avenue - from MLK to NW 6 Street	2LU	1,040	66	D or better	154	D or better	NO	2LU	1,040	71	D or better	26	97	D or better	165	D or better	25	189	D or better
NE 1 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	167	D or better	126	D or better	NO	2LU	1,040	179	D or better	30	209	D or better	197	D or better	22	219	D or better
NE 1 Avenue - from MLK to NW 6 Street	2LU	1,040	78	D or better	88	D or better	NO	2LU	1,040	83	D or better	0	83	D or better	94	D or better	0	94	D or better
NE 2 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	367	D or better	529	D or better	NO	2LU	1,040	393	D or better	45	438	D or better	566	D or better	35	601	D or better
NE 2 Avenue - from MLK to NW 6 Street	2LU	1,040	88	D or better	107	D or better	NO	2LU	1,040	94	D or better	0	94	D or better	114	D or better	0	114	D or better
NE 3 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	28	D or better	25	D or better	NO	2LU	1,040	30	D or better	0	30	D or better	27	D or better	0	27	D or better
NE 3 Avenue - from MLK to NW 6 Street	2LU	1,040	11	D or better	11	D or better	NO	2LU	1,040	12	D or better	0	12	D or better	12	D or better	0	12	D or better
NE 4 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	98	D or better	91	D or better	NO	2LU	1,040	105	D or better	18	123	D or better	97	D or better	16	114	D or better
NE 4 Avenue - from MLK to NW 6 Street	2LU	1,040	18	D or better	15	D or better	NO	2LU	1,040	19	D or better	0	19	D or better	16	D or better	0	16	D or better
NE 5 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	112	D or better	147	D or better	NO	2LU	1,040	120	D or better	9	128	D or better	157	D or better	3	161	D or better
NE 5 Avenue - from MLK to NW 6 Street	2LU	1,040	135	D or better	186	D or better	NO	2LU	1,040	144	D or better	0	145	D or better	199	D or better	0	199	D or better
NW 6 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	821	D or better	894	D or better	NO	2LU	1,040	878	D or better	93	971	D or better	957	D or better	50	1,007	D or better
NW 6 Avenue - from MLK to NW 6 Street	2LU	1,040	486	D or better	490	D or better	NO	2LU	1,040	520	D or better	0	520	D or better	524	D or better	0	524	D or better
Flagler Avenue - from Atlantic Boulevard to MLK	2LU	1,040	63	D or better	123	D or better	NO	2LU	1,040	67	D or better	0	67	D or better	132	D or better	0	132	D or better
Flagler Avenue - from MLK to NW 6 Street	2LU	1,040	51	D or better	65	D or better	NO	2LU	1,040	55	D or better	0	55	D or better	70	D or better	0	70	D or better
Dixie Highway - from Atlantic Boulevard to MLK	4LD	3,220	2,363	D or better	2,279	D or better	NO	4LD	3,220	2,528	D or better	256	2,785	D or better	2,439	D or better	180	2,619	D or better
Dixie Highway - from MLK to NW 6 Street	4LD	3,220	1,436	D or better	1,963	D or better	NO	4LD	3,220	1,537	D or better	53	1,590	D or better	2,100	D or better	45	2,146	D or better

* - From FDOT Generalized Level of Service Tables, GENERALIZED PEAK HOUR TWO-WAY VOLUMES FOR FLORIDA, URBANIZED AREAS

** - 2010 Collected or Adjusted Traffic Data, Typical Weekday

4.4 2030 No Build Conditions

4.4.1 Signalized Intersections

The signalized intersections within the study area were analyzed utilizing background traffic only for the year 2030. The signal timing adjustments and optimization were done in a similar manner as the 2015 Conditions.

NW 6th Street at Dixie Highway

The intersection of NW 6th Street at Dixie Highway is expected to operate at similar conditions during the 2030 No Build scenario as the existing conditions and 2015 No Build scenario. The eastbound and westbound approaches will operate at LOS E during the AM and PM peak hours. The northbound and southbound approaches and the overall intersection will operate at LOS B or better during both peak hours. The high average vehicle delay and low LOS for the eastbound and westbound approaches are caused by the long signal cycle length. Since the traffic volumes and queues for the eastbound and westbound approaches are low, there are not any major operational concerns at the intersection of NW 6th Street at Dixie Highway.

Dr. Martin Luther King Jr. Boulevard at NW 6th Avenue

The intersection of Dr. Martin Luther King Jr. Boulevard at NW 6th Avenue will improve its operational efficiency in the 2030 No Build Scenario compared to the existing conditions due to the signal timing adjustment and will operate similarly to the 2015 No Build scenario. Each of the approaches and the overall intersection will operate at LOS D or better during both peak hours.

Dr. Martin Luther King Jr. Boulevard at Dixie Highway

The intersection of Dr. Martin Luther King Jr. Boulevard is expected to operate at similar conditions during the 2030 No Build scenario as the 2015 No Build scenario and existing conditions. The eastbound and westbound approaches will operate at LOS E during both peak hours. The northbound and southbound approaches and the overall intersection will operate at LOS D or better during both peak hours. The high average vehicle delay and low LOS for the eastbound

and westbound approaches are caused by the long signal cycle length to keep favorable progression along Dixie Highway.

Atlantic Boulevard at NW 6th Avenue

The operational efficiency of the intersection of Atlantic Boulevard at NW 6th Avenue degrades in the 2030 No Build scenario compared to the 2015 No Build scenario and existing conditions. The southbound approach will operate at LOS E during the AM peak hour and LOS F during the PM peak hour, the westbound approach will operate at LOS F during the PM peak hour, and the overall intersection will operate at LOS E during the PM peak hour. The remaining approaches will operate at LOS D or better for both peak hours.

Atlantic Boulevard at Dixie Highway

The operational efficiency of the intersection of Atlantic Boulevard at Dixie Highway degrades in the 2030 No Build scenario compared to the 2015 No Build scenario and existing conditions. The eastbound approach will operate at LOS E during the PM peak hour. The remaining approaches and the overall intersection will operate at LOS F during both peak hours.

Atlantic Boulevard at NE 1st Avenue

The operational efficiency of the intersection of Atlantic Boulevard at NE 1st Avenue slightly improves in the 2030 No Build scenario compared to the existing conditions due to the phase timing optimization and will operate similarly to the 2015 No Build scenario. The eastbound and westbound approaches will operate at LOS E during both peak hours. The eastbound, westbound, and the overall intersection will operate at LOS A during both peak hours. The high average vehicle delay and low LOS for the northbound and southbound approaches are caused by the long signal cycle length. A high signal cycle length is used to keep favorable progression along the heavier congested Atlantic Boulevard.

Atlantic Boulevard at NE 2nd Avenue

The operational efficiency of the intersection of Atlantic Boulevard at NE 2nd Avenue will degrade in the 2030 No Build scenario compared to the 2015 No Build scenario and existing conditions. The northbound and southbound approaches will continue to operate at LOS E during both peak hours. The eastbound approach, westbound approach, and the overall intersection will also operate at LOS E during the PM peak hour. The eastbound approach, westbound approach, and the overall intersection will operate at LOS D or better during the AM peak hour.

4.4.2 Unsignalized Intersections

The unsignalized HCM analysis demonstrated that the 2030 No Build scenario results are similar to the 2015 No Build scenario and existing analysis results. There are no significant concerns for any of the unsignalized intersections.

4.4.3 Link Analysis

The 2030 No Build scenario link analysis showed that Atlantic Boulevard from west of NW 7th Avenue to NE 1st Avenue during both peak hours would be operating at LOS F. Atlantic Boulevard from NE 1st Avenue to NE 2nd Avenue and from NE 3rd Avenue to NE 4th Avenue will also operate at LOS F during the PM peak hour. Additionally, NW 6th Avenue from Atlantic Boulevard to Dr. Martin Luther King Jr. Boulevard will operate at LOS F during both peak hours. The remaining study roadway segments are expected to operate at LOS D or better during both peak hours.

4.5 2030 Build Conditions

The proposed development vehicle trips consisting of hotel, office, and retail land uses were added to the 2030 background traffic to create the 2030 Build Conditions. The signal timing was not modified from the 2030 No Build Conditions in order to quantify the effects of the proposed development traffic.

4.5.1 Signalized Intersections

There were no additional failing approaches during either peak hour with the addition of the proposed development for the intersections of NW 6th Street at Dixie Highway, Dr. Martin Luther King Jr. Boulevard at NW 6th Avenue, Atlantic Boulevard at NW 6th Avenue, Atlantic Boulevard at Dixie Highway, Atlantic Boulevard at NE 1st Avenue, and Atlantic Boulevard at NE 2nd Avenue.

Dr. Martin Luther King Jr. Boulevard at Dixie Highway

The westbound approach degrades from LOS E for the 2030 No Build scenario to LOS F for the 2030 Build scenario during the PM peak hour. However, the average delay for this approach during the PM peak hour is reduced from 76.6 seconds to 80.2 seconds. From a practical stand point, there will not be much of a change from the 2030 No Build and Build scenarios.

Atlantic Boulevard at NW 2nd Avenue

The northbound approach degrades from LOS E for the 2030 No Build scenario to LOS F for the 2030 Build scenario during the PM peak hour.

4.5.2 Unsignalized Intersections

Each of the unsignalized intersection will operate at similar delays and LOS during both peak hours for the 2030 No Build and Build scenarios with the exception of Atlantic Boulevard at NE 4th Avenue. The southbound approach degrades to LOS F during the PM peak hour at this intersection for the 2030 Build scenario. However, there are not any major operational concerns at this intersection due to the low traffic volumes and vehicular queuing.

The results of years 2010, 2015, and 2030 HCM intersection operational analysis are included in **Appendix H**. The HCM Synchro printouts for each of the scenarios are included in **Appendix I**. **Figures 4-8** depict the overall intersection delay and LOS for each of the scenarios.

