I-275 from North End of the Howard Frankland Bridge to North Ashley Drive/Tampa Street Systems Interchange Modification Report (SIMR)

FPID # 447107-2, 447107-3, 447107-4, 447534-1, 434045-2 and 434045-3

Hillsborough County, Florida

Prepared for:

Florida Department of Transportation
District Seven

March 2022

PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I am a registered professional engineer in the State of Florida practicing engineering for Arcadis U.S., Inc. and that I have supervised the preparation of and approve the analysis, findings, opinions, conclusions, and technical advice hereby reported for:

PROJECT: I-275 from North End of the Howard Frankland Bridge to North Ashley Drive/Tampa Street Systems Interchange Modification Report (SIMR)
FPID # 447107-2, 447107-3, 447107-4, 447534-1, 434045-2 and 434045-3
Hillsborough County, Florida

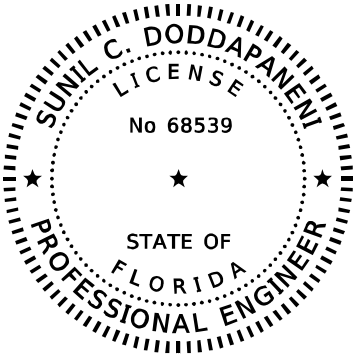
The engineering work represented by this document was performed through the following duly authorized engineering business:

Arcadis U.S., Inc.
3109 W Dr. Martin Luther King Jr. Boulevard, Suite 350
Tampa, Florida 33607
Certificate of Authorization No. 7917

This report provides preliminary engineering analyses for the proposed systems interchange modifications along I-275. Any engineering analyses, documents, conclusions, or recommendations relied upon from other professional sources or provided by others are referenced accordingly in the following report.

FLORIDA REGISTERED ENGINEER

Sunil Doddapaneni, P.E.,
P.E. # 68539
March 7, 2022



1.A.1.1 ***Engineer of Record***

This item has been digitally signed and sealed by

Digitally signed by: Sunil C Doddapaneni
DN: CN = Sunil C Doddapaneni C = US O = ARCADIS US INC. OU = A01410D0000017556286F8B000094A9
Date: 2022.03.08 14:36:49 -05'00'

on the date adjacent to the seal.
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System Interchange Modification Report(SIMR)

I-275

North End of the Howard Frankland Bridge to North Ashley Drive/Tampa Street

447107-2, 447107-3, 447107-4, 447534-1, 434045-2 and 434045-3

Florida Department of Transportation

Determination of Safety, Operational and Engineering Acceptability

Acceptance of this document indicates successful completion of the review and determination of safety, operational and engineering acceptability of the Interchange Access Request. Approval of the access request is contingent upon compliance with applicable Federal requirements, specifically the National Environmental Policy Act (NEPA) or Department's Project Development and Environment (PD&E) Procedures. Completion of the NEPA/PD&E process is considered approval of the project location design concept described in the environmental document.

Requestor	DocuSigned by: Richard Moss CADF40BFE536492...	3/8/2022 | 4:01 PM EST
	Richard Moss, PE Director of Transportation Development - District Seven	Date
Interchange Review Coordinator	DocuSigned by: Waddah Farah 9C8365A20D9447F...	3/8/2022 | 4:18 PM EST
	Waddah Farah, EI, MSE District Seven	Date
Systems Management Administrator	DocuSigned by: Jenna Bowman 4AD03E6A337F4C1...	3/9/2022 | 8:52 AM EST
	Jenna Bowman, PE Systems Implementation Office – Central Office	Date
Office of Project Delivery Director	DocuSigned by: James Stevenson C1A2678BD5F743C...	3/9/2022 | 10:26 AM EST
	James Stevenson Federal Highway Administration, Florida Division	Date

SYSTEMS IMPLEMENTATION OFFICE

QUALITY CONTROL CERTIFICATION FOR INTERCHANGE ACCESS REQUEST SUBMITTAL

Submittal Date: March 2022

FM Number: 447107-2, 447107-3, 447107-4, 447534-1, 434045-2 and 434045-3

Project Title: I-275 from North End of the Howard Frankland Bridge to North Ashley Drive/Tampa Street

District: 7

Requestor: Richard Moss, PE Phone: 813.975.6133

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Document Type: ☐ MLOU ☐ IJR ☒IMR ☐IOAR ☐OTHER (Specify)

Status of Document (Only complete documents will be submitted for review; however, depending on the complexity of the project, interim reviews may be submitted as agreed upon in the MLOU)

System Interchange Modification Report (SIMR)

Quality Control (QC) Statement

This document has been prepared following FDOT Procedure Topic No. 525-030-160 (New or Modified Interchanges) and complies with the FHWA two policy requirements. Appropriate District level quality control reviews have been conducted and all comments and issues have been resolved to their satisfaction. A record of all comments and responses provided during QC review is available in the project file or Electronic Review Comments (ERC) system.

Requestor: DocuSigned by: Richard Moss CADF49BFE536492... Date: 3/8/2022 | 4:01 PM EST

Richard Moss, PE

IRC: DocuSigned by: Waddah Farah 9C8365A20D9447F... Date: 3/8/2022 | 4:18 PM EST

Waddah Farah, EI

EXECUTIVE SUMMARY

Interstate 275 (I-275) is a principal interstate roadway interconnecting the Tampa Bay Region. The I-275 system also provides access to Tampa International Airport, Port of Tampa, and Downtown Tampa, three major economic development hubs in the area. The I-275/SR 60 interchange provides mobility within the Westshore District of Tampa. The Westshore District is Tampa's largest employment center with approximately 4,000 businesses and over 97,000 employees. In addition to the commercial and industrial uses, Westshore has about 15,000 residents and is expected to add another 1,000 units over the next year. Major destinations within the Westshore District include Tampa International Airport, Raymond James Stadium, International Plaza, Westshore Plaza, and George Steinbrenner Field.

FDOT through its commitment to developing comprehensive and multimodal regional transportation systems to modernize infrastructure and prepare for the future, created the Tampa Bay Next (TBNext) program. Tampa Bay Next priorities include:

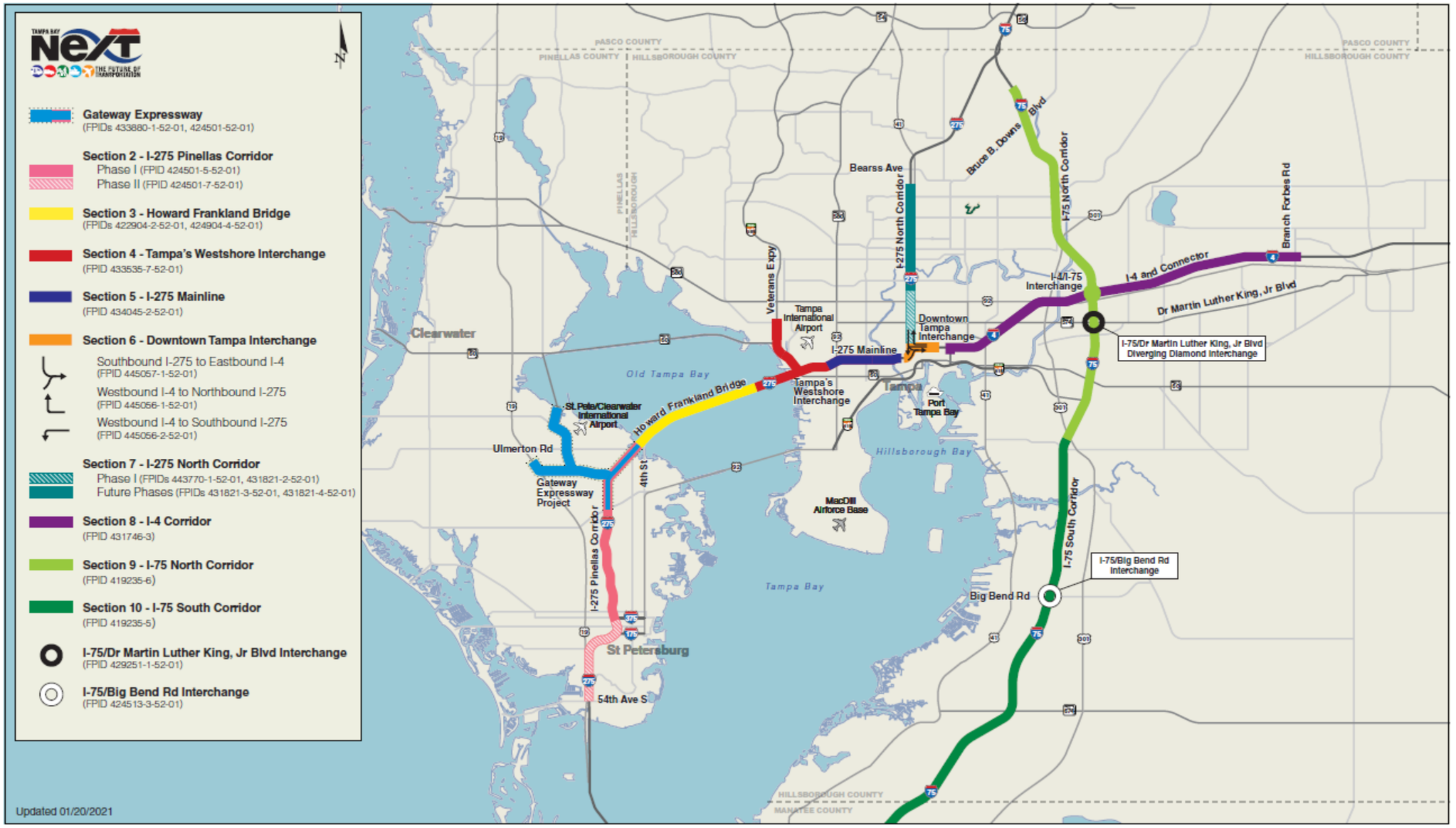
- Move people and goods safely and efficiently
- Build a comprehensive regional transportation system
- Create meaningful opportunities for public input
- Balance regional needs with community concerns
- Commit to sustainable infrastructure decisions

The TBNext Interstate Modernization project is divided into several sections within the Tampa Bay region, as shown in **ES - Figure 1**. This project includes improvements within Sections 4 and 5 of the TBNext program.

The Final Environmental Impact Statement (FEIS) prepared for the Tampa Interstate Study (TIS) and approved by the Federal Highway Administration (FHWA) in January 1997, documented the need for multi-lane improvements on I-275 from the north end of the Howard Frankland Bridge to the north of Dr. Martin Luther King, Jr. (Dr. MLK, Jr.) Boulevard and on I-4 from I-275 to 50th Street. The FHWA, in cooperation with the Florida Department of Transportation (FDOT), prepared a Supplemental Environmental Impact Statement (SEIS) to examine the impacts and to modify the Locally Preferred Alternative (LPA) for the Tampa Interstate Study (TIS) to improve portions of I-275, I-4, and SR 60 in Hillsborough County, Florida.

FDOT completed a preliminary screening in 2017 to narrow the range of alternatives that would be evaluated in the SEIS. The preliminary screening analysis mainly focused on whether the proposed build alternatives could address the Purpose and Need of the project. In addition, FDOT conducted a public workshop in October 2017 to present preliminary analysis results and gather inputs from stakeholders and the public to finalize the alternatives for the SEIS evaluation.

In May 2019, FDOT held Public Workshops to receive input on the proposed design for the 2018 Express Lanes Alternative (tolled), which includes the Westshore interchange (Sections 4 & 5) and Design Options A, B, C, and D for the Downtown interchange (Section 6). Many factors, including comments and concerns related to the potential impacts to the Perry Harvey Sr. Park, ROW impacts to downtown neighborhoods, and the need to provide safety improvements in the Downtown Interchange area, led FDOT to develop Design Option E.



ES - Figure 1: Tampa Bay Next Interstate Modernization Projects

The Recommended LPA selection process involved numerous considerations, which balanced engineering and environmental considerations and local preference gleaned through the public involvement process and meetings with stakeholders and local officials. FDOT presented the Recommended LPA at the public hearing that FDOT held on February 25 and 27, 2020. As a result of coordination with the City of Tampa and public comments on the TIS Draft SEIS, FDOT made some refinements to the Recommended LPA to mitigate potential safety issues, which resulted in the Preferred Alternative.

Considering all the social, economic, and environmental evaluations contained in the Final SEIS, with input received from other agencies, organizations, and the public, the FHWA has determined that the TIS Preferred Alternative is hereby the selected alternative. On September 15, 2020, the FHWA granted Location and Design Concept Acceptance (LDCA) for the TIS SEIS, Record of Decision (ROD), and Section 4(f) Evaluation. All the improvements considered as part of the SIMR are consistent with the approved SEIS Preferred Alternative.

The Preferred Alternative mainly consists of general-use lane improvements and two express lanes in each travel direction within the Sections 4 and 5 study limits. The I-275 northbound express lanes end before the Tampa Street/Ashley Drive Off-Ramp. The I-275 southbound express lanes begin south of Tampa Street/Ashley Drive interchange and continue through Howard Frankland Bridge into Pinellas County. The operational improvements involve the use of express lanes and access changes between general use and express lanes, expansion of I-275 from Howard Frankland Bridge (HFB) to the south of SR 60 to accommodate express lanes along I- 275, and local street improvements, including the relocation of Lemon Street, the extension of Occident Street, modified Trask Street ramp connections, Reo Street extension to Kennedy Boulevard providing connection to the southbound I-275 Ramp, Sherrill Street is being shortened, and Executive Drive has intersection modifications at Reo Street. Additionally, Himes Avenue is connected to express lanes (direct connect from northbound express lanes and direct connect to southbound express lanes).

Due to high AM and PM peak periods demand, I-275 currently experiences recurring congestion within the study limits of Sections 4 and 5. Sections 4 and 5 limit extends along I-275 from north of the Howard Frankland Bridge to Ashley/Tampa Street interchange and along SR 60 from Kennedy Boulevard to the north of Cypress Street. Peak hours travel demand exceeds the available capacity of the I-275 system causing longer travel times, poor travel reliability, and underperforming traffic operations.

Although I-275 is, in general, a north-south limited access facility, the alignment of this roadway within the area of influence is east-west. Throughout the document, the directional orientation of I-275 and SR 60 is described as north-south and east-west, respectively.

The following FHWA policy points serve as primary decision criteria used to approve SIMR for Sections 4 and 5.

1. The proposal does not adversely impact the operational safety of the existing freeway

An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis should, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, should be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR

625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with a crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 USC 109(d), and 23 CFR 655.603(d)).

I-275 currently experiences recurring congestion within the study limits of Sections 4 and 5 during the AM and PM peak periods. Peak hour demands exceed the available capacity of the I-275 system causing longer travel times, poor travel reliability, and underperforming traffic operations. As growth in the region continues, congestion, travel times, and crashes within the study area will increase. Therefore, there is an immediate need for capacity improvements along the I-275 corridor to meet the existing and future peak hour traffic demand. This project proposes general use lane improvements and two express lanes in each travel direction to improve the traffic operations and safety within the Sections 4 and 5 study limits.

Existing field reviews were conducted to observe traffic conditions along the corridor. The following provides a summary of the traffic conditions during the AM and PM peak periods.

- Overall, the traffic delays for PM peak hour are higher compared to AM peak hour. Congestion resulting in more delays was observed along I-275 northbound than I-275 southbound during AM and PM peak hours.
- I-275 northbound, south of SR 60, was observed to be a critical bottleneck segment for both AM and PM peak hours, leading to higher delays due to high exiting traffic volumes to the SR 60 Off-Ramp and due to vehicle slowdowns on the SR 60 northbound flyover ramp.
- Heavy congestion is experienced during the PM peak hour along I-275 northbound, north of SR 60, primarily due to the downstream congestion. The traffic queues from the I-275/I-4 interchange extend beyond the Westshore Boulevard interchange.
- The I-275 southbound segment between Ashley Drive and SR 60 Off-Ramp is experiencing severe traffic delays during the PM peak hours. This is a critical segment for this facility due to high traffic volumes all merging from I-4 westbound, I-275 southbound, and the downtown Tampa area. The majority of the traffic exits to SR 60 westbound via the off-ramp.
- Higher traffic delays observed along the SR 60 eastbound segment for both AM and PM peak hours were caused primarily due to heavy SR 60 eastbound to I-275 northbound On-Ramp demand and existing capacity deficiencies for the SR 60 eastbound to I-275 northbound loop ramp.

A crash analysis was completed for the five-year period from 2013 to 2017. During the study period, a total of 7,900 crashes, 13 (0.2 percent) fatal crashes, 2,446 (31 percent) injury crashes, and 5,441 (69 percent) property damage only crashes were reported within the Sections 4 and 5 limits. Most of the fatal crashes occurred on I-275 mainline (9 fatal crashes). The predominant crash type was found to be rear-end crashes (59 percent). Rear-end crashes occurring within the peak periods of traffic flow are associated with heavy congestion and high vehicular densities. The high frequency of rear-end crashes can be attributed to the reduced spacing between vehicles and driver behavior, such as distracted driving during peak period congestion. Sideswipe crashes (15 percent) were the second most common crash type, followed closely by other crashes.

Microsimulation models were completed for the No-Build and Build conditions for the Opening Year (2025) and Design Year (2045) for both peak periods. The Build conditions' overall operations improved significantly compared to No-Build conditions within the Sections 4 and 5 study limits. **ES - Table 1** compares demand volumes processed in the No-Build and Build conditions during AM and PM peak hours. The results indicate that more demand vehicles will be processed in the Build conditions with the proposed improvements than the No-Build conditions.

ES – Table 1: Processed Demand

Roadway	Scenario	Opening Year (2025)		Design Year (2045)	
		AM	PM	AM	PM
I-275 NB	No-Build	79%	59%	58%	52%
	Build	91%	79%	71%	86%
I-275 SB	No-Build	74%	60%	65%	53%
	Build	82%	65%	74%	70%

In the Opening Year (2025) and Design Year (2045), a 17 to 70 percent increase in throughput was observed along I-275 northbound during peak hours. Similarly, an 8 to 32 percent increase in throughput was observed along I-275 southbound during peak hours. The comparison of throughput in the No-Build and Build conditions are presented in **ES - Table 2**.

ES – Table 2: Throughput – No-Build Vs. Build

Roadway	Scenario	Average Throughput[1] (Veh/hour)					
		AM Peak Hour			PM Peak Hour		
		No-Build	Build	Difference (%)	No-Build	Build	Difference (%)
I-275 NB	Opening Year	8,117	9,514	17%	5,399	6,911	28%
	Design Year	6,974	8,397	20%	5,488	9,350	70%
I-275 SB	Opening Year	6,645	7,148	8%	6,069	6,778	12%
	Design Year	6,862	7,954	16%	6,200	8,196	32%

[1] Average vehicle throughput is the total throughput on all study segments divided by the number of segments

Since the proposed Build improvements are mainly focused on freeway facilities, the peak hour traffic operations are similar on arterial corridors for No-Build and Build conditions within the study limits of Sections 4 and 5. However, with additional capacity available through proposed build improvements, more capacity will be available to satisfy demand on the interstate in the Build conditions compared to No-Build conditions. Due to increased traffic near ramp terminal intersections, the traffic delays will be slightly more for some study intersections in Build conditions than the No-Build conditions.

In the Opening Year (2025), the percentage increase in total vehicle miles traveled in Build conditions ranges between 15 percent and 26 percent during peak hours compared to No-Build conditions. The percentage increase in average speed in Build conditions ranges between 46 percent and 62 percent during peak hours compared to No-Build conditions. Simultaneously, the percentage reduction in delay per vehicle-mile ranges between 54 percent and 71 percent during peak hours compared to No-Build conditions. The percentage reduction in travel time per vehicle-mile ranges between 31 percent and 38 percent during peak hours compared to No-Build conditions.

In the Design Year (2045), the percentage increase in total vehicle miles traveled in Build conditions ranges between 31 percent and 54 percent during peak hours compared to No-Build conditions. The percentage increase in average speed in Build conditions ranges between 54 percent and 59 percent during peak hours compared to No-Build conditions. Simultaneously, the percentage reduction in delay per vehicle-mile ranges between 57 percent and 60 percent during peak hours compared to No-Build conditions. The percentage reduction in travel time per vehicle-mile ranges between 35 percent and 37 percent during peak hours compared to No-Build conditions.

In addition to the processed demand, the latent demand at the end of the peak period simulation along the freeway facility entering the study area from I-275 northbound, I-275 southbound, Veterans Expressway southbound, SR 60 eastbound, George Bean Parkway southbound, I-4 westbound, and Selmon Expressway ramp was also analyzed for evaluating the performance of the Build Alternative compared to No-Build Alternative. The results show a decrease in latent demand for the Build Alternative compared to No-Build Alternative as shown in **ES - Table 3**. The reduction in latent demand ranges from 1 percent to 100 percent in the Opening Year (2025) and 14 percent to 99 percent in the Design Year (2045).

ES – Table 3: Latent Demand – No-Build Vs. Build

Location	Peak Period	Opening Year (2025)			Design Year (2045)		
		No-Build	Build	Percent Change	No-Build	Build	Percent Change
I-275 Northbound	AM	6257	14	-100%	14160	7284	-49%
	PM	7072	7	-100%	15248	243	-98%
I-275 Southbound	AM	5123	5061	-1%	9118	7805	-14%
	PM	1996	1157	-42%	920	41	-96%
Veterans Expressway Southbound	AM	50	49	-3%	9831	75	-99%
	PM	6754	0	-100%	12052	74	-99%
SR 60 Eastbound	AM	15	8	-48%	5	4	-20%
	PM	15	2	-88%	9	6	-33%
George J. Bean Parkway Southbound	AM	26	6	-78%	1350	8	-99%
	PM	4345	8	-100%	9902	3298	-67%
I-4 Westbound	AM	2525	19	-99%	5423	132	-98%
	PM	22556	11655	-48%	28753	10709	-63%
NB Selmon Expressway Ramp to WB I-4	AM	1171	0	-100%	2789	2080	-25%
	PM	4388	2753	-37%	8983	6688	-26%

The predictive analysis results indicate that the study corridor (I-275) will experience fewer crashes in Build conditions than No-Build conditions with the proposed Build improvements. Even though there is an increase in the Annual Average Daily Traffic (AADT) and the number of lanes, I-275 is expected to experience a reduction in crashes of 27 percent, and SR 60 is expected to experience a decrease of 49 percent. This reduction is likely due to volumes now being split between the general use lanes and express lanes. With the volumes split, crashes are decreased on the general use lanes.

The I-275 corridor is expected to experience a reduction in individual severity types, with the largest decrease in property damage only (PDO) crashes at 27 percent. SR 60 is expected to experience significant reductions in possible injury and PDO crashes, both at 49 percent. The Build Alternative is also expected to reduce the number of total multiple vehicles crashes along the I-275 and SR 60 corridors by 37 percent and 61 percent, respectively. This is likely due to a reduction in rear-end and side-swipe crashes due to splitting the volumes between general use lanes and express lanes. However, the I-275 and SR 60 corridors are expected to experience an increase in total single-vehicle crashes by 13 percent and 17 percent, respectively. This is likely due to an increased amount of barrier walls and delineators throughout the study limits due to separating the general use lanes from the express lanes.

With the proposed improvements along the study corridor (I-275), the Build Alternative will observe increased travel speeds and throughput, reduced delays, and decreased crashes compared to No-Build Alternative. Therefore, the proposed improvements will improve the traffic operations and safety along the I-275 within the study area.

2. A full interchange with all traffic movements at a public road is provided

The proposed access connects to *a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access such as managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards for federal-aid projects on the interstate system (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). In rare instances where all basic movements are not provided by the proposed design, the report should include a full-interchange option with a comparison of the operational and safety analyses to the partial interchange option. The report should also include the mitigation proposed to compensate for the missing movements, including wayfinding signage, impacts on local intersections, mitigation of driver expectation leading to wrong-way movements on ramps, etc. The report should describe whether future provision of a full interchange is precluded by the proposed design.*

This project retains all traffic movements currently available for commuters within the study area. Also, the proposed Build improvements will provide additional opportunities for access into the Westshore Area. Reo Street, Occident Street, and Trask Street will provide access north and south of I-275. I-275 will have access to Reo Street to and from the south and Trask Street to and from the north. Himes Avenue will have a direct express lane connection to and from the south.

These modifications have been coordinated with the City of Tampa and local residential and business groups. Access Management on the cross streets will not be affected beyond the limits of this project. The Access Management Evaluation Memorandum developed for Sections 4 and 5 is provided in **Appendix N.**

Overall, comparing operational and safety performance of No-Build and Build Alternatives, the Build Alternative provides improved performance. Therefore, the Safety, Operational, and Engineering (SO&E) approval is requested for the Build Alternative.

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APPENDICES

1 INTRODUCTION

Interstate 275 (I-275) is a principal interstate roadway interconnecting the Tampa Bay Region. I-275 is a major thoroughfare that extends from Manatee County into Pasco County, crossing through Pinellas and Hillsborough Counties, and connects interstates and other major arterials in the area, specifically, Intestate 75 (I-75), Interstate 4 (I-4), and State Route 60 (SR 60). These roadways are designated as Strategic Intermodal System (SIS) Corridors, integral to the high-priority network of transportation facilities vital to the state's economy and mobility. Additionally, two expressways indirectly connect to I-275 within the project vicinity: State Route 618 (SR 618) Lee Roy Selmon Expressway connecting through I-4 and State Route 589 (SR 589) Veterans Expressway connecting through SR 60. The I-275 system also provides access to Tampa International Airport, Port of Tampa, and Downtown Tampa, three major economic development hubs in the area.

Tampa Bay Next (TBNext) is a program to modernize Tampa Bay's transportation infrastructure and prepare for the future. The TBNext Interstate Modernization project is divided into several sections within the Tampa Bay region, as shown in **Figure 1**. This project includes improvements within Sections 4 and 5 of the TBNext program.

I-275 currently experiences recurring congestion within the study limits of Sections 4 and 5 during the AM and PM peak periods. Sections 4 and 5 limit extends along I-275 from north of the Howard Frankland Bridge to Ashley/Tampa Street interchange and along SR 60 from Kennedy Boulevard to the north of Cypress Street. Peak hour demands exceed the available capacity of the I-275 system causing longer travel times, poor travel reliability, and underperforming traffic operations. As growth in the region continues, travel times and congestion within the study area will increase. Therefore, there is an immediate need for capacity improvements along the I-275 corridor to meet the existing and future peak hour traffic demand. This document summarizes an overview of the study area's existing conditions, the impact of proposed improvements on operations along the I-275 corridor, and a comparison of Build and No-Build Alternatives for Opening Year (2025) and Design Year (2045).

The purpose of the project is to evaluate potential capacity improvements to the existing interchanges located along I-275 from the north end of the Howard Frankland Bridge to the Ashley Drive/ Tampa Street interchange, including an evaluation of improvements at various interchanges within the study area that were not previously considered in the 2001 SIMR. Such improvements include the addition of express toll lanes along the interstate mainline within the SIMR area of influence and, specifically, for the interchange at I-275 and State Road (SR) 60 / Memorial Highway.

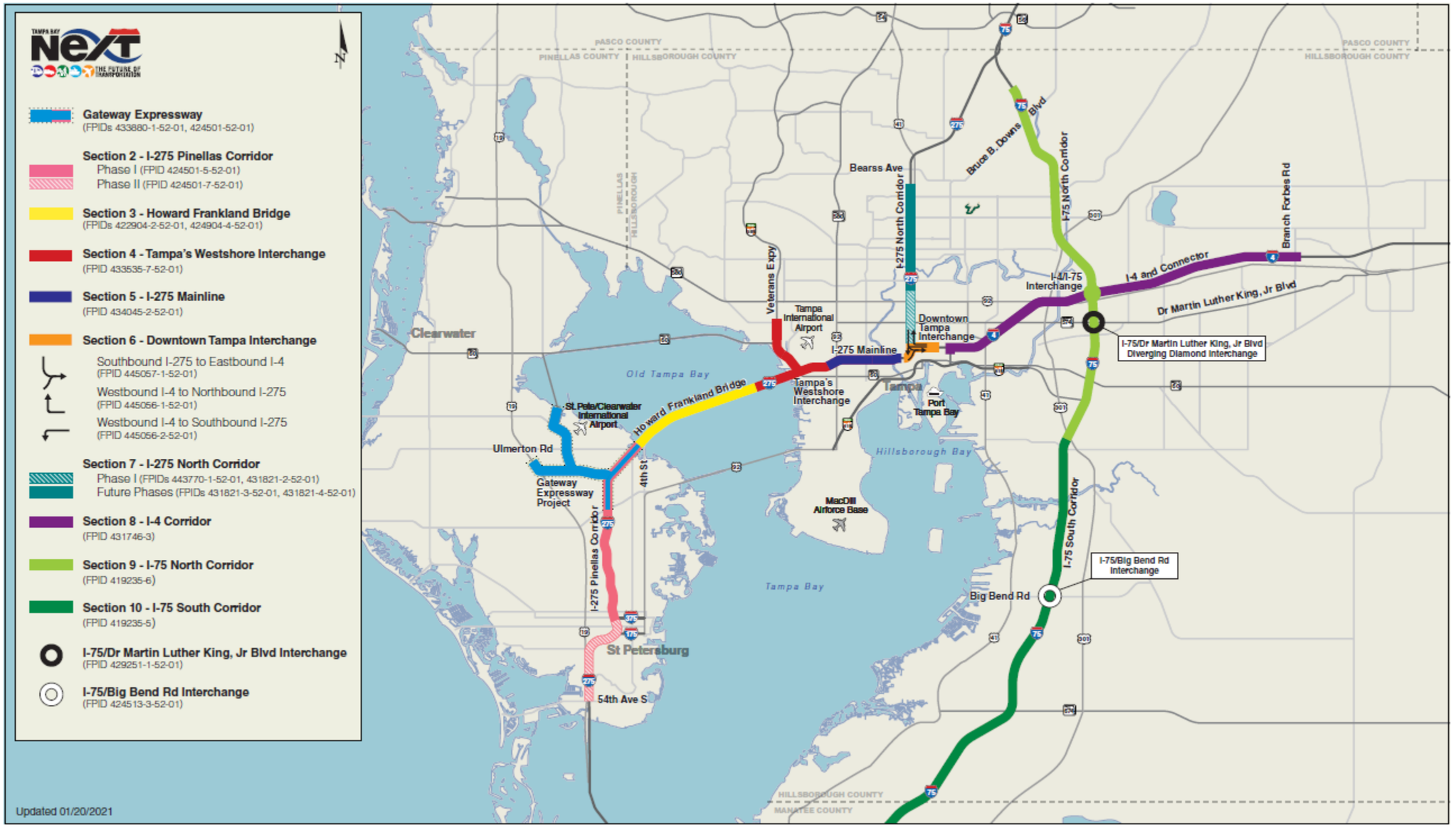


Figure 1: Tampa Bay Next Interstate Modernization Projects

2 PROJECT DESCRIPTION

FDOT through its commitment to developing comprehensive and multimodal regional transportation systems to modernize infrastructure and prepare for the future, created the Tampa Bay Next (TBNext) program. Tampa Bay Next priorities include:

- Move people and goods safely and efficiently
- Build a comprehensive regional transportation system
- Create meaningful opportunities for public input
- Balance regional needs with community concerns
- Commit to sustainable infrastructure decisions

The Final Environmental Impact Statement (FEIS) prepared for the Tampa Interstate Study (TIS) and approved by the Federal Highway Administration (FHWA) in January 1997, documented the need for multi-lane improvements on I-275 from the north end of the Howard Frankland Bridge to the north of Dr. Martin Luther King, Jr. (Dr. MLK, Jr.) Boulevard and on I-4 from I-275 to 50th Street. The ultimate improvements for the I-275 corridor consist of a two-roadway system with a local freeway on the outside and an express freeway on the inside. The improvements documented in the FEIS also include modifications to the existing interchanges along I-275, detailed in the I-275 Systems Interchange Modification Report (SIMR) completed in 2001. These modifications are needed to improve the geometrics of the existing interchanges (e.g., ramp acceleration/deceleration lane lengths, vertical profiles, etc.) and improve the traffic operations on mainline I-275. As part of the TBNext program's interstate modernization initiative, the Department seeks to provide tolled express lanes to meet the future transportation demands of the Tampa Bay Region. The FHWA, in cooperation with the Florida Department of Transportation (FDOT), prepared a Supplemental Environmental Impact Statement (SEIS) to examine the impacts and to modify the Locally Preferred Alternative (LPA) for the Tampa Interstate Study (TIS) to improve portions of I-275, I-4, and SR 60 in Hillsborough County, Florida.

FDOT completed a preliminary screening in 2017 to narrow the range of alternatives that would be evaluated in the SEIS. The preliminary screening analysis mainly focused on whether the proposed build alternatives could address the Purpose and Need of the project. In addition, FDOT conducted a public workshop in October 2017 to present preliminary analysis results and gather inputs from stakeholders and the public to finalize the alternatives for the SEIS evaluation.

In May 2019, FDOT held Public Workshops to receive input on the proposed design for the 2018 Express Lanes Alternative (Tolled), which includes the Westshore interchange (Sections 4 & 5) and Design Options A, B, C, and D for the Downtown interchange (Section 6). Many factors, including comments and concerns related to the potential impacts to the Perry Harvey Sr. Park, ROW impacts to downtown neighborhoods, and the need to provide safety improvements in the Downtown Interchange area, led FDOT to develop Design Option E.

A Project Traffic Analysis Report (PTAR) was prepared in November of 2019 in support of the Tampa Interstate Study (TIS) Supplemental Environmental Impact Statement (SEIS) performed under the National Environmental Policy Act (NEPA). The purpose of the SEIS study was to determine the Preferred Alternative and resulting traffic impacts for improving the interstate system within the Tampa Bay region, including I-275 and I-4. This study aims to prepare SIMR for the Preferred Alternative identified as part of the SEIS study within the Sections 4 and 5 study limits. Sections 4 and 5 study limits extend from the north end of the Howard Frankland Bridge to North Ashley Drive/Tampa Street along I-275 and south of I-275 to north of Cypress Street along SR 60.

The Recommended LPA selection process involved numerous considerations, which balanced engineering and environmental considerations and local preference gleaned through the public involvement process and meetings with stakeholders and local officials. FDOT presented the Recommended LPA at the public hearing that FDOT held on February 25 and 27, 2020. As a result of coordination with the City of Tampa and public comments on the TIS Draft SEIS, FDOT made some refinements to the Recommended LPA to mitigate potential safety issues, which resulted in the Preferred Alternative.

Considering all the social, economic, and environmental evaluations contained in the Final SEIS, with input received from other agencies, organizations, and the public, the FHWA has determined that the TIS Preferred Alternative is hereby the selected alternative. On September 15, 2020, the FHWA granted Location and Design Concept Acceptance (LDCA) for the TIS SEIS, Record of Decision (ROD), and Section 4(f) Evaluation. All the improvements considered as part of the SIMR are consistent with the approved SEIS Preferred Alternative.

2.1 Purpose and Need

The purpose of the project is to evaluate potential capacity improvements to the existing interchanges located along I-275 from the north end of the Howard Frankland Bridge to the Ashley Drive/ Tampa Street interchange, including an evaluation of improvements at various interchanges within the study area that were not previously considered in the 2001 SIMR. Such improvements include the addition of express toll lanes along the interstate mainline within the SIMR area of influence and, specifically, for the interchange at I-275 and State Road (SR) 60 / Memorial Highway. The SIMR will document the existing conditions in the study area, the future year travel demand forecasts, and the analysis of future conditions for express toll lanes, general use lanes, ramps, and ingress/egress points between the interstate mainline and the express toll lanes system.

The need for this project is to alleviate existing traffic congestion and excessive vehicle delays on I-275 and at its interchanges. Moreover, the segment of I-275 from the north end of Howard Frankland Bridge to Ashley Drive exhibits a crash rate of 1.947 that is more than two times the statewide average for similar interstate facilities across the State of Florida. Ensuring safe and efficient operations along I-275 is critical, given that I-275 is a designated hurricane evacuation route.

The I-275/SR 60 interchange provides mobility within the Westshore District of Tampa. The Westshore District is Tampa's largest employment center with approximately 4,000 businesses and over 97,000 employees. In addition to the commercial and industrial uses, Westshore has about 15,000 residents and is expected to add another 1,000 units over the next year. Major destinations within the Westshore District include Tampa International Airport, Raymond James Stadium, International Plaza, Westshore Plaza, and George Steinbrenner Field.

2.2 Location and Area of Influence

The project is located along I-275 from north of the Howard Frankland Bridge to Ashley Drive/Tampa Street interchange and along SR 60 from Kennedy Boulevard to the north of Cypress Street in Tampa. Although I-275 is, in general, a north-south limited access facility, the alignment of this roadway within the area of influence is east-west. Throughout the document, the directional orientation of I-275 and SR 60 is described as north-south and east-west, respectively.

The study area consists of two major facilities (I-275 and SR 60). Per guidance provided in the Florida Department of Transportation (FDOT) Interchange Access Request Users Guide (IARUG, September 2020, Version 2.0), the area of influence adopted for microsimulation modeling is composed of 7 interchanges and 33 signalized intersections. The

extended influence area was considered to incorporate the adjacent signalized intersections along the arterial on each side of the interchange ramp terminals. **Figure 2** illustrates the area of influence for this project.

The proposed study area along I-275 extends from the north end of the Howard Frankland Bridge to the Ashley Drive/Tampa Street interchange, approximately 6.5 miles, and includes the following interchanges:

- Kennedy Boulevard / Memorial Highway (SR 60)
- Westshore Boulevard
- Lois Avenue
- Dale Mabry Highway
- Himes Avenue
- Howard/Armenia Avenue
- Ashley Drive/Tampa Street
- Himes Avenue (Future express lane arterial direct connection)

The proposed area of influence along SR 60 is from Kennedy Boulevard to the north of Cypress Street, approximately 0.5 miles. Further, the proposed area of influence extends the limits of the study to include the following signalized intersections per the 2018 FDOT Interchange Access Request User's Guide:

- West Kennedy Boulevard at South Hoover Boulevard
- West Kennedy Boulevard at Memorial Highway
- West Cypress Street at I-275 West Frontage Road
- West Cypress Street at I-275 East Frontage Road
- North Westshore Boulevard at West Cypress Street
- North Westshore Boulevard at I-275 Southbound Off-Ramp
- North Westshore Boulevard at I-275 Northbound On-Ramp
- North Westshore Boulevard at West Gray Street
- North Lois Avenue at West Cypress Street
- North Lois Avenue at I-275 Southbound On-Ramp
- West Cypress Street at I-275 Southbound Off-Ramp
- North Lois Avenue at I-275 Northbound Off-Ramp
- North Dale Mabry Highway at Walmart/PetSmart Driveway
- North Dale Mabry Highway at I-275 Southbound ramps
- North Dale Mabry Highway at I-275 Northbound ramps
- North Dale Mabry Highway at West Cypress Street
- North Himes Avenue at West Spruce Street
- North Himes Avenue at I-275 Southbound Off-Ramp
- North Himes Avenue at I-275 Northbound On-Ramp
- North Himes Avenue at West Cypress Street
- North Armenia Avenue at West Main Street
- North Armenia Avenue at West Green Street/ I-275 Southbound On-Ramp
- North Armenia Avenue at I-275 Northbound Off-Ramp
- North Armenia Avenue at West Cypress Street
- North Howard Avenue at West Main Street

- North Howard Avenue at West Green Street/ I-275 Southbound Off-Ramp
- North Howard Avenue at I-275 Northbound On-Ramp
- North Howard Avenue at West Cypress Street
- North Ashley Drive at East Tyler Street
- North Tampa Street at East Tyler Street
- North Tampa Street at I-275 Northbound Off-Ramp/East Scott Street
- North Tampa Street at I-275 Southbound On-Ramp/East Kay Street
- North Florida Avenue at East Scott Street

The list of intersections were updated in the Methodology Letter of Understanding (MLOU) addendum, which excluded Florida Avenue at the East Tyler Street intersection. Additionally, the MLOU addendum included two new intersections: Himes Avenue at Cypress Street and Tampa Street at Scott Street.

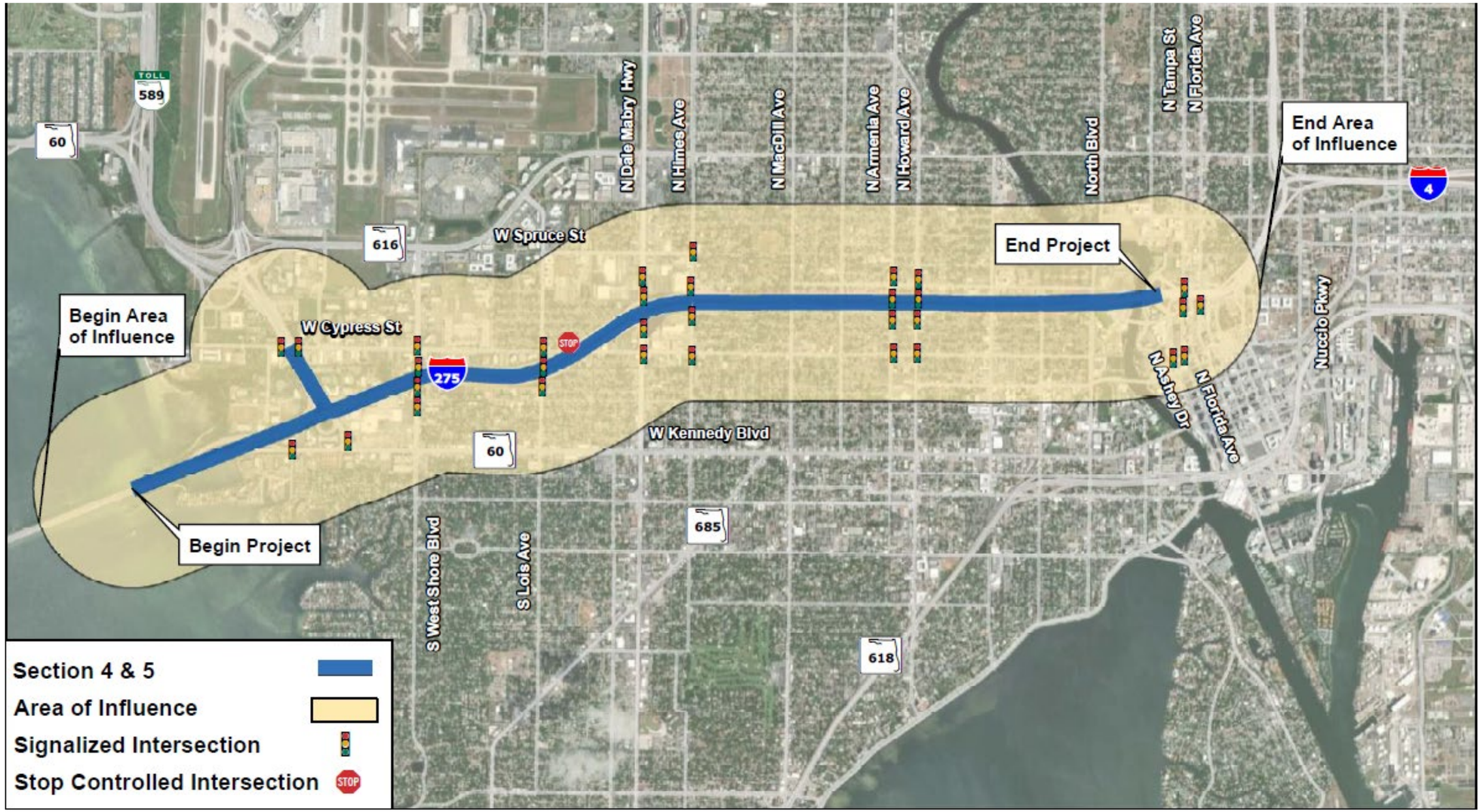


Figure 2: Study Area and Area of Influence Limits

3 STUDY METHODOLOGY

3.1 OVERVIEW

A Methodology Letter of Understanding (MLOU) was prepared to document the methodology for the analysis and evaluation used in this SIMR study. The MLOU was approved by the FDOT District 7 Interchange Review Coordinator (IRC) and FDOT Central Office in January 2020, and an addendum was approved in September 2020. Signed copies of the MLOU and the addendum are provided in **Appendix A**.

3.2 ANALYSIS YEARS

The MLOU establishes the following study years for the operational analysis of this SIMR evaluation:

- Existing Year (2018)
- Opening Year (2025)
- Design Year (2045)

In addition, the travel demand model years of the evaluation were established as:

- Base Year (2010)
- Horizon Year (2040)

3.3 DATA COLLECTION

This study utilized the recent data collected for the 2020 I-275 Supplemental Environmental Impact Statement (SEIS) Project Traffic Analysis Report (PTAR) and the I-275 Operational Improvements from West of Memorial Highway (SR 60) to Dale Mabry Highway (SR 600) Interchange Operational Analysis Report (IOAR). The data collection effort conformed to the Project Traffic Forecasting Handbook (Chapter Two – Traffic Data Sources and Factors). The following are the data collection efforts identified in the MLOU.