Figure 4 – Existing Intersections Delay & LOS



Figure 5 – 2015 No Build Intersections Delay & LOS

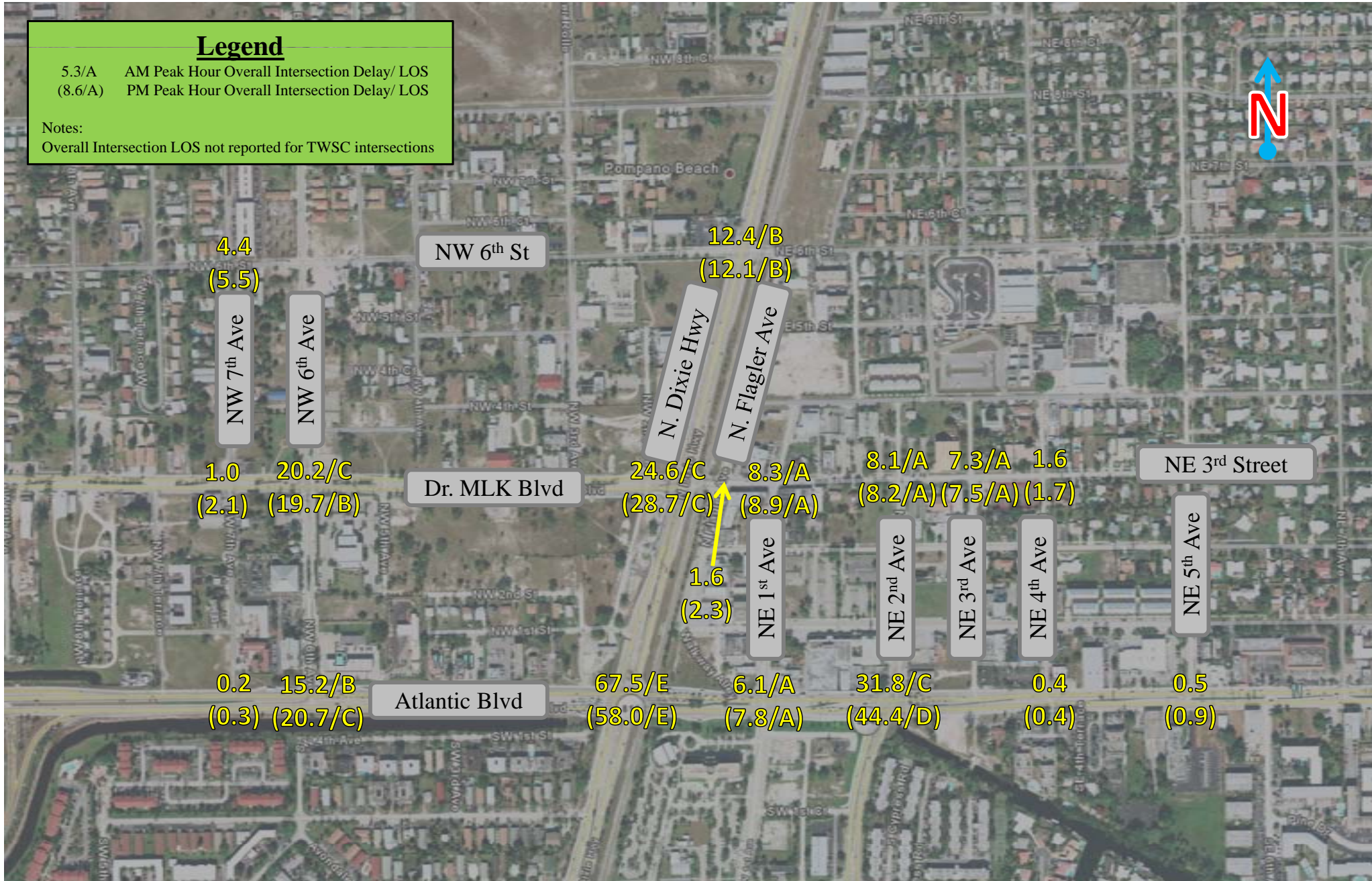


Figure 6 – 2015 Build Intersections Delay & LOS

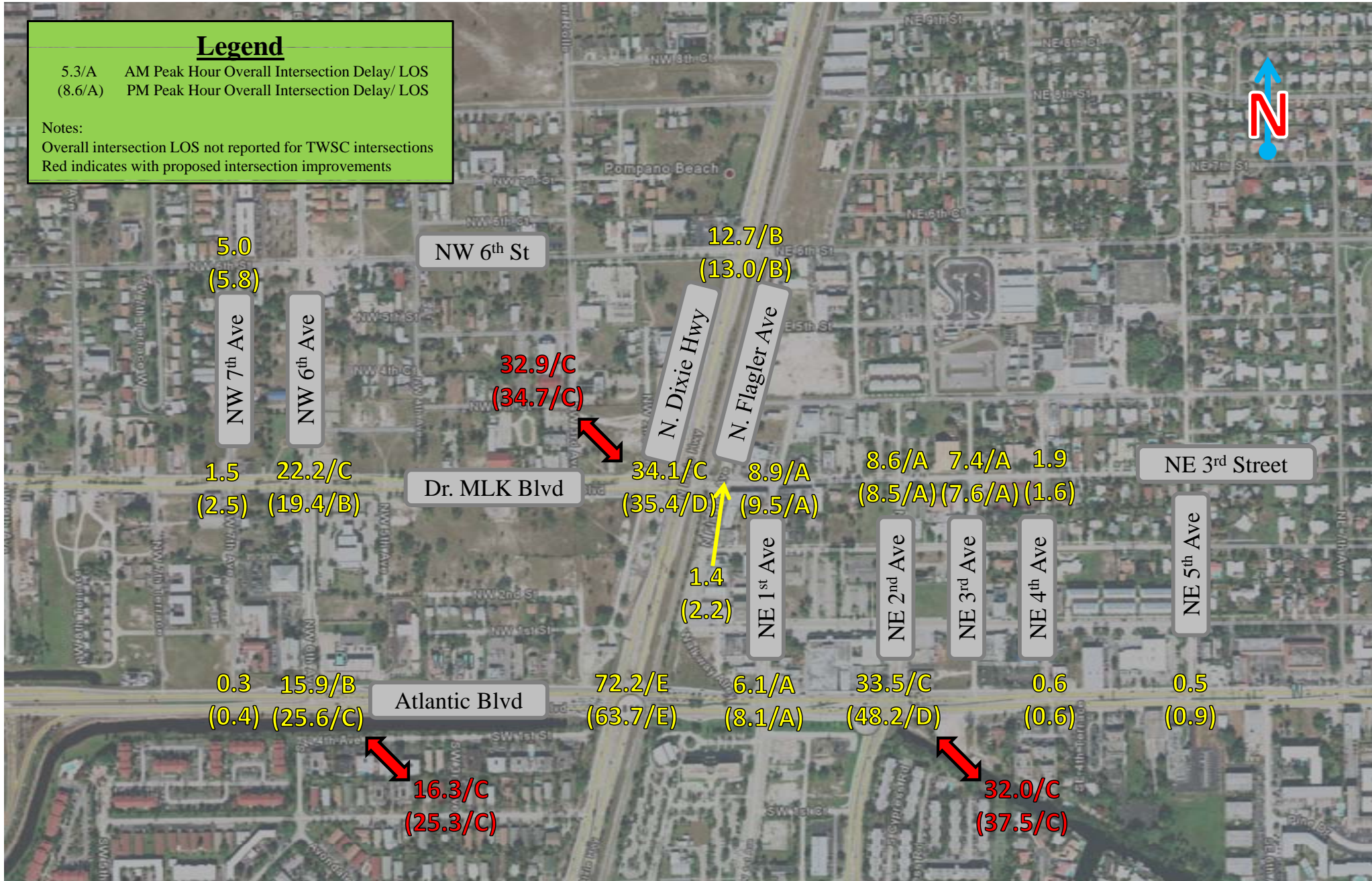


Figure 7 – 2030 No Build Intersections Delay & LOS

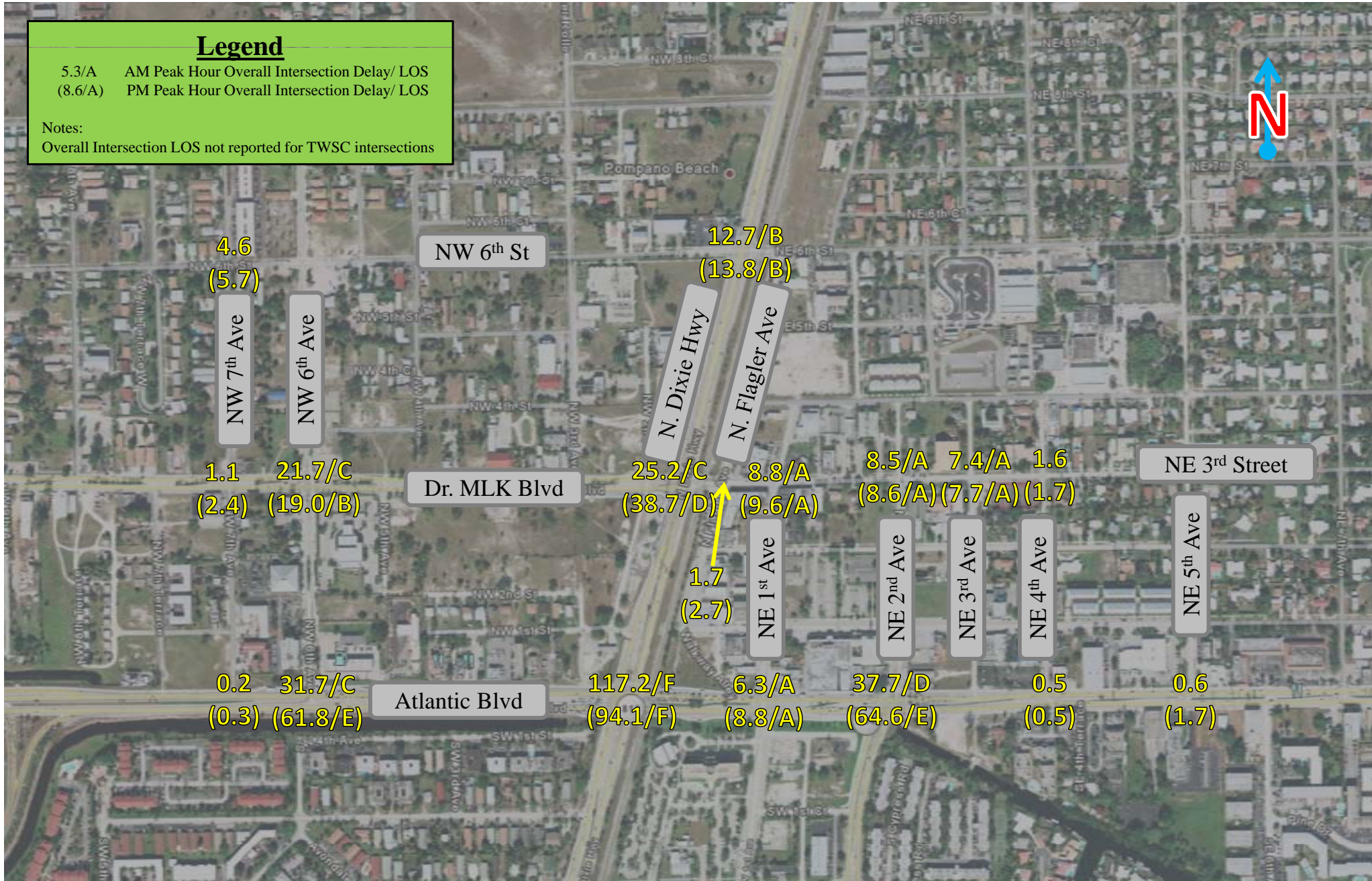
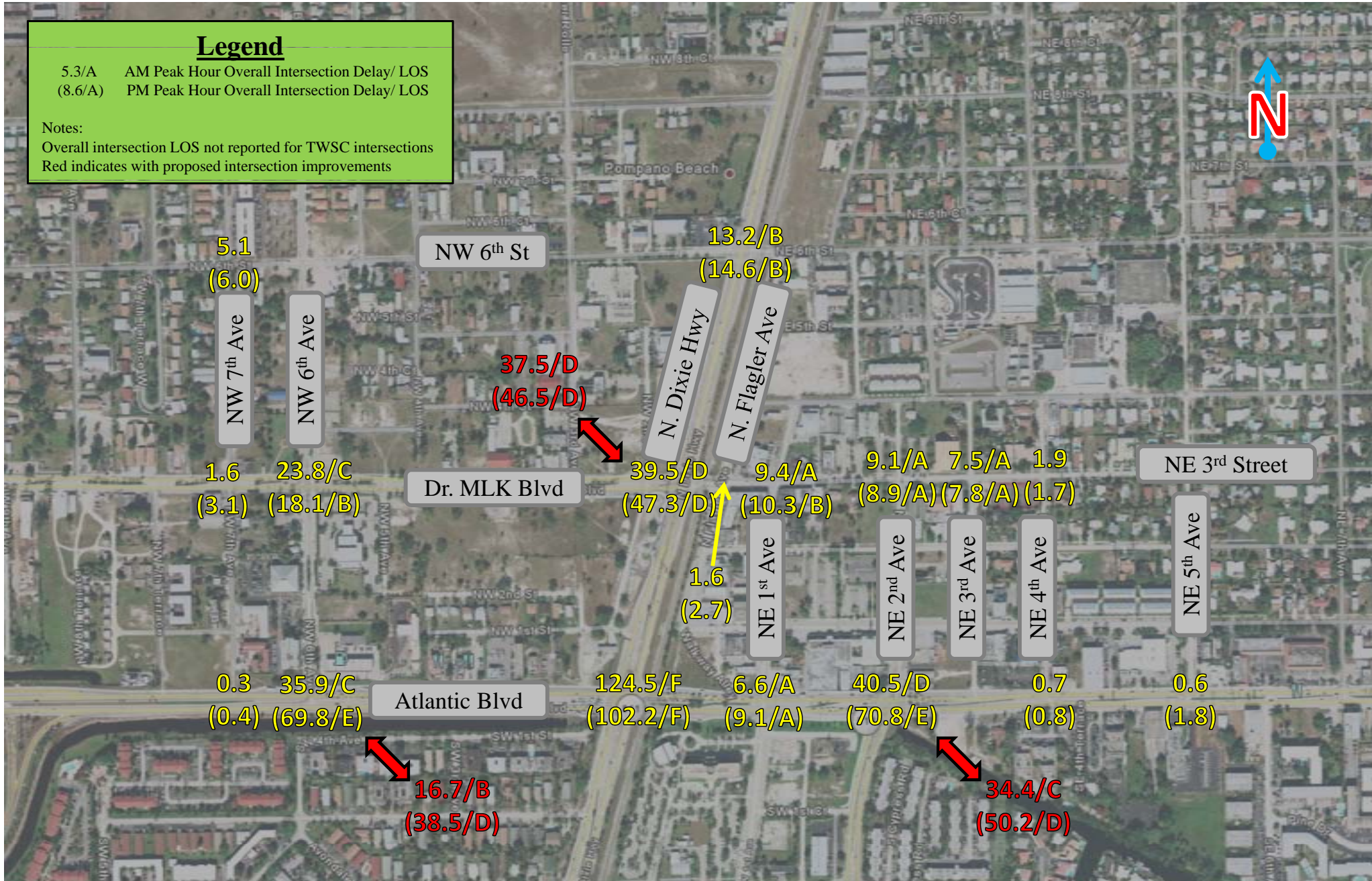