- Transportation System Data
    - Roadway characteristics data:
        - Roadway geometry
        - Functional classification
        - Number of lanes
        - Length of acceleration/deceleration lanes
        - Extent and amount of curvature
        - Posted speed limits
    - Travel Time and Speed data

- Existing and Historical Traffic Data
    - Existing tube counts on ramps and mainline along I-275 and SR 60
    - Existing turning movement counts at ramp terminal and adjacent intersections
    - Existing queuing at signals
    - Existing signal timing
    - Existing traffic volumes from other recent studies
    - Historical traffic volumes (FDOT Annual Count Program)

- Control Data
  - Signal timing data
  - Stop/Yield signs
  - Regulatory/Advisory speed limits
  - Guide sign locations

- Land Use Data
  - Land use data was obtained from the Florida Geographic Data Library (FGDL).

3.4 Design Traffic Factors

The design traffic analysis factors include the K, D, T_{24}, T_f, Peak Hour Factor (PHF), and Model Output Conversion Factor (MOCF). The K-factor is the proportion of the AADT estimated to occur during the Opening Year and Design Year design hours, depending upon the area type and facility type. The D-factor is the proportion of traffic traveling in the peak direction for the Opening Year and Design Year's design hour. T_f is the percentage of truck traffic occurring during the peak hours and is estimated as half of the 24-hour truck percentage (T24). PHF is the hourly volume during the analysis hour divided by the peak 15-min flow rate within the analysis hour. The MOCF is the average of the thirteen consecutive weeks when the highest weekday volumes occur and when the sum of Seasonal Factors (SF) for those thirteen weeks is the lowest. The MOCF is used to convert the traffic volumes generated by a travel demand forecasting model in the Peak Season Weekday Average Daily Traffic (PSWADT) to AADT. The traffic factors used in this SIMR study are presented in **Table 1** as obtained from the approved MLOU.

Table 1: Summary of Traffic Factors

Roadway	K	D	T_{24}	T_f	PHF	MOCF
I-275	9 percent	57 percent	4.5 percent	3 percent	0.95	0.97
SR 60	9 percent	57 percent	4.5 percent	3 percent	0.95	0.97
Arterials	9 percent	57 percent	4.5 percent	3 percent	0.95	0.97

3.5 Analyzed Alternatives

No-Build Alternative: This alternative considers existing roadway conditions, including any planned or programmed projects anticipated to be constructed within the study area funded in the FDOT Work Program and City of Tampa's Capital Improvement Program (CIP).

Build Alternative: The Build Alternative included in the 2020 I-275 SEIS PTAR is considered the Build Alternative for this SIMR. This alternative considers four general use lanes and two express lanes in each travel direction. It provides express lane ramp connections from I-275 to/from SR 60 and I-275 to/from Ashley Drive/Tampa Street.

3.6 Traffic Demand Forecasting Methodology

The project traffic forecasting methodology is described below as a four-step process.

Step 1: The year 2017 traffic counts were adjusted by applying the historic growth factors obtained from the FDOT Traffic Online monitoring sites located in the study locations' vicinity to determine the Existing Year (2018) traffic counts. These counts were balanced along the study area.

Step 2: Future traffic forecasts were based on the Tampa Bay Regional Planning Model (TBRPM) and origin-destination matrix estimation (ODME) subarea model projections. Model projections were compared to area historical growth rates. The TBRPM model was used to evaluate the TBNext project and was proposed to maintain consistency with traffic volume forecasting conducted for Sections 3, 4, and 5 of TBNext.

The TBNext subarea model network was coded to include the No-Build and Build networks. Land use from the 2020 I-275 SEIS PTAR was used for the Design Year (2045) traffic forecasts. The land use was extrapolated from 2040 to reflect 2045 values. The 2045 PSWADT was converted to AADT by applying the model output conversion factor (MOCF). The resulting growth rate calculated by comparing the 2045 AADT to the existing AADT was compared to the historical growth rates, and an appropriate growth rate was determined. The 2025 No-Build and Build AADT was calculated by interpolating between the 2045 No-Build and Build AADT and the existing AADT.

Step 3: Florida's Turnpike's Express Lane Time of Day (ELToD) model was used to forecast the split between general use and express lane traffic. The ELToD model network was built to reflect the 2025 and 2045 network and tolling plans. ELToD provides hourly volumes across each hour of the day. The existing hourly distribution of traffic was used as input values for ELToD's hourly assignment. To account for the existing oversaturation of I-275, consideration was given to using a demand K-factor for the AM and PM peak hours.

Step 4: The Directional Design Hour Volumes (DDHVs) for the Opening Year (2025) and Design Year (2045) were calculated by applying the K- and D-factors identified in the MLOU. DDHVs were compared to ELToD hourly volumes, and the express lane traffic splits were estimated using the ELToD outputs. Traffic volumes were then balanced by holding the mainline volumes and adding and subtracting the ramp volumes. As needed, the DDHV turning movements were developed by applying existing turning percentages to the intersection approach DDHVs and adjusting. The DDHVs were balanced and adjusted to balance the intersection turns with the ramp traffic. The volumes were then balanced along the arterials. The traffic projections were also checked for reasonableness.

3.7 Traffic Operational Analysis Methodology

3.7.1 Calibration Methodology

The model calibration process and calibration targets used for this study are discussed in this section. The calibration criteria listed in the FDOT Traffic Analysis Handbook (2014) for interstates and arterials was used to determine calibration targets. **Table 2** provides the CORSIM model calibration criteria.

Table 2: Model Calibration Criteria

Criteria and Measures	Calibration Acceptance Targets
1) Simulated Capacity	Within 10 percent of the Field Measurement
2) Hourly Flows, Model Versus Observed	
a) Individual Link Flows Criteria	
i) Within 100 vehicles per hour (veh/hr), for flow < 700 veh/hr	> 85 percent of cases
ii) Within 15 percent, for 700 veh/hr < flow < 2700 veh/hr	> 85 percent of cases
iii) Within 400 veh/hr, for flow > 2700 veh/hr	> 85 percent of cases
b) Sum of all link flows	Within 5 percent of the sum of all link flows
c) GEH statistic* < 5 for individual link flows	> 85 percent of cases
3) Travel Times, Model Versus Observed Travel Times (TT) > 7 min: ±15 percent (or TT < 7 min: ±1 min)	85 percent of cases
4) Speed, Model Versus Observed Speed ±10 mph	85 percent of cases
5) Visual Audits Freeway & Arterial Bottlenecks - Visually acceptable queuing	To analyst's satisfaction

*The GEH statistic is computed as follows:

$$GEH = \sqrt{\frac{(E-V)^2}{(E+V)/2}}$$

Where: E = model estimated volume; V = field count.

3.7.2 Selection of Measures of Effectiveness (MOE)

A detailed operational analysis was performed for all analysis years for No-Build and Build Alternatives. Highway Capacity Manual (HCM), 6th Edition thresholds for MOEs were used to determine the level of service (LOS) from the CORSIM microsimulation models. A direct comparison of microsimulation-based LOS cannot be made; however, the information is provided for reference purposes. The CORSIM microsimulation analysis was performed for the I-275 mainline, ramps, weaving segments, and intersections for the Opening Year (2025) and Design Year (2045). Additionally, Synchro analysis was performed for the surface streets and intersections for all analysis years.

The simulation model was modified accordingly to reflect future Build conditions. A four-hour AM and PM peak period analysis was conducted using 15-minute flow rates with CORSIM microsimulation for Opening Year (2025) and Design Year (2045) conditions. The adopted LOS target was LOS "D" for roadways in urban areas. If an acceptable LOS (LOS D or better) was not achievable, then other measures of effectiveness (MOEs) such as delay, density, speed, and volume-to-capacity

(v/c) ratio as applicable for the Build Alternative were provided comparing with the No-Build conditions in the same analysis years.

The following MOEs were used to evaluate the performance of the alternatives and were reported as listed below:

- Freeway Segments, Ramps, Weaving Areas (CORSIM)
    - Travel times
    - Traffic volumes
    - Speeds
    - Complex Weave Segments
        - Approved methodology between Central Office and FHWA
- System-Level Operational Performance – A system-level performance comparison of the No-Build and Build Alternatives were performed comparing the following network-wide MOEs (CORSIM):
    - Traffic Volume Summary
    - System-wide Average Delay
    - System-wide Average Speed
    - Travel Time Summary
    - Link Level Operational Performance – A link-level performance comparison of the No-Build and Build Alternatives was performed comparing the operational performance of alternatives at a link-level using the following MOEs:
        - Link Level Speed Evaluation – Included heat diagrams.
        - Link Level Density Evaluation – Included heat diagrams. All weave segments were closely analyzed to FDOT District Seven and Central Office's satisfaction.
        - Link Level Throughput Evaluation
- Ramp Terminal Intersections and Adjacent Intersections (CORSIM and Synchro)
    - Intersection and approach Delays
    - Queue Lengths

4 EXISTING CONDITIONS

4.1 ROADWAY NETWORK

The study area's existing (2018) transportation network consists of a major interstate highway I-275, with seven interchanges, including State Road 60. I-275 runs east-west within the study limits. The number of lanes along I-275 varies from two to five lanes in each direction between the closely spaced arterial interchanges. The most recent (2020) improvements constructed along I-275 between Howard Frankland Bridge and Dale Mabry Highway are not included in the existing network. In addition, State Road 60 consists of four lanes in each direction within the study limits. The I-275 lane schematics are presented in **Figure 3**. In addition, functional classification and the posted speed limit for major roadways within the study limits are shown in **Figure 4**.

The environmental details such as navigable waterways, wetlands, public lands, contaminated sites, noise-sensitive sites, historical or archaeological sites, threatened and endangered species, contamination, air quality, and impacts to neighborhoods or any other environmental issues for Sections 4 and 5 limits are provided in the Tampa Interstate Study SEIS document.

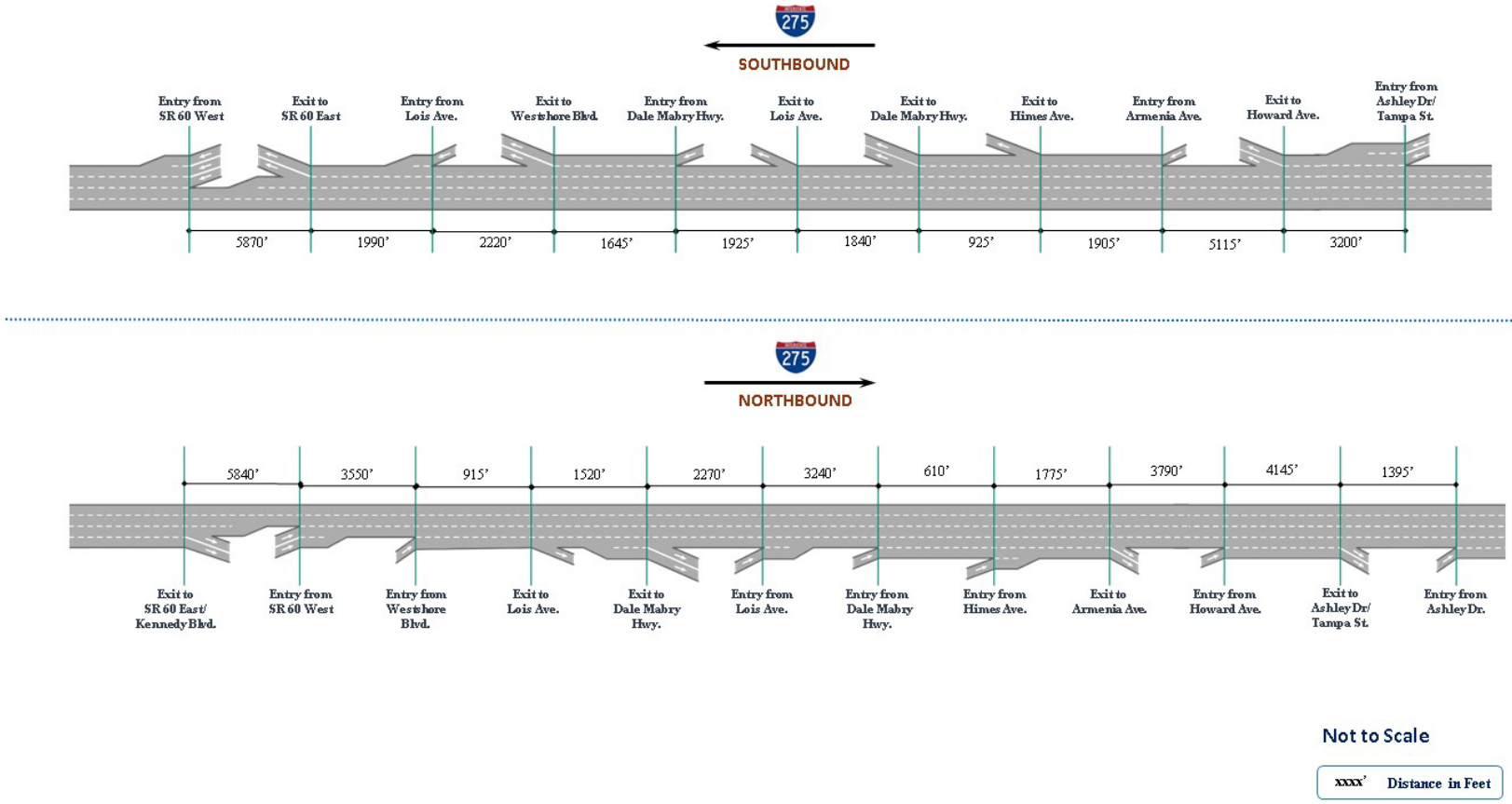


Figure 3: I-275 Lane Schematics

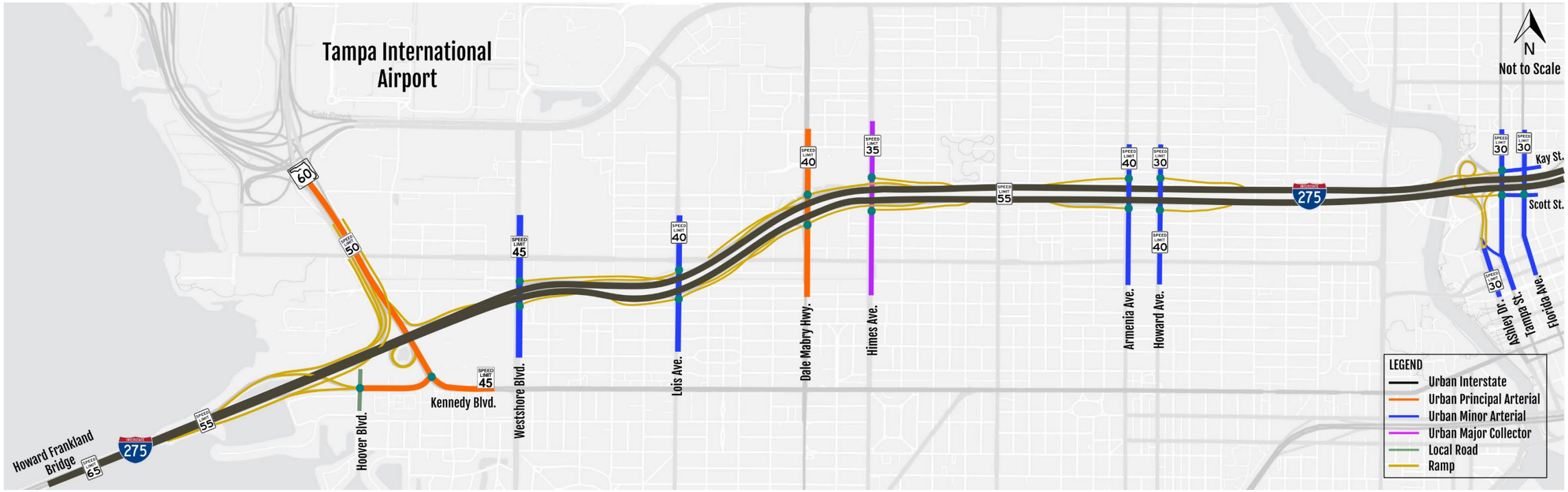


Figure 4: Functional Classification and Speed Limit

4.2 Field Observation During Peak Hours

A field visit was conducted during the AM and PM peak periods on Tuesday, August 21, 2018, through Thursday, August 23, 2018. The purpose of field observations is to visually assess the study area's traffic conditions, collect traffic signal timing information at study intersections, and conduct speed/travel time runs within I-275 and SR 60 corridors' study limits. The study limits travel time, extended from Howard Frankland Bridge to the north of Ashley Drive on I-275 and from Kennedy Boulevard to the north of Cypress St on SR 60.

Existing roadway characteristics such as the number of lanes, length of turn bays, lane width, and sight distances were also observed during the field visits. **Figures 5** and **6** illustrate the study area's traffic conditions during AM and PM peak hours, respectively. The field visits' key observations along major study corridors (I-275 and SR 60) are summarized below.

4.2.1 I-275 Segment – From South of SR 60 to Ashley Drive/Tampa Street

- Overall, the traffic delays for PM peak hour are higher compared to AM peak hour. Congestion resulting in more delays was observed along the I-275 northbound than the I-275 southbound during AM and PM peak hours.
- Average speeds of 48 miles per hour and 21 miles per hour were observed along the I-275 northbound segment (From south of the SR 60 to Ashley Drive/Tampa Street – 6.5-mile segment) during AM and PM peak hours, respectively.
- I-275 northbound, south of SR 60, was observed to be a critical bottleneck segment for both AM and PM peak hours, leading to higher delays due to high exiting traffic volumes to the SR 60 Off-Ramp and due to vehicle slowdowns on SR 60 northbound Off-Ramp curve. Also, heavy congestion is experienced during the PM peak hour along the I-275 northbound, north of the SR 60, primarily due to the downstream congestion. The traffic queues from the I-275 and I-4 merge extend beyond the Westshore Boulevard interchange.
- Average speeds of 52 miles per hour and 32 miles per hour were observed along the I-275 southbound segment (From Ashley Drive/Tampa Street to the south of SR 60 – 6.5 miles segment) during AM and PM peak hours, respectively.
- Minor delays were observed during the AM peak hour along the I-275 southbound. During PM peak hours, the Ashley Drive and SR 60 Off-Ramp segment experiences severe traffic delays (Average speeds of 27 miles per hour). This is a critical segment for this facility due to high traffic volumes all merging from I-4 westbound, I-275 southbound, and the downtown Tampa area and exiting to SR 60 via the Off-Ramp.

4.2.2 SR 60 Segment – North of Cypress Street to I-275

- Overall, the SR 60 eastbound segment was observed to experience higher delays during the AM and PM peak hours than the SR 60 westbound segment. Congestion resulted in more traffic delays during the AM peak hours than during the PM peak hours.
- Higher traffic delays observed along the SR 60 eastbound segment for both AM and PM peak hours were caused primarily due to heavy SR 60 eastbound to the I-275 northbound On-Ramp demand and existing capacity deficiencies for the SR 60 eastbound to the I-275 northbound loop ramp.
- The observed average speeds along the SR 60 eastbound segments were 25 miles per hour and 48 miles per hour during the AM and PM peak hours, respectively.
- Average speeds along the SR 60 westbound segments were 50 miles per hour and 48 miles per during the AM and PM peak hours, respectively.

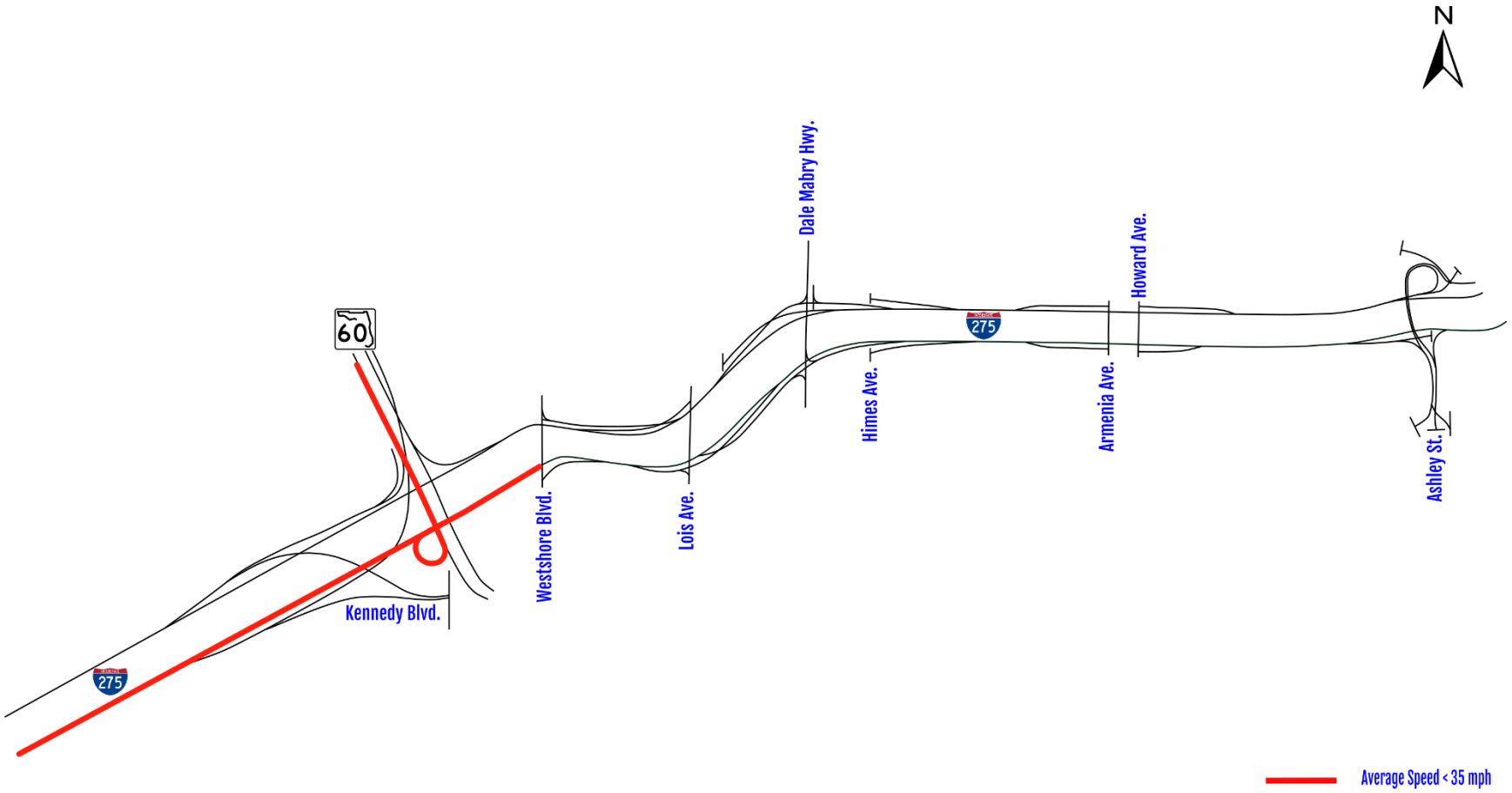


Figure 5: Existing Year (2018) AM Peak Hour Congestion

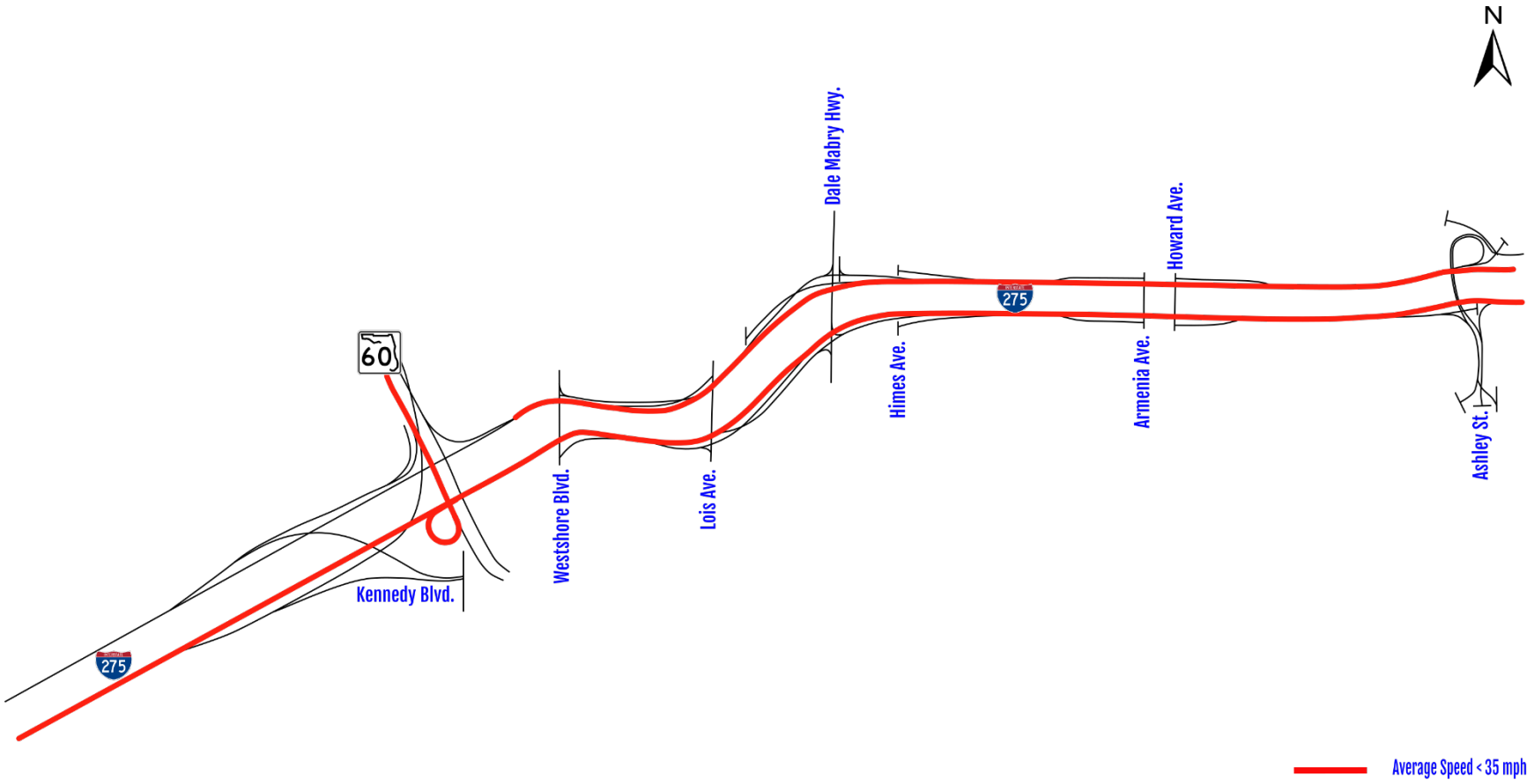


Figure 6: Existing Year (2018) PM Peak Hour Congestion

4.3 Peak Hour Volumes

The mainline, ramp counts, and intersection turning movement counts (TMCs) collected as part of the I-275 Operational Improvement IOAR were used for this study. The data for I-275 IOAR was collected for the study limit between the north end of Howard Frankland Bridge and Himes Avenue in 2017 (October – November). The appropriate growth rates were applied to estimate the Existing Year (2018) traffic counts for this study. The data for the remaining locations were collected as part of the I-275 SEIS PTAR Study in 2018 (September – October). These counts were collected in accordance with the guidelines in the FDOT Project Traffic Forecasting Handbook. Additionally, the traffic counts available from Florida Traffic Online (FTO) that contained synopsis reports only and other recent studies performed within the study area were obtained for volume development purposes. The raw traffic counts collected are presented in **Appendix B**.

4.3.1 Traffic Counts Location

The locations where traffic counts data were collected are shown in **Figure 7**. It includes the 72-hour mainline tube count locations, 24-hour ramp tube count locations, and 24-hour arterial tube count locations. Additionally, 8-hour turning movement counts were collected for all the intersections within the area of influence.

4.3.2 Determination of Peak Periods

Hourly volume variation was studied by examining the 24-hour classification counts. The volume variation revealed that the weekdays AM and PM peak periods were from 5:30 AM to 9:30 AM and 2:30 PM to 6:30 PM, respectively. An assessment of mid-day peaks revealed that volume intensity was less than observed during regular AM and PM weekday peak periods. For this study, the two most critical peak periods that define the existing traffic operations, AM and PM, were selected for analysis. The AM and PM peaks best capture traffic flow at its peak for the mainline I-275, SR 60, and arterials. In addition, the AM and PM peak hours were found to be 7:30 AM to 8:30 AM and 4:30 PM to 5:30 PM, respectively.

4.3.3 Annual Average Daily Traffic

The mainline and ramps' daily counts were adjusted with seasonal and axle correction factors to estimate the AADTs along I-275 and SR 60. The estimated AADTs for the mainline and the ramps are presented in **Figure 8**. Detailed AADTs are shown in **Appendix C**.

4.3.4 Peak Hour Demand Volumes

Existing Year (2018) peak hour demand volumes for the study area were developed by applying K- and D-Factor to the AADT. The raw TMCs were used for the intersection movement splits, and the peak hour volumes were balanced across the freeway and arterials. **Figure 9** illustrates the peak hour demand volumes for freeway segments and ramps for the I-275 corridor within the study limits. Detailed the Existing Year (2018) demand volume diagrams that include freeway segments, ramps, and study intersections are shown in **Appendix D**.