Figure 8 – 2030 Build Intersections Delay & LOS



4.5.3 Link Analysis

The following roadway segments have a LOS F for both the 2030 No Build scenario and 2030 Build scenario:

- Atlantic Boulevard West of NW 7th Avenue – AM and PM peak hours
- Atlantic Boulevard from NW 7th Avenue to NW 6th Avenue – AM and PM peak hours
- Atlantic Boulevard from NW 6th Avenue to Dixie Highway – AM and PM peak hours
- Atlantic Boulevard from NE 1st Avenue to NE 2nd Avenue – PM peak hour
- Atlantic Boulevard from NE 3rd Avenue to NE 4th Avenue – PM peak hour
- NW 6th Avenue from Atlantic Boulevard to Dr. Martin Luther King Jr. Boulevard – AM and PM peak hours

The following roadway segments have a LOS F for the 2030 Build scenario but have a LOS D or better for the 2030 No Build scenario:

- Atlantic Boulevard from NE 2nd Avenue to NE 3rd Avenue
- Dixie Highway from Atlantic Boulevard to Dr. Martin Luther King Jr. Boulevard – AM peak hour
- Dr. Martin Luther King Jr. Boulevard West of NW 7th Avenue – PM peak hour (2 lane alternative)
- Dr. Martin Luther King Jr. Boulevard from NW 7th Avenue to NW 6th Avenue – PM peak hour (2 lane alternative)
- Dr. Martin Luther King Jr. Boulevard from NW 6th Avenue to Dixie Highway – PM peak hour (2 lane alternative)

The results of the 2030 link analysis are shown on **Table 4**.

Table 4

2030 Peak Hour Volume Level Of Service Analysis																			
LOCATION	Roadway Type*	PH LOS 'D' Volume*	AM PEAK HOUR		PM PEAK HOUR		Future Roadway Type (2030)			2030 - AM PEAK HOUR					2030 - PM PEAK HOUR				
			Existing Peak Hour (PH) Volume**	Existing Peak Hour LOS	Existing Peak Hour (PH) Volume**	Existing Peak Hour LOS	Programmed Improvements	Future Roadway Type**	Future PH LOS 'D' Volume**	Future PH Volume - without Project***	Future Peak Hour LOS	Project Trips***	Future PH Volume - with Project***	Future PH LOS	Future PH Volume - without Project***	Future Peak Hour LOS	Project Trips***	Future PH Volume - with Project***	Future PH LOS
NW 6 Street - West of NW 7 Avenue	2LU	1,040	70	D or better	129	D or better	NO	2LU	1,040	90	D or better	3	93	D or better	165	D or better	4	169	D or better
NW 6 Street - East of NW 7 Avenue	2LU	1,040	100	D or better	207	D or better	NO	2LU	1,040	128	D or better	25	153	D or better	265	D or better	23	288	D or better
NW 6 Street - West of Dixie Highway	2LU	1,040	114	D or better	119	D or better	NO	2LU	1,040	146	D or better	25	171	D or better	152	D or better	23	175	D or better
NW 6 Street - East of Dixie Highway	2LU	1,040	201	D or better	243	D or better	NO	2LU	1,040	257	D or better	7	264	D or better	311	D or better	7	318	D or better
NW 6 Street - West of NE 5 Avenue	2LU	1,040	57	D or better	67	D or better	NO	2LU	1,040	73	D or better	7	80	D or better	86	D or better	7	93	D or better
NW 6 Street - East of NE 5 Avenue	2LU	1,040	39	D or better	49	D or better	NO	2LU	1,040	44	D or better	2	46	D or better	63	D or better	2	64	D or better
Martin Luther King Boulevard - West of NW 7 Avenue	4LD	2,898	1,034	D or better	1,243	D or better	YES	2LD	1,598	1,324	D or better	47	1,370	D or better	1,591	D or better	36	1,627	F
Martin Luther King Boulevard - from NW 7 Avenue to NW 6 Avenue	4LD	2,898	985	D or better	1,221	D or better	YES	2LD	1,598	1,261	D or better	156	1,416	D or better	1,563	D or better	59	1,621	F
Martin Luther King Boulevard - from NW 6 Avenue to Dixie Highway	4LD	2,898	907	D or better	1,097	D or better	YES	2LD	1,598	1,161	D or better	412	1,573	D or better	1,404	D or better	303	1,707	F
Martin Luther King Boulevard - from Dixie Highway to Flagler Avenue	2LU	1,040	366	D or better	516	D or better	NO	2LU	1,040	468	D or better	103	571	D or better	660	D or better	77	738	D or better
Martin Luther King Boulevard - from Flagler Avenue to NE 1 Avenue	2LU	1,040	312	D or better	424	D or better	NO	2LU	1,040	399	D or better	103	502	D or better	518	D or better	77	596	D or better
Martin Luther King Boulevard - from NE 1 Avenue to NE 2 Avenue	2LU	1,040	204	D or better	255	D or better	NO	2LU	1,040	261	D or better	73	334	D or better	326	D or better	55	382	D or better
Martin Luther King Boulevard - from NE 2 Avenue to NE 3 Avenue	2LU	1,040	116	D or better	149	D or better	NO	2LU	1,040	148	D or better	27	176	D or better	191	D or better	20	211	D or better
Martin Luther King Boulevard - from NE 3 Avenue to NE 4 Avenue	2LU	1,040	93	D or better	108	D or better	NO	2LU	1,040	119	D or better	27	146	D or better	138	D or better	20	158	D or better
Martin Luther King Boulevard - from NE 4 Avenue to NE 5 Avenue	2LU	1,040	88	D or better	103	D or better	NO	2LU	1,040	113	D or better	9	122	D or better	132	D or better	4	136	D or better
Atlantic Boulevard - West of NW 7 Avenue	6LD	4,880	3,997	D or better	4,353	D or better	NO	6LD	4,880	5,116	F	169	5,286	F	5,572	F	125	5,697	F
Atlantic Boulevard - from NW 7 Avenue to NW 6 Avenue	6LD	4,880	4,440	D or better	4,701	D or better	NO	6LD	4,880	5,683	F	144	5,827	F	6,017	F	91	6,108	F
Atlantic Boulevard - from NW 6 Avenue to Dixie Highway	6LD	4,880	4,340	D or better	4,241	D or better	NO	6LD	4,880	5,056	F	51	5,107	F	5,428	F	38	5,466	F
Atlantic Boulevard - from Dixie Highway to NE 1 Avenue	6LD	4,880	4,121	D or better	4,284	D or better	NO	6LD	4,880	5,275	F	104	5,379	F	5,484	F	77	5,560	F
Atlantic Boulevard - from NE 1 Avenue to NE 2 Avenue	6LD	4,880	3,511	D or better	4,152	D or better	NO	6LD	4,880	4,379	D or better	126	4,505	D or better	5,315	F	94	5,409	F
Atlantic Boulevard - from NE 2 Avenue to NE 3 Avenue	6LD	4,880	3,189	D or better	3,784	D or better	NO	6LD	4,880	4,082	D or better	107	4,189	D or better	4,844	D or better	79	4,923	F
Atlantic Boulevard - from NE 3 Avenue to NE 4 Avenue	6LD	4,880	3,262	D or better	3,816	D or better	NO	6LD	4,880	4,175	D or better	107	4,283	D or better	4,884	F	79	4,964	F
Atlantic Boulevard - from NE 4 Avenue to NE 5 Avenue	4LD	3,220	3,205	D or better	3,829	F	YES	6LD	4,880	4,102	D or better	125	4,228	D or better	4,589	D or better	96	4,684	D or better
NW 7 Avenue - from MLK to NW 6 Street	2LU	1,040	99	D or better	161	D or better	NO	2LU	1,040	127	D or better	26	152	D or better	206	D or better	34	240	D or better
NW 7 Avenue - from MLK to NW 6 Street	2LU	1,040	66	D or better	154	D or better	NO	2LU	1,040	84	D or better	26	111	D or better	197	D or better	25	222	D or better
NE 1 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	167	D or better	126	D or better	NO	2LU	1,040	214	D or better	30	244	D or better	236	D or better	22	258	D or better
NE 1 Avenue - from MLK to NW 5 Street	2LU	1,040	78	D or better	88	D or better	NO	2LU	1,040	100	D or better	0	100	D or better	113	D or better	0	113	D or better
NE 2 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	367	D or better	529	D or better	NO	2LU	1,040	470	D or better	45	515	D or better	677	D or better	35	712	D or better
NE 2 Avenue - from MLK to NW 6 Street	2LU	1,040	88	D or better	107	D or better	NO	2LU	1,040	113	D or better	0	113	D or better	137	D or better	0	137	D or better
NE 3 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	28	D or better	25	D or better	NO	2LU	1,040	36	D or better	0	36	D or better	32	D or better	0	32	D or better
NE 3 Avenue - from MLK to NW 6 Street	2LU	1,040	11	D or better	11	D or better	NO	2LU	1,040	14	D or better	0	14	D or better	14	D or better	0	14	D or better
NE 4 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	98	D or better	91	D or better	NO	2LU	1,040	125	D or better	18	144	D or better	116	D or better	16	133	D or better
NE 4 Avenue - from MLK to NW 6 Street	2LU	1,040	18	D or better	15	D or better	NO	2LU	1,040	23	D or better	0	23	D or better	19	D or better	0	19	D or better
NE 5 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	112	D or better	147	D or better	NO	2LU	1,040	143	D or better	9	152	D or better	188	D or better	3	192	D or better
NE 5 Avenue - from MLK to NW 6 Street	2LU	1,040	135	D or better	186	D or better	NO	2LU	1,040	173	D or better	0	173	D or better	238	D or better	0	238	D or better
NW 6 Avenue - from Atlantic Boulevard to MLK	2LU	1,040	821	D or better	894	D or better	NO	2LU	1,040	1,051	F	93	1,144	F	1,144	F	50	1,195	F
NW 6 Avenue - from MLK to NW 6 Street	2LU	1,040	486	D or better	490	D or better	NO	2LU	1,040	622	D or better	0	622	D or better	627	D or better	0	627	D or better
Flagler Avenue - from Atlantic Boulevard to MLK	2LU	1,040	63	D or better	123	D or better	NO	2LU	1,040	81	D or better	0	81	D or better	157	D or better	0	157	D or better
Flagler 6 Avenue - from MLK to NW 6 Street	2LU	1,040	51	D or better	65	D or better	NO	2LU	1,040	65	D or better	0	65	D or better	83	D or better	0	83	D or better
Dixie Highway - from Atlantic Boulevard to MLK	4LD	3,220	2,363	D or better	2,279	D or better	NO	4LD	3,220	3,025	D or better	256	3,281	F	2,917	D or better	180	3,097	D or better
Dixie Highway - from MLK to NW 6 Street	4LD	3,220	1,436	D or better	1,963	D or better	NO	4LD	3,220	1,838	D or better	53	1,891	D or better	2,513	D or better	45	2,558	D or better