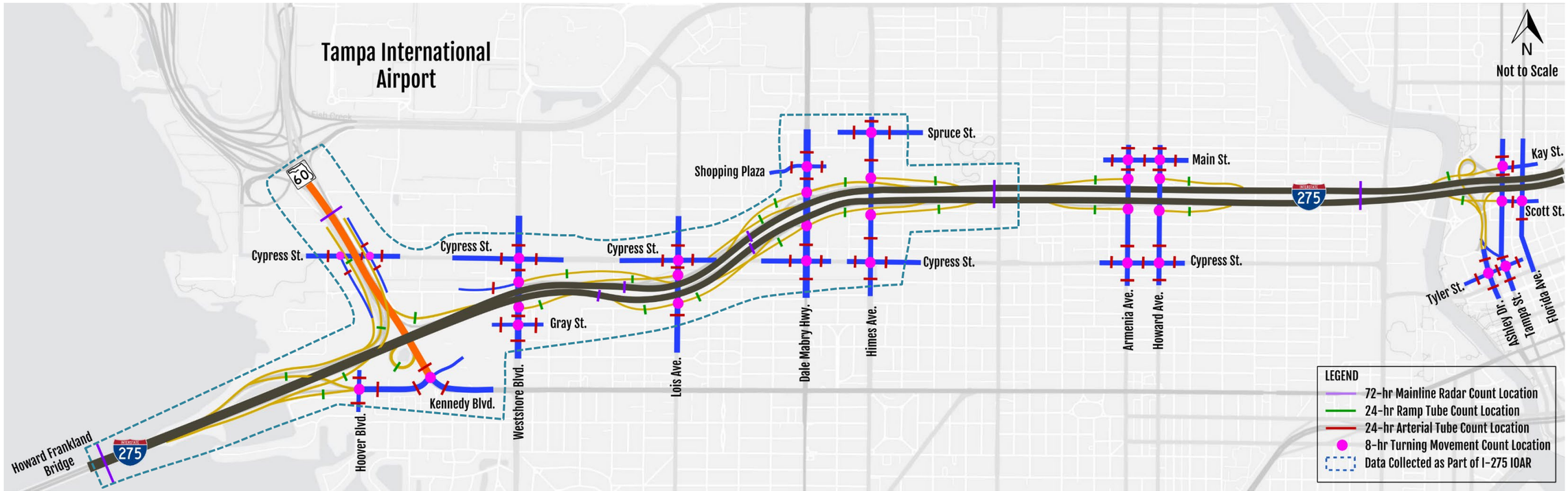


Figure 7: Traffic Counts Location

N

Not to Scale

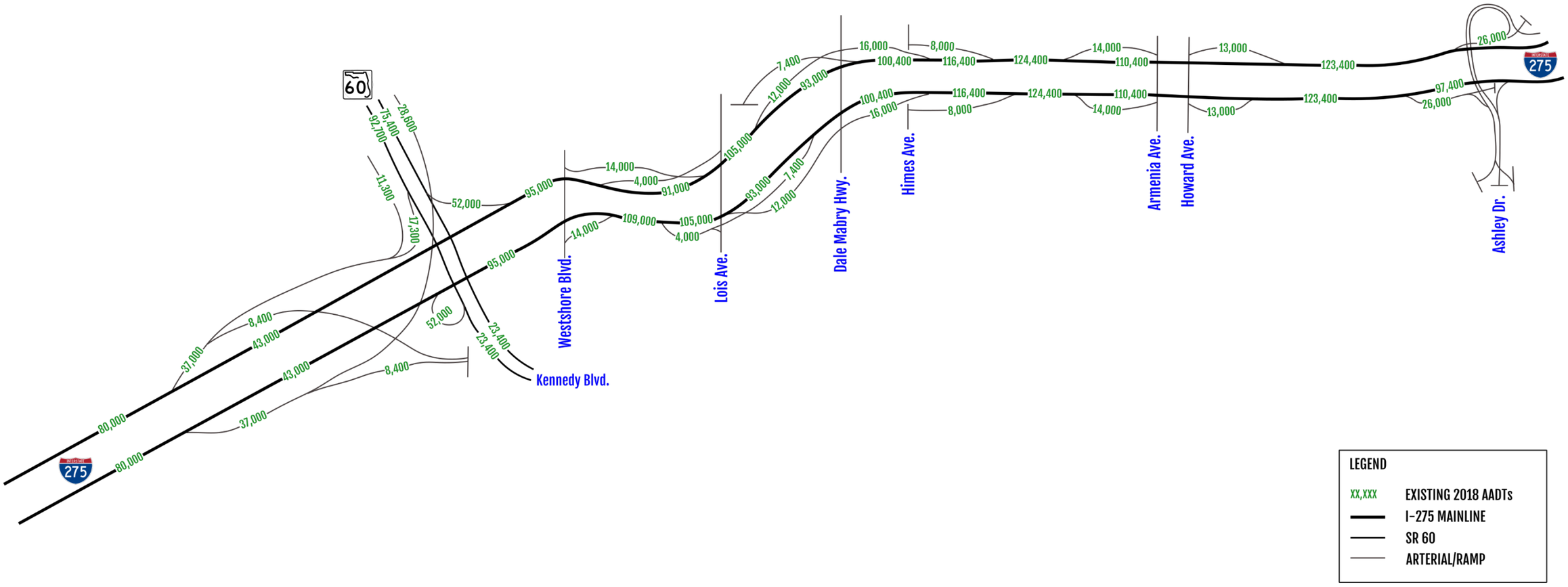


Figure 8: Existing Year (2018) Annual Average Daily Traffic (AADT)

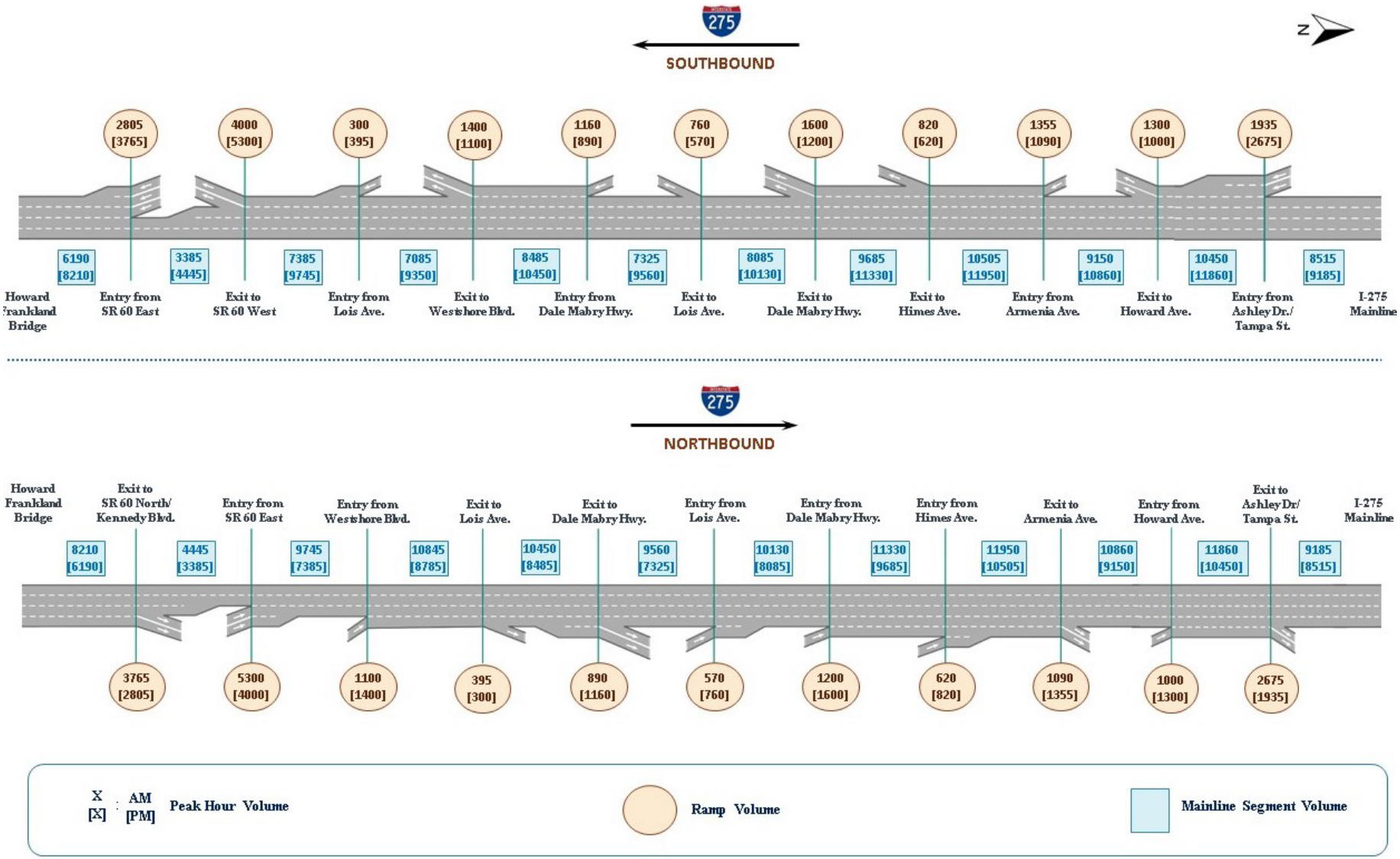


Figure 9: Existing Year (2018) Peak Hour Demand Volumes

4.4 EXISTING CONDITIONS PERFORMANCE

Microsimulation analysis was conducted using CORSIM (TSIS) 6.3 software. A step-by-step procedure defined in FDOT Traffic Analysis Handbook was followed to develop CORSIM models for the existing conditions. Section 5 of the Existing Conditions Report details the model development and calibration process, as provided in **Appendix E**.

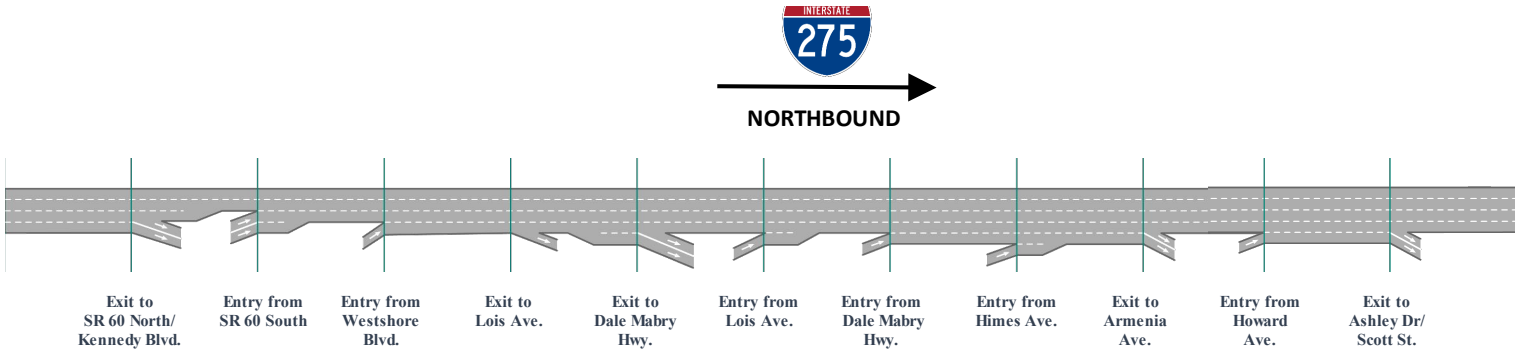
The Car Following Sensitivity (CFS) multiplier was adjusted and ranged from 110 to 295, depending on the collected speeds to reflect the existing conditions as indicated in Section 5.4.5 of the Existing Conditions Report. The default CFS values were used for the links where reconstruction is proposed with improvements in the Build conditions. No CFS values were adjusted for conservative Build analysis for the links where only lane additions or other improvements were proposed.

The Existing Year (2018) AM and PM peak hour balanced volumes were utilized to calibrate CORSIM models to replicate field conditions. However, the Existing Year (2018) AM and PM peak hour demand volumes were used to perform operational analysis of the study area.

4.4.1 Freeway – CORSIM Analysis

The Existing Year (2018) demand model results, an average of 10 run results, were used to evaluate the study corridor's performance (I-275). The throughput, density, and speed for the I-275 segments are presented in **Figures 10** and **11**. These results are based on the Existing Year (2018) demand, estimated by applying the K factor (9%) to AADTs. It should be noted that these results may not reflect the field conditions shown in **Figures 5** and **6**. The existing demand volumes are higher than the counted volumes resulting in lower travel speeds and higher densities for certain deficient freeway segments. However, the worse operating conditions on these upstream deficient freeway segments meter the amount of traffic accessing the downstream segments, thereby showing better operations on some freeway segments. The performance of the study corridor (I-275) during AM and PM peak hours is summarized below.

- Overall, the traffic delays for PM peak hour are higher compared to AM peak hour.
- The CORSIM analysis results indicate higher delays observed along I-275 northbound than I-275 southbound during AM and PM peak hours.
- Due to high exiting traffic volumes to SR 60 westbound and Kennedy Boulevard Off-Ramp and vehicle slowdowns on the SR 60 westbound flyover ramp during AM peak hour, the commuters will experience significant delays south of SR 60 westbound and Kennedy Boulevard Off-Ramp along I-275 northbound.
- All the I-275 northbound segments operate at failing conditions (LOS E or F) during PM peak hours. These segments fail mainly because of downstream capacity constraints near the downtown area and the I-4 interchange.
- No significant congestion was observed during the AM peak hour along I-275 southbound, whereas the segment north of Howard Avenue Off-Ramp experienced heavy congestion during the PM peak hour. This is a critical segment for this facility due to high traffic volumes from westbound I-4, southbound I-275, and the downtown Tampa area all merge.



	Distance (feet)	8030	5840	3550	900	1520	2270	3220	610	1770	3790	4150	1370
AM	Demand (vph)	8210	4445	9745	10845	10450	9560	10130	11330	11950	10860	11860	9185
	Throughput (vph)	5526	3020	6745	7787	7511	6876	7571	8641	9269	8392	9374	7255
	Speed	18	19	30	50	57	56	55	51	51	55	52	52
	Density	75	82	67	37	27	29	31	32	33	36	34	33
	Travel Time (sec)	310	210	81	12	18	27	40	8	23	47	54	18
PM	Demand (vph)	6190	3385	7385	8785	7645	7325	8085	9685	10505	7440	10450	8515
	Throughput (vph)	4278	2334	4231	5026	4802	4028	4397	5146	5894	5139	6240	5118
	Speed	12	12	11	18	14	9	12	12	11	8	14	15
	Density	93	117	124	74	77	110	87	87	111	157	98	90
	Travel Time (sec)	466	341	216	33	75	165	176	34	110	304	204	64

Density (veh/ln-mile)
<=28
Between 28-35
>35

Speed (mph)
>50
Between 35 and 50
Between 25 and 35
<25

Figure 10: I-275 NB Analysis Summary – Existing Year (2018) Demand

AM	Demand (vph)	6190	3385	7385	7085	8485	7325	8085	9685	10505	9150	10450	8515
	Throughput (vph)	4840	2321	5003	4764	6403	5147	5772	7274	8102	6617	7939	6059
	Speed	63	58	53	57	56	57	57	56	55	54	50	55
	Density	18	17	21	20	22	21	24	25	28	29	29	26
	Travel Time (sec)	101	70	25	28	20	23	26	7	24	58	44	30
PM	Demand (vph)	8210	4445	9745	9350	10450	9560	10130	11330	11950	0	11860	9185
	Throughput (vph)	6032	2752	6461	6104	6881	5730	6182	6942	7320	6344	6782	4479
	Speed	61	57	43	51	44	55	57	56	49	42	17	9
	Density	24	22	37	30	31	26	27	25	30	45	85	131
	Travel Time (sec)	104	70	32	31	25	24	26	7	27	74	130	187
	Distance (feet)	9250	5870	1990	2320	1630	1920	2190	560	1900	4630	3200	2470

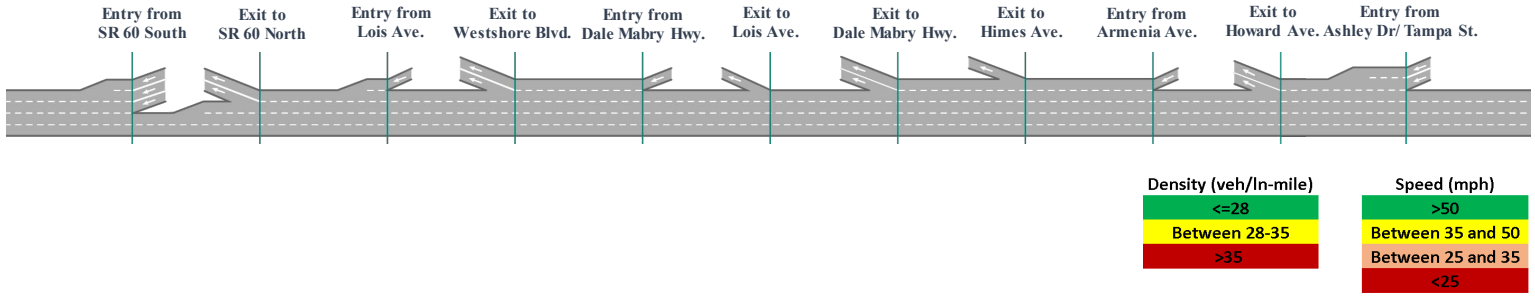


Figure 11: I-275 SB Analysis Summary – Existing Year (2018) Demand

4.4.2 Arterial Intersections

Per approved MLOU, the study intersections for the Existing Year (2018) conditions were analyzed using SYNCHRO 10. The SYNCHRO analysis is performed using demand volumes. The SYNCHRO reports were created using the HCM 6th version for the study intersections. The arterial intersections performance results for Existing Year (2018) AM and PM peak hours are presented in **Tables 3** and **4**. The SYNCHRO reports are provided in **Appendix F**.

SYNCHRO analysis results indicate that most of the study intersections operate at acceptable LOS (LOS D or better) during AM and PM peak hours. However, interchange intersections along Dale Mabry Highway operate at failing conditions (LOS E or F) during peak hours. This failing condition is mainly due to the available capacity on Dale Mabry Highway is inadequate to accommodate peak hour demand volumes.

The 95th percentile queue length and corresponding storage length are also provided in **Table 5** for Existing Year (2018) AM and PM peak hours. The 95th percentile queue length higher than the storage length is highlighted in yellow. The results are summarized below.

- The 95th percentile queue length for westbound through (WBT) movement during PM peak hour at the intersection of Tampa Street at Kay Street and Tampa Street at Tyler Street exceeds the storage length. Ashley Drive at Tyler Street intersection has a queue length higher than the existing storage length for northbound through (NBT) during AM peak hour and WBT, eastbound left-turn (EBL), and NBT during PM peak hour.
- Along Howard-Armenia Avenue, the queue length exceeds the storage length for northbound left-turn (NBL) at Howard Avenue at I-275 SB Off-Ramp and southbound right-turn (SBR) at Armenia Avenue at I-275 SB On-Ramp during AM peak hour. During PM peak hour, the eastbound through (EBT) queue length at the intersection of Howard Avenue and I-275 NB On-Ramp exceeds the storage length.
- Along Himes Avenue, westbound left-turn (WBL) and southbound left-turn (SBL) queue length during PM peak hour exceeds the storage length at the intersection with Spruce Street.
- Along Dale Mabry Highway, the queue length for NBL and SBR at I-275 SB Off-Ramp, NBR at I-275 NB Off-Ramp, and NBL at Cypress Street exceed storage length during AM peak hour. During PM peak hour, the queue length exceeds storage length for eastbound right-turn (EBR) and SBT at Shopping Plaza, SBR at I-275 SB Off-Ramp, NBR at I-275 NB Off-Ramp, and EBL at Cypress Street.
- Along Lois Avenue, the queue length exceeds storage length at Cypress Street for NBL during AM peak hour and EBR and WBL during PM peak hour.
- Along Westshore Boulevard, the queue length exceeds storage length for NBL at Cypress Street and WBL at Gray Street during AM peak hour. During PM peak hours, the queue length exceeds storage length for NBT and SBL at Cypress Street, SBL at I-275 NB On-Ramp, and EBL and WBL at Gray Street.
- Along Kennedy Boulevard, the queue length exceeds storage length for SBL at Hoover Boulevard and EBL, NBL, and NBT at Memorial Highway during PM peak hour.
- Along Cypress Street, queue length exceeds storage length for WBL at West Frontage Road during PM peak hour.
- Heavy peak hour demand, insufficient storage length, and closely spaced intersections are primary reasons for queues extending the available storage length at some study intersections. However, the 95th percentile queues at all interchange intersections within the study limits do not extend to the I-275 mainline.

Table 3: Existing Year (2018) Demand – LOS and Delay (AM Peak Hour)

Arterial	Intersecting Roadway	Eastbound		Westbound		Northbound		Southbound		Intersection	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Tampa St.	Kay St.	--	--	D	50.3	--	--	A	9.6	C	24.2
	Scott St.	D	50.4	--	--	--	--	C	31.8	D	40.1
	Tyler St.	D	33.3	D	41.7	--	--	B	18.3	C	21.6
Florida Ave.	Scott St.	E	61.3	--	--	B	17.7	--	--	C	33.2
Ashley Dr.	Tyler St.	D	49.4	C	28.1	C	24.4	C	23.5	C	24.7
Howard Ave.	Main St.	E	55.7	E	58.9	E	55.2	--	--	E	55.4
	I-275 SB Off-Ramp	--	--	E	55.3	D	41.1	--	--	D	48.0
	I-275 NB On-Ramp	E	57.5	--	--	D	39.6	--	--	D	44.5
	Cypress St.	C	22.1	C	33.0	B	14.8	--	--	B	17.7
Armenia Ave.	Main St.	E	55.5	D	54.6	--	--	A	1.6	B	12.0
	I-275 SB On-Ramp	--	--	D	45.4	--	--	D	37.3	D	43.3
	I-275 NB Off-Ramp	C	33.7	--	--	--	--	D	45.1	D	39.0
	Cypress St.	D	52.4	D	46.4	--	--	C	23.4	C	29.3
Himes Ave.	Spruce St.	D	41.3	D	51.0	A	5.1	C	28.0	C	22.2
	I-275 SB Off-Ramp	--	--	D	39.8	A	5.9	A	1.4	B	15.8
	I-275 NB On-Ramp	--	--	--	--	B	18.2	A	3.8	A	9.0
	Cypress St.	D	43.2	D	47.0	B	10.7	A	7.3	B	18.4
Dale Mabry Hwy.	Shopping Plaza	F	155.4	F	93.9	A	5.5	B	18.5	B	17.6
	I-275 SB Off-Ramp	--	--	F	117.5	B	19.1	F	150.9	F	98.2
	I-275 NB Off-Ramp	F	113.6	--	--	E	68.4	C	34.9	E	64.7
	Cypress St.	F	80.8	F	88.9	C	29.2	A	5.4	C	33.5
Lois Ave.	Cypress St.	C	26.2	D	53.3	D	51.7	D	53.7	D	49.0
	I-275 SB On-Ramp	--	--	--	--	A	9.6	A	4.4	A	7.3
	I-275 NB Off-Ramp	D	44.9	--	--	C	32.1	A	7.4	C	27.1
Westshore Blvd.	Cypress St.	D	48.4	E	72.8	B	45.4	E	55.3	D	53.4
	I-275 SB Off-Ramp	--	--	D	48.0	A	7.6	D	44.2	D	36.4
	I-275 NB On-Ramp	--	--	--	--	D	38.2	A	4.9	C	22.6
	Gray St.	F	87.1	F	87.1	A	7.6	A	0.4	A	7.5
Kennedy Blvd.	S. Hoover Blvd.	C	33.5	B	18.8	F	87.3	E	73.2	C	33.8
	Memorial Hwy.	E	59.1	--	--	C	34.6	D	40.1	D	42.0
Cypress St.	E. Frontage Rd.	A	0.4	A	8.4	D	55.0	D	47.3	A	9.7
	W. Frontage Rd.	A	8.8	A	2.3	E	77.4	--	--	A	5.1

Table 4: Existing Year (2018) Demand – LOS and Delay (PM Peak Hour)

Arterial	Intersecting Roadway	Eastbound		Westbound		Northbound		Southbound		Intersection	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Tampa St.	Kay St.	--	--	D	46.6	--	--	B	11.8	C	27.7
	Scott St.	E	57.7	--	--	--	--	C	22.1	D	37.2
	Tyler St.	C	31.8	C	34.4	--	--	B	18.5	C	20.6
Florida Ave.	Scott St.	E	65.6	--	--	B	13.6	--	--	C	26.2
Ashley Dr.	Tyler St.	F	95.7	D	51.2	E	61.6	C	26.9	D	50.0
Howard Ave.	Main St.	E	55.8	E	55.6	C	20.4	--	--	C	26.1
	I-275 SB Off-Ramp	--	--	D	49.3	D	35.4	--	--	D	41.1
	I-275 NB On-Ramp	E	55.6	--	--	D	50.7	--	--	D	52.5
	Cypress St.	C	23.5	C	23.5	C	25.8	--	--	C	25.0
Armenia Ave.	Main St.	D	51.4	E	56.1	--	--	A	3.0	B	16.3
	I-275 SB On-Ramp	--	--	D	46.9	--	--	C	30.0	D	41.1
	I-275 NB Off-Ramp	F	89.1	--	--	--	--	C	34.7	E	65.5
	Cypress St.	D	49.9	D	41.3	--	--	C	32.0	D	37.2
Himes Ave.	Spruce St.	C	32.8	D	43.2	A	5.7	D	50.2	C	31.9
	I-275 SB Off-Ramp	--	--	D	45.1	A	0.3	A	1.1	B	11.5
	I-275 NB On-Ramp	--	--	--	--	C	22.5	A	3.7	B	10.5
	Cypress St.	D	42.3	C	33.9	C	21.6	B	15.2	C	27.1
Dale Mabry Hwy.	Shopping Plaza	F	150.9	F	117.1	A	9.4	C	26.8	C	34.1
	I-275 SB Off-Ramp	--	--	E	79.7	A	8.9	F	100.5	E	63.0
	I-275 NB Off-Ramp	E	78.1	--	--	D	47.7	D	48.0	D	54.6
	Cypress St.	E	73.7	F	98.0	D	42.2	B	12.5	D	45.0
Lois Ave.	Cypress St.	F	88.0	D	44.4	D	41.3	D	53.5	E	61.8
	I-275 SB On-Ramp	--	--	--	--	A	8.8	A	6.3	A	7.0
	I-275 NB Off-Ramp	D	48.4	--	--	D	37.3	A	3.5	B	19.4
Westshore Blvd.	Cypress St.	E	55.4	E	61.7	C	24.7	E	75.2	D	52.6
	I-275 SB Off-Ramp	--	--	D	50.7	A	7.0	B	15.5	C	25.5
	I-275 NB On-Ramp	--	--	--	--	D	42.7	A	5.6	B	18.9
	Gray St.	F	93.2	F	93.5	B	13.7	D	38.1	D	36.5
Kennedy Blvd.	S. Hoover Blvd.	C	28.9	B	17.1	F	87.6	E	75.9	C	34.7
	Memorial Hwy.	E	65.3	--	--	D	45.0	D	38.6	D	47.2
Cypress St.	E. Frontage Rd.	A	0.8	B	14.0	D	54.6	D	47.5	B	12.2
	W. Frontage Rd.	B	11.3	B	15.3	F	114.0	--	--	C	23.9

Table 5: Existing Year (2018) Demand – 95th Percentile Queue Length (feet)