* - From FDOT Generalized Level of Service Tables, GENERALIZED PEAK HOUR TWO WAY VOLUMES FOR FLORIDA, URBANIZED AREAS

** - 2010 Collected or Adjusted Traffic Data, Typical Weekday

5.0 PROPOSED IMPROVEMENTS

5.1 Intersection Improvements

The analysis demonstrates that the proposed development outlined by the City of Pompano Beach CRA does not have a detrimental impact on the study intersections. None of the intersections degraded to below a LOS D with the development trips alone. The majority of the degradation of the intersections was caused by the background traffic. However, a few improvements have been identified within the study area that will increase the efficiency of the intersections.

Dr. Martin Luther King Jr. Boulevard at Dixie Highway

A 5-section signal head is proposed for the eastbound right turn lane at the intersection of Dr. Martin Luther King Jr. Boulevard at Dixie Highway. Additionally, the signal timing should be adjusted accordingly to allow for a protected right turn overlap phase. This improvement gives the eastbound right turn a protected green during the northbound left turn phase. While this is only a small change, this improvement will increase the operational efficiency for the eastbound approach and the entire intersection. The cost of the 5-section signal head is also very low.

It is also recommended that the westbound left turn lane be extended for a total length of at least 75 feet. Currently, there is only sufficient space for one queued vehicle in the westbound left turn lane. Providing sufficient store space for the westbound left turn lane will improve the operational efficiency for both the through lane and the left turn lane. Right-of-way acquisition and reduction of parking spaces adjacent to the eastbound lane may be required for this improvement.

Atlantic Boulevard at NW 6th Avenue

An additional eastbound left turn lane and a southbound right turn lane 5-section signal head is proposed for the intersection of Atlantic Boulevard at NW 6th

Avenue. Currently, only a single eastbound left turn lane is present to accommodate the large volumes of eastbound left vehicles at this intersection. An additional turn lane will help alleviate the large existing and anticipated vehicular queuing. Without the new turn lane, vehicular queuing extending past the turn lane and into the eastbound through lane would be a common occurrence during the peak hours. Additionally, the westbound approach will benefit from this improvement since less green time can be allotted to the eastbound left turn movement. Therefore, the green time to cycle length (g/C) for the westbound through movement can be increased. The protected southbound right turn overlap phase will increase the efficiency of the southbound approach.

The cost of the additional eastbound left turn lane can be and most likely will be very costly. Right of way acquisition and the realignment of Atlantic Boulevard surrounding NW 6th Avenue will most likely be needed. The improvement of a second eastbound left turn lane must be completed in conjunction with the widening of NW 6th Avenue from Atlantic Boulevard to Dr. Martin Luther King Jr. Boulevard.

Atlantic Boulevard at NE 2nd Avenue/ Cypress Road

An additional northbound right turn lane is proposed at the intersection of Atlantic Boulevard at NE 2nd Avenue/ Cypress Road. Additionally, it is proposed to reconfigure the northbound approach to accommodate two exclusive left turn lanes, one shared through/ right turn lane, and one exclusive right turn lane. The current northbound configuration consists of one exclusive left turn lane, one shared left turn lane/ through lane, and one exclusive right turn lane. With the new northbound lane configuration, it is recommended that the intersection signal timing plan be revised from northbound/ southbound split phasing to a standard 8-phase signal timing plan. The main advantage of this change is this will allow more green time for the eastbound and westbound approaches. Therefore, the operational efficiency of Atlantic Boulevard at this intersection will be improved with increased performance. This is particularly important since Atlantic

Boulevard is anticipated to be overcapacity in the long term planning horizon (2030).

The cost of the additional right turn lane and reconfiguration of the northbound approach can be and most likely will be very costly. Right of way acquisition and realignment of Cypress Road just south of the intersection will most likely be needed. The primary reason that this intersection utilizes a northbound/southbound split phasing plan is that Cypress Road/ NE 2nd Avenue alignment is offset. By converting the existing northbound exclusive right turn lane into a shared through/ right turn lane, the northbound through alignment is not offset as far as the existing conditions. The northbound and southbound left turn movements should also be protected only phases to help alleviate the alignment concerns. The final design will dictate whether a standard 8-phase signal timing plan can be safely accommodated.

It is also recommended that a 5-section signal head be installed for the eastbound right turn lane at the intersection of Atlantic Boulevard at NE 2nd Avenue/ Cypress Road. This low cost improvement will increase the operational efficiency of the eastbound approach.

The existing and proposed lane configurations for all 18 study intersections are shown in **Figures 9 & 10**, respectively.

Figure 9 - Existing Lane Configuration

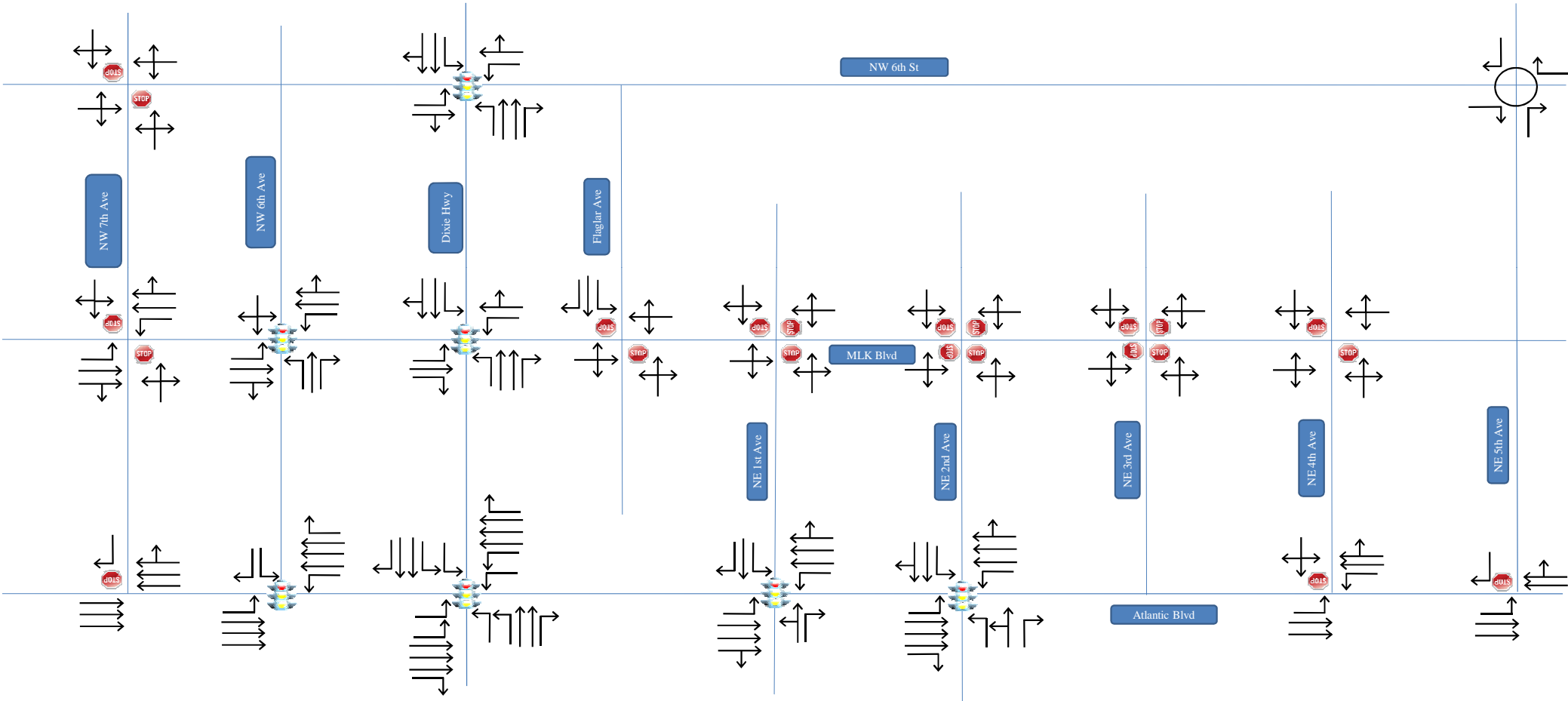
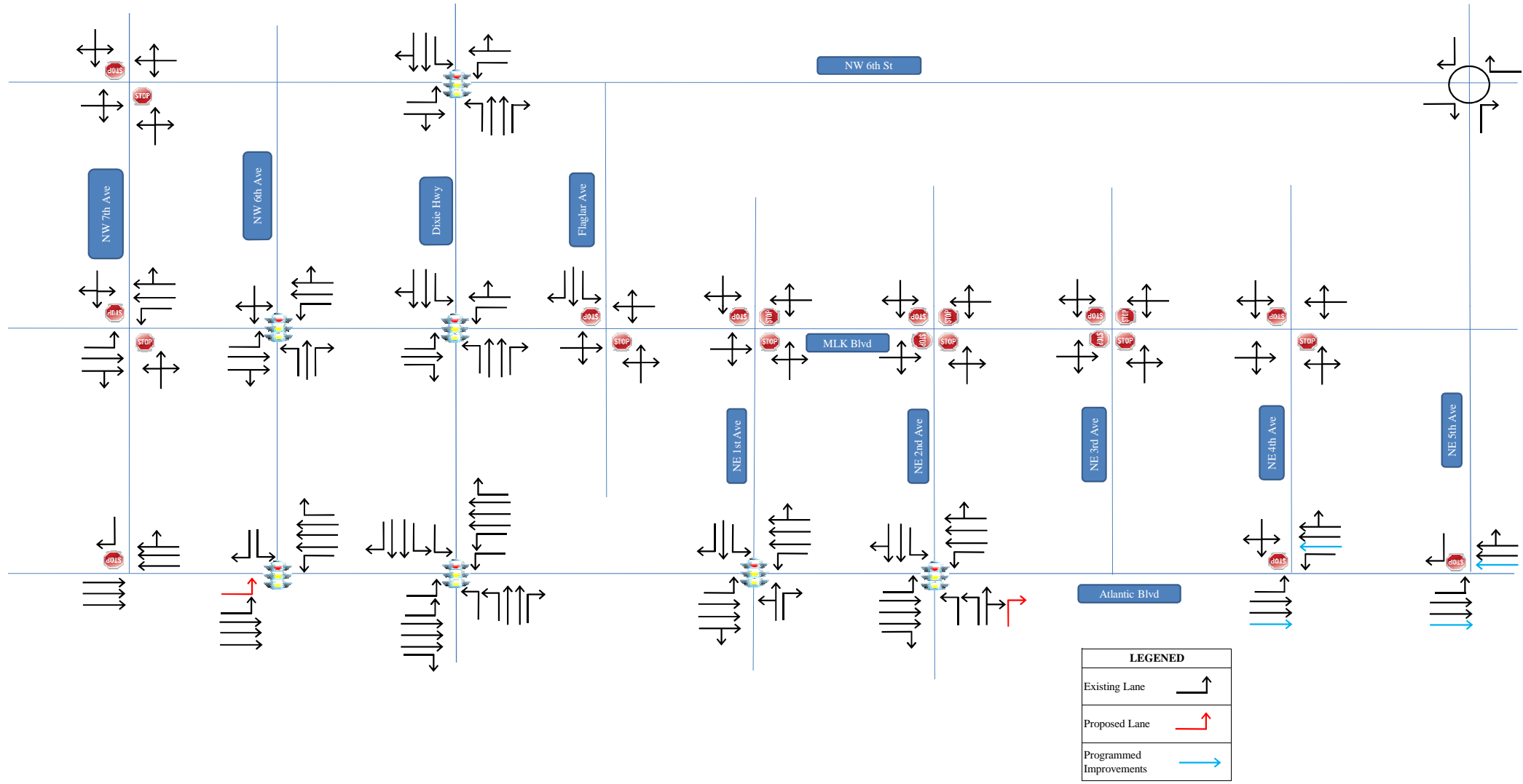


Figure 10 - Proposed Lane Configuration



5.2 Roadway Improvements

The roadway segments along Atlantic Boulevard make up the majority of the failing roadway segments expected by year 2030. However, the widening of Atlantic Boulevard from six lanes to eight lanes is not part of the Broward County 2035 Long Range Transportation Plan. Because of the physical constraints surrounding the corridor, it is not a feasible option to include the widening of Atlantic Boulevard within the study area with the exception of the four lane portion east of NE 2nd Street/ Cypress Road.

Many motorists currently utilize NW 6th Avenue to travel from Atlantic Boulevard to Dr. Martin Luther King Boulevard particularly to and from I-95. Because of this travel pattern, NW 6th Avenue is expected be overcapacity by 2030. Therefore, it is recommended that NW 6th Avenue be expanded from two lanes to four lanes from Atlantic Boulevard to Dr. Martin Luther King Jr. Boulevard. The widening of NW 6th Avenue will also allow the additional eastbound left turn lane at the intersection of Atlantic Boulevard and NW 6th Avenue. The widening of NW 6th Avenue will require right-of-way acquisition.

An alternative to the widening of NW 6th Avenue is to conduct a traffic study to determine the feasibility of extending NW 9th Avenue to connect with the Atlantic Boulevard and I-95 off ramp signalized intersection. This connection would allow for an alternative route for NW 6th Avenue and would also reduce the traffic volumes on Atlantic Boulevard from I-95 to NW 6th Avenue. It potentially could reduce vehicle crashes as there is only limited space for vehicles exiting on the I-95 northbound to eastbound off ramp to weave across a congested Atlantic Boulevard to the westbound left turn lane at NW 6th Avenue.

The major concerns of extending NW 9th Avenue to connect to Atlantic Boulevard is the elimination of the westbound to northbound I-95 on ramp free flow lane. The I-95 on ramp would have to come to a complete stop at times. The FDOT data shows that this ramp currently accommodates over 9,000 vehicles on a daily basis. The vehicular queue could potentially extend back to NW 6th

Avenue. Several factors including the g/C ratio, turning movement counts, and diversion volumes for NW 9th Avenue will all play a critical factor in determining the feasibility of this improvement. This traffic study would include extensive coordination with the City, County, FDOT, and Federal Highway Administration. Standard procedures for an Interchange Modification Report (IMR) would need to be followed.

6.0 DR. MARTIN LUTHER KING JR. BOULEVARD

At the request of the City of Pompano Beach CRA, the conversion of Dr. Martin Luther King Jr. Boulevard from four lanes divided to two lanes divided was evaluated. The link analysis concluded that Dr. Martin Luther King Jr. Boulevard could operate below 2 lane capacity thresholds for the existing conditions, 2015 No Build and Build scenarios, and 2030 No Build scenario. However, the 2030 Build scenario link analysis concludes that Dr. Martin Luther King Jr. Boulevard would be overcapacity during the PM peak hour. This is due to the high peak hour traffic projected for the proposed development on Dr. Martin Luther King Jr. Boulevard particularly between NW 6th Avenue and Dixie Highway.

The FDOT Level of Service thresholds are standardized volumes that take into account state-wide averages. In reality, true level of service is based on driver perception. If a driver is utilizing a roadway as a pass through to get from one location to the next, the driver will only tolerate minimal delays. However, if the driver anticipates delays and the street is used as a destination point, the driver will be more tolerable of slower travel times.

The Pompano Beach CRA is considering different alternatives to the redevelopment of Downtown Pompano Beach. One potential alternative is that Dr. Martin Luther King Jr. Boulevard would have a downtown, lively, and destination type atmosphere. In this scenario, slower travel times and increased delays would be more tolerable to the general public. Therefore, the actual perception Level of Service would not be truly reflected in the FDOT standardized tables.

A link capacity analysis was also completed for the off-peak hours of Dr. Martin Luther King Jr. Boulevard within the study area for 2010, 2015, and 2030 Build conditions. A reduction factor of 15% determined by FDOT hourly counts was applied to each of the scenario peak hours. The 15% reduction is considered conservative because most hours of the day have a significantly higher reduction percentage from the peak hours. The results conclude that Dr. Martin Luther King could serve as a two lane divided roadway during off-peak hours. A link capacity analysis table documenting each of the scenarios for Dr. Martin Luther King Jr. Boulevard is shown on **Table 5**. The reduction factor analysis is included in **Appendix J**.

These findings leave open the possibility that Dr. Martin Luther King Jr. Boulevard could be modified in such a way that it remained a four lane divided roadway during the peak hours but could operate as a two lane divided roadway with on-street parking facilities during off peak hours through signing and marking. For example, parking could be allowed only from 6:30 PM – 6:00 AM which would allow for a lively downtown atmosphere while still providing the sufficient roadway capacity for those utilizing Dr. Martin Luther King Jr. Boulevard as a through roadway during the peak hours. This alternative could serve in a similar capacity to Las Olas Boulevard in downtown Fort Lauderdale.

Table 5

Dr. Martin Luther King Jr. Boulevard Link Capacity Analysis

SCENARIO	LOCATION	Roadway Type ^a	PH LOS "D" Volume ^a	2010 - AM PEAK HOUR ^{**}		2010 - PM PEAK HOUR ^{**}		2015 - AM PEAK HOUR		2015 - PM PEAK HOUR		2030 - AM PEAK HOUR		2030 - PM PEAK HOUR	
				Future PH Volume	Existing Peak Hour LOS	Future PH Volume	Existing Peak Hour LOS	Future PH Volume	Future PH LOS	Future PH Volume	Future PH LOS	Future PH Volume	Future PH LOS	Future PH Volume	Future PH LOS
4 LD No Build	West of NW 7 Avenue	4LD	2,898	1,034	D or better	1,243	D or better	1,106	D or better	1,330	D or better	1,324	D or better	1,591	D or better
	NW 7 Avenue to NW 6 Avenue	4LD	2,898	985	D or better	1,221	D or better	1,054	D or better	1,306	D or better	1,261	D or better	1,563	D or better
	NW 6 Avenue to Dixie Highway	4LD	2,898	907	D or better	1,097	D or better	970	D or better	1,174	D or better	1,161	D or better	1,404	D or better
4 LD Build	West of NW 7 Avenue	4LD	2,898	1,034	D or better	1,243	D or better	1,153	D or better	1,366	D or better	1,370	D or better	1,627	D or better
	NW 7 Avenue to NW 6 Avenue	4LD	2,898	985	D or better	1,221	D or better	1,210	D or better	1,365	D or better	1,416	D or better	1,621	D or better
	NW 6 Avenue to Dixie Highway	4LD	2,898	907	D or better	1,097	D or better	1,383	D or better	1,477	D or better	1,573	D or better	1,707	D or better
2 LD No Build	West of NW 7 Avenue	4LD	1,598	1,034	D or better	1,243	D or better	1,106	D or better	1,330	D or better	1,324	D or better	1,591	D or better
	NW 7 Avenue to NW 6 Avenue	4LD	1,598	985	D or better	1,221	D or better	1,054	D or better	1,306	D or better	1,261	D or better	1,563	D or better
	NW 6 Avenue to Dixie Highway	4LD	1,598	907	D or better	1,097	D or better	970	D or better	1,174	D or better	1,161	D or better	1,404	D or better
2 LD Build	West of NW 7 Avenue	4LD	1,598	1,034	D or better	1,243	D or better	1,153	D or better	1,366	D or better	1,370	D or better	1,627	F
	NW 7 Avenue to NW 6 Avenue	4LD	1,598	985	D or better	1,221	D or better	1,210	D or better	1,365	D or better	1,416	D or better	1,621	F
	NW 6 Avenue to Dixie Highway	4LD	1,598	907	D or better	1,097	D or better	1,383	D or better	1,477	D or better	1,573	D or better	1,707	F
2 LD Build - 15% Reduction for Off Peak Hours^{***}	West of NW 7 Avenue	4LD	1,598	879	D or better	1,057	D or better	980	D or better	1,161	D or better	1,165	D or better	1,383	D or better
	NW 7 Avenue to NW 6 Avenue	4LD	1,598	837	D or better	1,038	D or better	1,028	D or better	1,160	D or better	1,204	D or better	1,378	D or better
	NW 6 Avenue to Dixie Highway	4LD	1,598	771	D or better	932	D or better	1,176	D or better	1,255	D or better	1,337	D or better	1,451	D or better

^a - From FDOT Generalized Level of Service Tables, GENERALIZED PEAK HOUR TWO-WAY VOLUMES FOR FLORIDA, URBANIZED AREAS

^{**} - 2010 Existing Conditions remain the same for both the No Build and Build scenarios

^{***}15% Off Peak Hour Reduction Factor reflects the worst conditions from 12:00AM-7:00AM, 9AM-3PM, and 6PM-12:00AM

7.0 Atlantic Boulevard between Dixie Highway and NE 2nd Avenue

At the request of the Pompano Beach CRA, different alternatives on Atlantic Boulevard from Dixie Highway and NE 2nd Avenue were evaluated. The following alternatives were considered:

- 4LD section
- 4LD section with roundabouts at NE 1st Avenue and NE 2nd Avenue
- 6LD section with removal of traffic signal at NE 1st Avenue and replaced with a two-stage pedestrian crossing traffic signal

4 LD Section

The feasibility of a four lane divided section on Atlantic Boulevard from Dixie Highway and NE 2nd Avenue was considered. The advantage of a four lane divided section is this typical section allows easier pedestrian crossing across Atlantic Boulevard. Additionally, a larger center median could be accommodated to allow for pedestrian refuge.

To accurately analyze the four lane section, a microscopic model using SimTraffic software was utilized. A microscopic analysis allows the user to see the cumulative effect of multiple intersections where as a macroscopic analysis such as Synchro or HCM methodologies evaluate for the most part intersections independently with only limited interaction between adjacent intersections. Therefore, a microscopic analysis is most suited for this particular roadway segment analysis because of the possibility of extended vehicular queuing due to the bottlenecking effect and the close proximity of the signalized intersections.

A few intersection modifications were made to the roadway network to allow for the most optimal conditions of the four lane divided section. Additionally, the traffic signal at NE 1st Avenue was removed in this scenario to provide more efficiency on Atlantic Boulevard.

The results of the 2030 microscopic analysis concluded that massive delays and vehicular queues would occur if the Atlantic Boulevard was reduced from six lanes to four lanes from Dixie Highway to NE 2nd Avenue. The long queues compounded on the eastbound approach at Dixie Highway and the westbound approach at NE 2nd Avenue due to the bottlenecking. The Atlantic Boulevard at Dixie Highway eastbound vehicular queues extended back past the I-95 interchange while the Atlantic Boulevard at NE 2nd Avenue westbound approach also have extensive vehicular queues. **Figures 11-14** depict the microscopic analysis on Atlantic Boulevard for the four lane divided alternative.

Figure 11



Eastbound Queue on Atlantic Blvd at Dixie Hwy – View from I-95 looking east

Figure 12



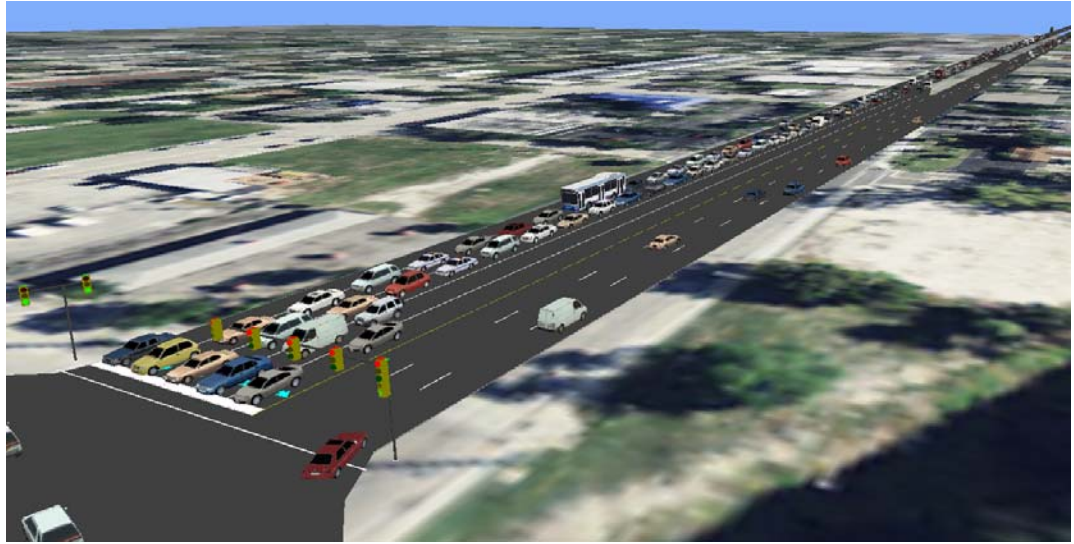
Eastbound queue on Atlantic Blvd at Dixie Hwy – View from Atlantic Blvd at Dixie Hwy looking west

Figure 13



Eastbound queue on Atlantic Blvd at Dixie Hwy – View of Atlantic Blvd at NW 6th Ave looking west

Figure 14



Westbound queue on Atlantic Blvd at NE 2nd Ave – View of Atlantic Blvd at NE 2nd Ave looking east

4LD section with roundabouts at NE 1st Avenue and NE 2nd Avenue

Two lane roundabouts at the intersection of Atlantic Boulevard at NE 1st Avenue and NE 2nd Avenue were also analyzed using SimTraffic software. An additional eastbound and northbound right turn “slip” lane was added to the intersection of Atlantic Boulevard at NE 2nd Avenue.

The results of the microscopic analysis concluded that similarly to the standard four lane divided alternative, extensive vehicular queuing and delays would occur. This is caused by the eastbound approach bottlenecking on Atlantic Boulevard at Dixie Highway. Additionally, the two lane roundabout on Atlantic Boulevard at NE 2nd Avenue does not provide enough overall capacity for the large number of vehicles that enter the intersection from all four approaches. Furthermore, the queue from the westbound approach on Atlantic Boulevard at Dixie Highway extended into the NE 1st Avenue roundabout. **Figures 15-17** depict the microscopic analysis on Atlantic Boulevard for the two lane roundabout alternative.

Figure 15



Eastbound queue on Atlantic Blvd at Dixie Hwy – View of Atlantic Blvd at Dixie Hwy looking west

Figure 16



View of Atlantic Boulevard between Dixie Highway and NE 2nd Avenue looking north

Figure 17



Westbound queue on Atlantic Blvd at NE 2nd Ave – View of Atlantic Blvd at NE 2nd Ave looking east

6LD section with removal of traffic signal at NE 1st Avenue and replaced with a 2-stage pedestrian crossing signal

The advantage of this alternative is that the study roadway segment gets the benefit of a six lane roadway and the removal of the traffic signal at NE 1st Avenue. The removal of the NE 1st Avenue signal not only provides an improvement in traffic flow but also allows for a large median to be installed between Dixie Highway and NE 2nd Avenue. The existing eastbound and westbound left turn lanes would be removed and used to increase the size of the median. This large median (approximately 25 feet) could be used as a pedestrian refuge for a two-stage pedestrian crossing traffic signal. In this scenario, only one direction of traffic would have to be stopped at a time. Therefore, the operational flow of Atlantic Boulevard between Dixie Highway and NE 2nd Avenue would be more optimal. Additionally, pedestrians would only have to cross approximately 36 feet of paved roadway at a time as compared to over 100 feet in the current

conditions. The northbound and southbound approaches on NE 1st Avenue would be converted to right-in/ right-out only movements in this scenario.

Neither Sychro nor SimTraffic software's can model two-stage pedestrian crossings. Therefore, two SimTraffic models were constructed for the analysis. The first model included only the eastbound traffic while the second model included only the westbound traffic. Small modifications were made to the adjacent intersections so that the study directional segment on Atlantic Boulevard would simulate realistic conditions.

As expected, the results of the microscopic analysis concluded that this alternative provided the most beneficial conditions for Atlantic Boulevard. No extensive vehicular queuing was present on the eastbound approach on Atlantic Boulevard at Dixie Highway. The worst case conditions showed that the vehicle stacking on the eastbound approach on Atlantic Boulevard at NE 2nd Avenue extended nearly to Dixie Highway. Similarly, the vehicle stacking on the westbound approach on Atlantic Boulevard at Dixie Highway extended to NE 2nd Avenue during the worst conditions. However, these queues did not have any significant effects on the operation of Atlantic Boulevard at Dixie Highway and NE 2nd Avenue. Additionally, since the pedestrians only have to cross one direction of traffic at a time and because of optimal signal timing, the two-stage pedestrian crossing traffic signal did not create significant delays or queues on Atlantic Boulevard. This two-stage pedestrian crossing traffic signal allows for a high green time to cycle length ratio (g/C) for Atlantic Boulevard.

However, after consulting with the project team it was decided that this alternative significantly impacts vehicular access to the proposed Civic Campus on the southwest quadrant of the Atlantic Boulevard at NE 1st Avenue intersection. Therefore, an option to only remove the eastbound left turn lane on Atlantic Boulevard at NE 1st Avenue was developed. For this option, redirected traffic can be accommodated at the NE 2nd Avenue intersection, which is capable of handling the additional left turn movements without exceeding an acceptable

level of service with an additional eastbound left turn improvement. Additionally, right of way for an additional eastbound left turn at NE 2nd Avenue is available, via a previously striped out left turn bay at the intersection. This improvement would create an approximately 25 foot wide center median on the west leg of Atlantic Boulevard, would not affect access to the proposed Civic Campus and does not create extensive queuing on Atlantic Boulevard near Dixie Highway.

Figures 18 and 19 depict the microscopic analysis on Atlantic Boulevard for the two-stage pedestrian crossing traffic signal alternative

Figure 18



No excessive queuing on eastbound approach on Atlantic Blvd at Dixie Hwy

Figure 19



Eastbound queue on Atlantic Blvd at NE 2nd Ave – View of Atlantic Blvd at NE 2nd Ave looking west

8.0 I-95 NORTHBOUND OFF RAMP ONTO ATLANTIC BOULEVARD INTERSECTION

At the request of the Pompano Beach CRA, the I-95 northbound off ramp onto Atlantic Boulevard intersection was evaluated for feasible alternatives to improve traffic circulation within the Downtown area. Preliminary plans call for potential future development in the area between Atlantic Boulevard and Dr. Martin Luther King Jr. Boulevard just east of I-95. Using the existing roadway configuration, motorists utilizing I-95 would be required to travel east to NW 6th Avenue and make a left turn or u-turn to arrive at the destination. This will only make the existing eastbound left turn delays and vehicular queuing problems worse at Atlantic Boulevard and NW 6th Avenue. Therefore, intersection modifications were evaluated at the I-95 northbound off ramp onto Atlantic Boulevard signalized intersection. The existing intersection configuration consists of:

- Two exclusive northbound left turn lanes (signalized control)
- One exclusive northbound right turn lane (free flow)
- Three eastbound and westbound through lanes (signalized control)
- One westbound right turn lane onto northbound I-95 (free flow)

Two different alternatives were evaluated:

1. An intersection lane modification only
2. An intersection lane modification and a westbound right turn only fly-over ramp onto northbound I-95

Intersection Lane Modification Only

The new lane configuration for this scenario consists of:

- Two exclusive northbound left turn lanes (signalized control)
- **One exclusive northbound through lane (signalized control)**
- One exclusive northbound right turn lane (free flow)
- Three eastbound and westbound through lanes (signalized control)
- One westbound right turn lane onto northbound I-95 (**signalized control**)

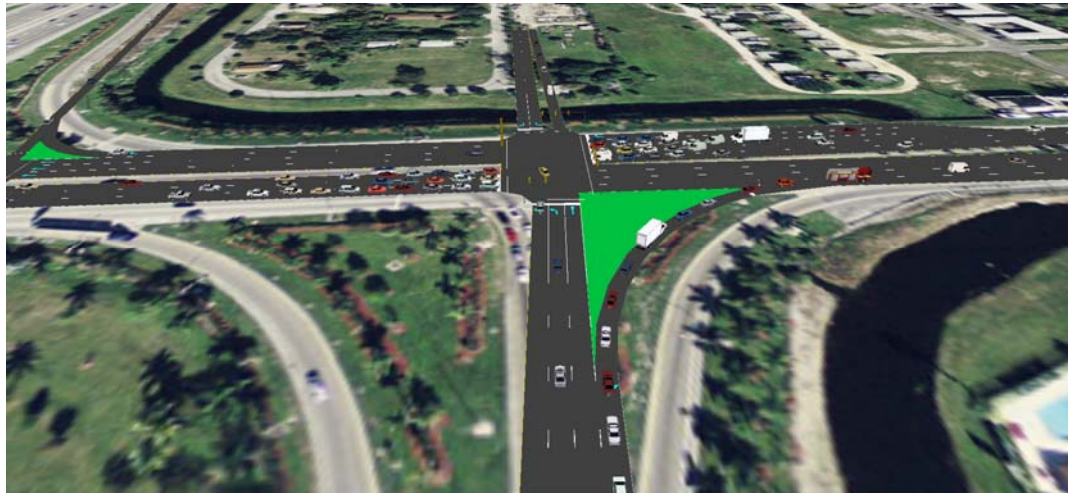
- **One westbound right turn lane into proposed future development (signalized control)**
- **One southbound left turn lane and one southbound right turn lane (signalized control)**

The proposed new lanes consist of the northbound through lane, westbound right turn lane and the two southbound lanes. Additionally, the westbound to northbound I-95 on ramp would be under signalized control. This proposed intersection lane modification was analyzed under the 2030 Build conditions. Future turning movement counts for the study intersection were determined from a combination of existing FDOT data and the projections completed for the Downtown traffic study.

The results of the analysis concluded that this lane intersection modification is a feasible alternative. The southbound approach would operate slightly worse than LOS E thresholds but similarly to other intersections within the study area this is due to the long intersection cycle length and to keep adequate progression along Atlantic Boulevard. Therefore, the southbound approach would not present a traffic operational concern and only a short vehicular queue would occur. **Figure 22** depicts a typical eastbound and westbound queue under this scenario. The Synchro Printouts and supporting FDOT data is provided in **Appendix K**.

To fully analyze the effects of this intersection modification, a much more detailed analysis will be required including modeling and analyzing each of the I-95 at Atlantic Boulevard interchange intersections and on/off ramps. Coordination with the County, FDOT, and FHWA may also be necessary to determine the full scope of work and whether a SIJR or IMR would be required. Additionally, a final determination of the future development and density for the area just east of I-95 between Atlantic Boulevard and Dr. Martin Luther King Jr. Boulevard will allow for more accurate results.

Figure 20



I-95 northbound off ramp onto Atlantic Boulevard intersection looking north

Intersection lane modification and a westbound right turn only fly-over ramp onto northbound I-95

The other alternative at this intersection includes a similar intersection layout as the previous scenario except that the westbound right turn only ramp onto northbound I-95 would include a fly-over bridge above the study intersection. The benefit of this scenario is that the westbound on-ramp would be able to remain in a free flow operation instead of under signalized control as in the previous alternative. The main disadvantage is the extensive cost of constructing the fly-over bridge. Based on accepted standards outlined in the *Florida Greenbook*, the fly over bridge would need to be approximately 1600 feet long and have a vertical clearance of 16 feet at the study intersection. Therefore, the westbound fly over ramp would need to begin approximately 800 feet east of the study intersection or just west of NW 7th Avenue. Similar to the first alternative, the fly-over alternative would require extensive coordination with the FDOT and potentially additional preliminary design and traffic analysis.

The results of the analysis concluded that there was not an appreciable difference between the two alternatives. The minimal reduced delays and queues from the fly over bridge do not justify the high costs of construction. Therefore, it recommended that if any type of interchange intersection modification is pursued,

that only similar intersection lane modifications identified in the first alternative are considered. **Figure 23** depicts a typical eastbound and westbound queue under this scenario. Each of the alternatives for the Atlantic Boulevard and the Northbound I-95 off ramp intersection are depicted in **Figure 24**.

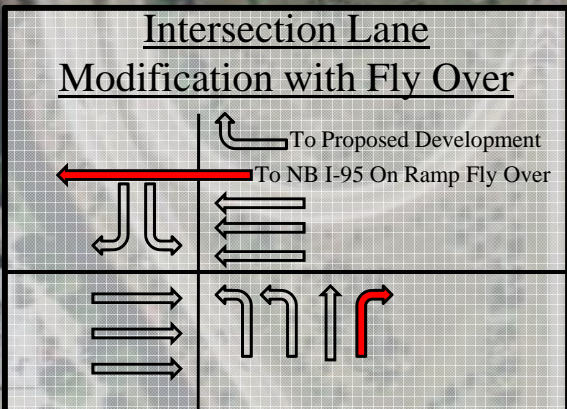
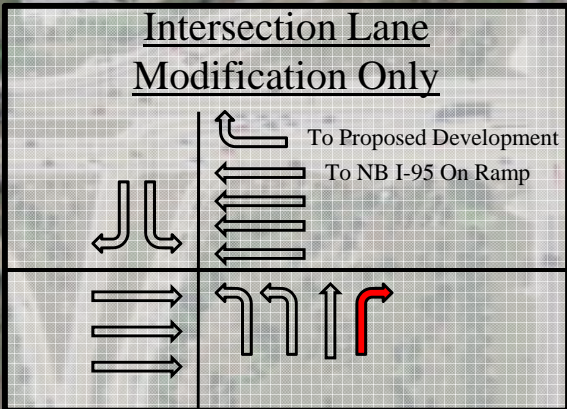
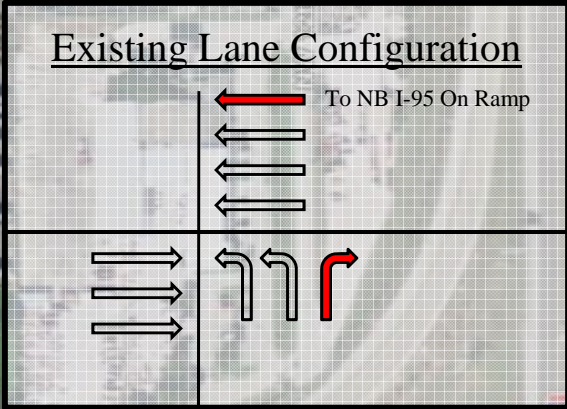
As previously discussed, the next step in the process is to coordinate with the FDOT and discuss potential options with them. The FDOT will most likely require additional traffic analysis incorporating the entire I-95 at Atlantic Boulevard interchange and a preliminary design.

Figure 21



I-95 northbound off ramp onto Atlantic Boulevard intersection looking north

Figure 22 – Atlantic Boulevard at Northbound I-95 Off Ramp Intersection Alternatives



Note: Red filled lanes indicate free flow lanes

9.0 CONCLUSION

The City of Pompano Beach Community Redevelopment Agency (CRA) has requested Calvin, Giordano & Associates, Inc. to develop a comprehensive traffic analysis for the Downtown Pompano Beach Area. 18 intersections and 41 roadway segments were evaluated in the Downtown area of Pompano Beach. Each of the study intersections and roadway segments were analyzed under the following conditions and during the morning and afternoon peak hours:

- Existing conditions (2010) – Existing conditions as experienced today.
- No Build (2015) – This short term planning scenario considered background traffic but no new major development.
- Build (2015) – This short term planning scenario considered background traffic and proposed development outlined by the Pompano Beach CRA.
- No Build (2030) – This long term planning scenario considered background traffic but no new major development.
- Build (2030) – This long term planning scenario considered background traffic and proposed development outlined by the Pompano Beach CRA.

Intersections

The results of the analysis concluded that for the most part there were only minimal differences between the No Build and Build scenarios. The majority of the intersection degradations were a result of the background traffic projected for years 2015 and 2030 and not the proposed development.

The analysis indicated that only the intersection of Atlantic Boulevard at Dixie Highway is currently operating below the acceptable LOS D threshold. The 2015 analysis resulted in mostly minor degradations for each of the study intersections for the both the No Build and Build scenarios. In addition to the intersection of Atlantic Boulevard at NW Dixie Highway, the intersections of Atlantic Boulevard at NW 6th Avenue and NE 2nd Avenue were shown to operate below LOS D in the 2030 analysis for both the Build and No Build scenarios.

Roadways

Currently, only Atlantic Boulevard from NE 4th Avenue to NE 5th Avenue is overcapacity. The 2015 link analysis demonstrates that Atlantic Boulevard from NW 7th Avenue to NW 6th Avenue will be overcapacity in addition to Atlantic Boulevard from NE 4th Avenue to NE 5th Avenue. There were no additional failing segments between the No Build and Build scenarios. The 2030 No Build link analysis resulted in the following overcapacity roadway segments:

- Atlantic Boulevard west of NW 7th Avenue
- Atlantic Boulevard from NW 7th Avenue to NW 6th Avenue
- Atlantic Boulevard from NW 6th Avenue to Dixie Highway
- Atlantic Boulevard from Dixie Highway to NE 1st Avenue
- Atlantic Boulevard from NE 1st Avenue to NE 2nd Avenue
- Atlantic Boulevard from NE 3rd Avenue to NE 4th Avenue
- NW 6th Avenue from Atlantic Boulevard from Dr. Martin Luther King Jr. Boulevard

The 2030 Build link analysis resulted in these additional overcapacity roadway segments:

- Dr. Martin Luther King Jr. Boulevard west of NW 7th Avenue (2 lane alternative)
- Dr. Martin Luther King Jr. Boulevard from NW 7th Avenue to NW 6th Avenue (2 lane alternative)
- Dr. Martin Luther King Jr. Boulevard from NW 6th Avenue to Dixie Highway (2 lane alternative)
- Atlantic Boulevard from NE 2nd Avenue to NE 3rd Avenue
- Dixie Highway from Atlantic Boulevard to Dr. Martin Luther King Jr. Boulevard

Proposed Intersection Improvements

The analysis determined that the proposed development did not have a significant influence on the study intersections. The degradation of the intersections was mostly caused by background traffic or existing operational concerns. However, improvements at three intersections have been identified to help alleviate some of the traffic congestion. Please note that it is recommended that the traffic signal timing be optimized for each of the build out years.

Dr. Martin Luther King Jr. Boulevard at Dixie Highway

- Eastbound right turn lane 5-section signal head to allow for a right turn overlap phase
- Extend westbound left turn lane to allow for at least 75 feet of vehicle storage.

Atlantic Boulevard at NW 6th Avenue

- Additional eastbound left turn lane
- Southbound right turn lane 5-section signal head to allow for a right turn overlap phase

Atlantic Boulevard at NE 2nd Avenue/ Cypress Road

- Additional northbound right turn lane
- Reconfigure the northbound approach from one exclusive left turn lane, one shared left turn lane/ through lane, and one right turn lane to two exclusive left turn lanes, one shared through/ right turn lane, and one exclusive right turn lane
- Eastbound right turn lane 5-section signal head to allow for a right turn overlap phase
- Revise signal timing plan from the existing northbound-southbound split phasing to a standard 8-phase signal timing plan

Atlantic Boulevard between Dixie Highway and NE 2nd Avenue

The analysis concluded that reducing Atlantic Boulevard from six lanes to four lanes between Dixie Highway and NE 2nd Avenue would result in extensive vehicular delays and queues. However, the CRA could provide a safer crossing experience by providing a larger center median on Atlantic Boulevard. The most feasible option to provide this would be to remove the eastbound left turn lane on Atlantic Boulevard at NE 1st Avenue. This would redirect an insignificant number of eastbound left turns at the NE 1st Avenue intersection to the NE 2nd Avenue intersection, which is capable of handling the additional left turn movements without exceeding an acceptable level of service with an additional eastbound left turn improvement. Right of way for an additional eastbound left turn at NE 2nd Avenue is available, via a previously striped out left turn bay at the intersection. This improvement would create an approximately 25 foot wide center median on the west leg of Atlantic Boulevard and would not affect access to the proposed Civic Campus. This modification is anticipated to not only increase the performance of the Atlantic Boulevard at NE 1st Avenue intersection, but would provide a wide safe refuge for pedestrians traversing to/from the proposed Civic Campus. Combined with a 2-stage pedestrian crossing at this location, this improvement would allow for pedestrians to cross relatively smaller roadway segments on Atlantic Boulevard at one time.

I-95 Northbound Off Ramp onto Atlantic Boulevard Modifications

The analysis concluded that it is feasible to modify the I-95 Northbound Off Ramp onto Atlantic Boulevard intersection to accommodate a north approach driveway or local roadway. The main downside to this modification is that the westbound Atlantic Boulevard to northbound I-95 free flow lane would have to be converted to signal control. However, the resulting vehicular delays and queues for this approach would be reasonable and not excessive. Another option is to build an exclusive westbound I-95 on ramp overpass bridge over the subject intersection. However, the traffic operational benefits of this scenario do not justify the high costs of this overpass bridge.

Flagler Avenue

At the request of the Pompano Beach CRA, the possibility of modifying Flagler Avenue from a two-lane, two-way roadway to a one-lane, one-way roadway was analyzed. The projected directional peak hour volumes demonstrate that Flagler Avenue could easily be converted to a one-way roadway in either direction between NE 3rd Street and NE 1st Street, without exceeding the acceptable roadway capacity.

10.0 RECOMMENDATIONS

For the short term and long term planning horizons, several recommendations when the development types and locations are finally determined:

- **Keep Dr. Martin Luther King Jr. Boulevard at 4 lanes divided during the PM peak hours, approximately 4PM to 6PM.** However, Dr. Martin Luther King Jr. Boulevard could be modified to serve as a two-lane divided roadway and accommodate on-street short term parking during non-peak hours (9 AM to 4 PM and 6 PM to 6 AM) and be utilized as four-lane roadway during peak hours. The city may also examine parking strategies, such as potential metered parking during the non-peak hours as an option to regulate parking.

- **When determining the location for future development, encourage the use of Dr. Martin Luther King Jr. Boulevard.** Dr. Martin Luther King Jr. Boulevard as a four lane divided roadway is anticipated to be significantly under capacity in future conditions while Atlantic Boulevard is expected to be very congested and overcapacity. Traffic congestion can be reduced in the Downtown area by picking development locations adjacent to Dr. Martin Luther King Jr. Boulevard as opposed to Atlantic Boulevard.

- **Promote the use of all adjacent parallel north/south roadways as alternatives other than Dixie Highway when traveling from Dr. Martin Luther King Jr. Boulevard/ NE 3rd Street to Atlantic Boulevard.** The intersection of Atlantic Boulevard at Dixie Highway is the most heavily congested intersection within the study area. Excessive vehicular delays and queues will be experienced by all approaches in future conditions at this intersection.

The use of all adjacent parallel north/south roadways other than Dixie Highway should be promoted, such as NE 2nd Avenue and NE 1st Avenue because of their close proximity to Dixie Highway and signalization at Atlantic Boulevard. However, if more vehicles utilize these north/south facilities, then green time for the eastbound and westbound approaches on Atlantic Boulevard will need to be reduced, which may cause increased eastbound and westbound vehicular queuing, but will improve intersection operations at the Atlantic Boulevard at Dixie Highway intersection.

Some ways to encourage the use of adjacent parallel north/south roadways include installing lighting facilities and sidewalks on both sides of the street on segments in which they are missing. Additionally, surface treatments such as stamped concrete can be utilized at both unsignalized and signalized intersections to promote pedestrian safety and also increase the aesthetics of the intersection.

The intersections should be modified so that only the eastbound and westbound approaches are under stop control for the parallel facilities between MLK and Atlantic Boulevard. This will increase the speed and efficiency of the northbound and southbound traffic flow along these facilities. Also, the existing traffic signals along these corridors should be examined for justification. Removal of a traffic signal could decrease intersection delay and improve overall operations.

- **Implement 2-stage pedestrian crossings on Atlantic Boulevard at NE 1st Avenue.** 2-stage pedestrian crossings are created by having a refuge islands located in the middle of the street or as part of the center median. These pedestrian crossing islands increase safety by allowing pedestrians to only have to cross half the roadway at a time. The crosswalk across Atlantic Avenue is just over 100 feet. Signage (R9/R10 Series) should be installed to direct pedestrians where and how to cross Atlantic Boulevard near the proposed Civic Campus.

These islands could be supplemented with a crosswalk surface treatment such as stamped concrete. These improvements would enhance pedestrian safety, be aesthetically pleasing, and create a sense of a walkable community. Additionally, this improvement can tie in to the recommendations of removing the eastbound left turn lane on Atlantic Boulevard at NE 1st Avenue and promoting the use of the north/south facilities as opposed to Dixie Highway if this pedestrian enhancement is implemented.

- **Develop a traffic plan to minimize local impacts during the phases of construction.** A carefully planned traffic plan will help reduce traffic congestion and motorist confusion during roadway and development construction.
- **Implement the proposed intersection improvements identified in this report.**
- **Conduct an additional traffic study to determine the feasibility of extending NW 9th Avenue to connect with the intersection of Atlantic Boulevard at the I-95 northbound off ramp.**

A preliminary analysis concluded that the extension of NW 9th Avenue to Atlantic Boulevard is a feasible scenario and can provide direct access

from northbound I-95 to the redevelopment area, without placing traffic on Atlantic Boulevard. This scenario is anticipated to provide extensive relief to NW 6th Avenue, between Atlantic Boulevard and MLK. However, extensive coordination with the FDOT will be necessary. First, a Methodology Letter of Understanding (MLOU) will need to be prepared to coordinate with FDOT to perform an Interchange Justification Report (IJR) /Interchange Modification Report (IMR) along with additional detailed analysis of all the I-95 ramps will most likely be required to justify the need for the ramp modification. The applicant is responsible for the collection of all data, performing all required analysis and development of the required documentation consistent with the requirements and agreements in the MLOU. An IJR/IMR requires FHWA approval and must be consistent with and adequately address FHWA policies and regulations. The approval of all new or modified access on the Interstate Highway System by FHWA is considered a Federal Action. As such, this requires the approval of both the IJR or IMR document and project National Environmental Policy Act (NEPA) approval obtained through the Department's Project Development and Environment (PD&E) process study. These are two separate federally required actions requiring two separate documents and FHWA approval processes.

There are seven (7) steps involved with the interchange justification process by FDOT, as listed:

1. Development of Project Study Design and Methodology Letter of Understanding (MLOU)
2. Department Review and Approval of the MLOU
3. Development of Preliminary Interchange Proposal
4. Department and Approval Authority Review of Preliminary Interchange Report
5. Development of Interchange Proposal for Approval Decision
6. Interchange Proposal Processing and Approval Decision
7. Project Implementation Activities

This approval process can be expected to last approximately two (2) years and may be joint funded with FDOT or fully funded by the City of Pompano.