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Tampa St. at Kay St.	AM	-	-	-	21	393	-	-	-	-	-	218	176
	PM	-	-	-	29	437	-	-	-	-	-	174	217
	Storage Length	-	-	-	170	400	-	-	-	-	-	800	450
Tampa St. at Scott St.	AM	-	411	-	-	-	-	-	-	-	-	12	-
	PM	-	317	-	-	-	-	-	-	-	-	15	-
	Storage Length	-	1000	-	-	-	-	-	-	-	-	250	-
Tampa St. at Tyler St.	AM	-	m26	-	40	161	-	-	-	-	-	165	3
	PM	-	m45	-	39	206	-	-	-	-	-	249	11
	Storage Length	-	200	-	100	200	-	-	-	-	-	1550	135
Florida Ave. at Scott St.	AM	-	95	-	-	-	-	-	397	-	-	-	-
	PM	-	75	-	-	-	-	-	493	-	-	-	-
	Storage Length	-	400	-	-	-	-	-	625	-	-	-	-
Ashley Dr. at Tyler St.	AM	59	16	-	m11	32	-	82	500	-	-	311	123
	PM	#350	43	-	35	434	-	101	#1253	-	-	354	123
	Storage Length	220	325	-	175	200	-	170	170	-	-	650	150
Howard Ave. at Main St.	AM	36	71	-	-	78	-	-	m33	m0	-	-	-
	PM	44	120	-	-	158	-	-	93	m3	-	-	-
	Storage Length	110	580	-	-	600	-	-	200	200	-	-	-
Howard Ave. at I-275 SB Off-Ramp	AM	-	-	-	-	426	-	#863	99	-	-	-	-
	PM	-	-	-	-	335	-	176	117	-	-	-	-
	Storage Length	-	-	-	-	2000	-	275	310	-	-	-	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Howard Ave. at I-275 NB On-Ramp	AM	252	362	-	-	-	-	-	80	73	-	-	-
	PM	203	#673	-	-	-	-	-	83	#188	-	-	-
	Storage Length	600	600	-	-	-	-	-	1100	1100	-	-	-
Howard Ave. at Cypress St.	AM	43	116	-	-	164	78	42	313	-	-	-	-
	PM	m60	272	-	-	167	84	60	429	-	-	-	-
	Storage Length	110	600	-	-	4000	600	220	2600	-	-	-	-
Armenia Ave. at Main St.	AM	-	75	-	59	70	-	-	-	-	-	26	-
	PM	-	136	-	79	126	-	-	-	-	-	44	-
	Storage Length	-	600	-	100	580	-	-	-	-	-	2500	-
Armenia Ave. at I-275 SB On-Ramp	AM	-	-	-	m70	m325	-	-	-	-	-	67	230
	PM	-	-	-	129	395	-	-	-	-	-	121	109
	Storage Length	-	-	-	590	590	-	-	-	-	-	200	200
Armenia Ave. at I-275 NB Off-Ramp	AM	-	154	606	-	-	-	-	-	-	32	235	-
	PM	-	429	526	-	-	-	-	-	-	92	208	-
	Storage Length	-	1600	1140[6]	-	-	-	-	-	-	300	300	-
Armenia Ave. at Cypress St.	AM	-	200	-	21	105	-	-	-	-	m35	223	m4
	PM	-	425	-	15	128	-	-	-	-	m120	444	m38
	Storage Length	-	2550	-	150	590	-	-	-	-	200	1150	200
Himes Ave. at Spruce St.	AM	72	167	-	109	217	-	57	159	-	65	351	-
	PM	131	381	-	#185	235	-	m68	157	-	#183	516	-
	Storage Length	200	1200	-	140	1240	-	180	930	-	175	2500	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Himes Ave. at I-275 SB Off-Ramp	AM	-	-	-	191	228	70	-	173	-	-	76	-
	PM	-	-	-	188	234	68	-	68	-	-	67	-
	Storage Length	-	-	-	300	1450	800	-	350	-	-	970	-
Himes Ave. at I-275 NB On-Ramp	AM	-	-	-	-	-	-	-	181	-	215	0	-
	PM	-	-	-	-	-	-	-	248	-	222	0	-
	Storage Length	-	-	-	-	-	-	-	1000	-	350	350	-
Himes Ave. at Cypress St.	AM	56	126	-	44	296	-	42	185	-	40	114	-
	PM	142	456	-	48	278	-	55	280	-	98	241	-
	Storage Length	220	1175	-	225	2500	-	190	2500	-	210	1100	-
Dale Mabry Hwy. at Shopping Plaza	AM	29	38	0	81	59	0	m124	m329	m1	39	459	0
	PM	134	66	364	114	102	0	m202	m498	m50	75	595	89
	Storage Length	300	300	175	125	200	125	350	500	150	250	550	185
Dale Mabry Hwy. at I-275 SB Off-Ramp	AM	-	-	-	247	-	#1175	m#232	m27	-	-	67	1196
	PM	-	-	-	265	-	#768	m141	m27	-	-	177	353
	Storage Length	-	-	-	225	-	200	200	200	-	-	550	250
Dale Mabry Hwy. at I-275 NB Off-Ramp	AM	#650	-	139	-	-	-	-	306	595	440	109	-
	PM	#622	-	313	-	-	-	-	233	#744	496	247	-
	Storage Length	440	-	390	-	-	-	-	740	200	500	360	-
Dale Mabry Hwy. at Cypress St.	AM	210	140	-	85	290	-	376	508	-	77	291	41
	PM	489	440	-	119	301	-	199	698	-	115	661	39
	Storage Length	220	2500	-	180	1200	-	300	1200	-	425	710	710

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Lois Ave.at Cypress St.	AM	28	94	14	68	#612	-	#233	222	-	73	#295	-
	PM	61	394	#506	#262	287	-	101	249	-	117	#480	-
	Storage Length	100	565	425	100	2500	-	190	600	-	80	2500	-
Lois Ave.at I-275 SB On-Ramp	AM	-	-	-	-	-	-	65	0	-	-	42	-
	PM	-	-	-	-	-	-	47	0	-	-	m156	-
	Storage Length	-	-	-	-	-	-	250	250	-	-	215	-
Lois Ave.at I-275 NB Off-Ramp	AM	172	-	0	-	-	-	-	304	-	132	10	-
	PM	105	-	55	-	-	-	-	262	-	154	5	-
	Storage Length	600	-	600	-	-	-	-	1800	-	450	300	-
Westshore Blvd. at Cypress St.	AM	85	342	115	213	335	-	m302	440	-	77	338	-
	PM	117	#655	426	#322	262	-	138	638	-	#202	663	-
	Storage Length	225	2500	540	400	560	-	280	475	-	200	1230	-
Westshore Blvd. at I-275 SB Off-Ramp	AM	-	-	-	486	494	856	86	11	-	-	399	-
	PM	-	-	-	504	511	434	m4	52	-	-	310	-
	Storage Length	-	-	-	440	3000	2540[6]	370	170	-	-	475	-
Westshore Blvd. at I-275 NB On-Ramp	AM	-	-	-	-	-	-	-	264	272	302	4	-
	PM	-	-	-	-	-	-	-	172	317	#611	18	-
	Storage Length	-	-	-	-	-	-	-	380	380	310	170	-
Westshore Blvd. at Gray St.	AM	44	29	-	81	38	-	17	285	-	16	65	-
	PM	278	102	-	44	95	-	52	275	-	34	173	-
	Storage Length	125	450	-	30	550	-	270	590	-	155	400	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Kennedy Blvd. at Hoover Blvd.	AM	28	490	-	m111	35	m0	-	266	0	34	26	-
	PM	10	311	-	m3	m11	m0	-	245	0	#235	55	-
	Storage Length	250	1700	-	410	1400	600	-	460	100	100	100	-
Kennedy Blvd. at Memorial Hwy.	AM	270	273	203	-	-	-	303	667	0	100	930	115
	PM	#505	#506	285	-	-	-	#441	1158	0	#255	612	20
	Storage Length	430	1400	1400	-	-	-	420	750	125	310	1500	200
Cypress St. at E. Frontage Rd.	AM	m6	52	-	18	375	-	-	161	-	-	15	0
	PM	m18	231	-	7	137	-	-	167	-	-	31	26
	Storage Length	70	285	-	70	450	-	-	750	-	-	800	75
Cypress St. at W. Frontage Road	AM	-	255	-	42	25	-	0	-	0	-	-	-
	PM	-	377	-	299	8	-	56	-	64	-	-	-
	Storage Length	-	1000	-	150	285	-	180	-	650	-	-	-

Notes:

1) The # footnote indicates that the volume for the 95th percentile cycle exceeds capacity. This traffic was simulated for two complete cycles to account for the effects of spillover between cycles. If the reported v/c <1for this movement, this is a valid method for estimating the 95th percentile queue.
2) The m footnote indicates that the volume for the 95th percentile queue is metered by an upstream signal (Trafficware).
3) The storage length values were calculated from aerials or design drawings.
4) L = left, T = through, R = right.
5) Storage Length for through movement is considered as the distance from the upstream signalized intersection.
6) Storage Length for right-turn/left-turn at ramp terminals that extends to the gore is estimated by subtracting the deceleration length based on FDM Exhibit 212-1 from the total length of the ramp.

4.5 HISTORICAL CRASH SUMMARY

A safety analysis was conducted for the study limits of Sections 4 and 5, along I-275 from the north end of the Howard Frankland Bridge to the north of Ashley Drive/Tampa Street, the ramps, adjacent ramp terminals, and intersections. The latest certified historical crash data (2013 - 2017) was obtained from the Crash Data Management System (CDMS) and Crash Analysis Reporting (CAR) online. The CDMS, District 7's crash management system, was used to incorporate the crashes that are not reported in CAR online. The data obtained from these two databases were compared against each other, and the duplicates were removed. The historical crash data was reviewed to examine crash patterns and assess the corridors' existing safety deficiencies within the study area. The summary of the historical crashes for the study area is presented in **Figures 12** and **13**. The historical crash data (2013-2017) is provided in **Appendix G**.

Over five years from 2013 to 2017, a total of 7,900 crashes, 13 (0.2 percent) fatal crashes, 2,446 (31 percent) injury crashes, and 5,441 (69 percent) property damage only crashes were reported within the Sections 4 and 5 limits. Most of the fatal crashes occurred on I-275 mainline (9 fatal crashes).

49 pedestrian crashes occurred between 2013-2017 within the study limits. Four pedestrian crashes occurred on the I-275 mainline, one pedestrian crash on the SR 60 mainline, one pedestrian crash on an I-275 ramp, 13 pedestrian crashes at ramp terminals, and 30 pedestrian crashes at the study intersections. The pedestrian crashes that occurred on the I-275 and SR 60 mainline/ramp were caused by drivers exiting their vehicles following a crash, road rage incidents, or suspected drug or alcohol use. There were three pedestrian-related fatalities, one each on the I-275 mainline and ramp and one on the SR 60 mainline, within the study limits.

52 bicycle crashes occurred between 2013-2017 within the study limits. One bicycle-related crash occurred on the I-275 mainline, and the remaining crashes occurred at ramp terminals (12 crashes) and intersections (39 crashes). The crash that occurred on the I-275 mainline was due to a bicyclist illegally traveling along the Howard Frankland Bridge's paved shoulder and resulted in a fatality.

The predominant crash type was found to be rear-end crashes (59 percent). Rear-end crashes occurring within the peak periods of traffic flow are associated with heavy congestion and high vehicular densities. The high frequency of rear-end crashes can be attributed to the reduced spacing between vehicles and driver behavior, such as distracted driving during peak period congestion. Sideswipe crashes (15 percent) were the second most common crash type, followed closely by other crashes. Crashes categorized as 'other' mainly were collisions with concrete traffic barriers that indicate vehicles departing their travel lanes. Side-swipe crashes can be attributed partly to vehicles entering or exiting the mainline interstate roads. However, most of the side-swipe crashes occurred as vehicles changed lanes. These cases can be attributed to congestion as drivers tend to switch lanes frequently, attempting to avoid slower-moving lanes.

The historical five-year average number of crashes was 1580 crashes per year within the study limits. The year 2017 has the highest number of crashes that exceeds the study area average crashes by 12 percent. The time of the day analysis shows that the most crashes occurred during the AM (8:00 - 12:00), mid-day (12:00 - 16:00), and PM (16:00 - 20:00) peak periods. Also, 3 percent of the total crashes involved intoxication. Approximately 73 percent and 21 percent of the total crashes occurred during daylight and dark condition, respectively. In addition, 14 percent of the crashes occurred on a wet roadway surface condition.

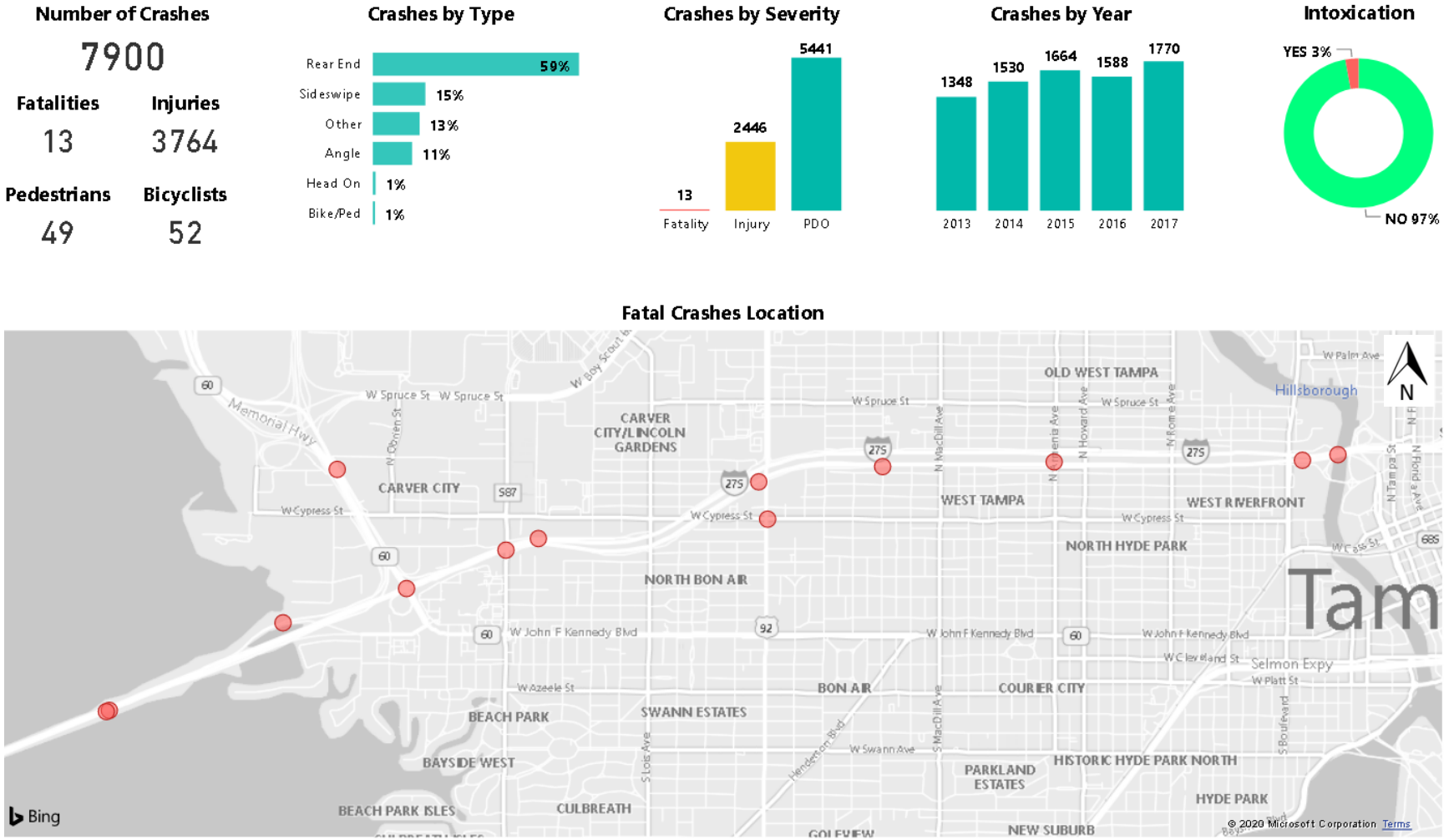
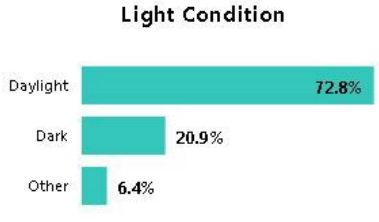
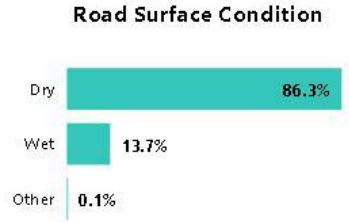


Figure 12: Overall Crash Summary (Part I) -2013-2017

Crashes by Time of Day

Time of Day	1. Mon	2. Tue	3. Wed	4. Thu	5. Fri	6. Sat	7. Sun
1. 00:00-4:00	28	22	37	39	69	125	102
2. 4:00-8:00	154	150	128	150	129	67	57
3. 8:00-12:00	229	248	237	223	226	158	81
4. 12:00-16:00	243	236	275	295	333	261	209
5. 16:00-20:00	350	431	465	432	455	296	268
6. 20:00-24:00	58	91	107	85	121	141	89





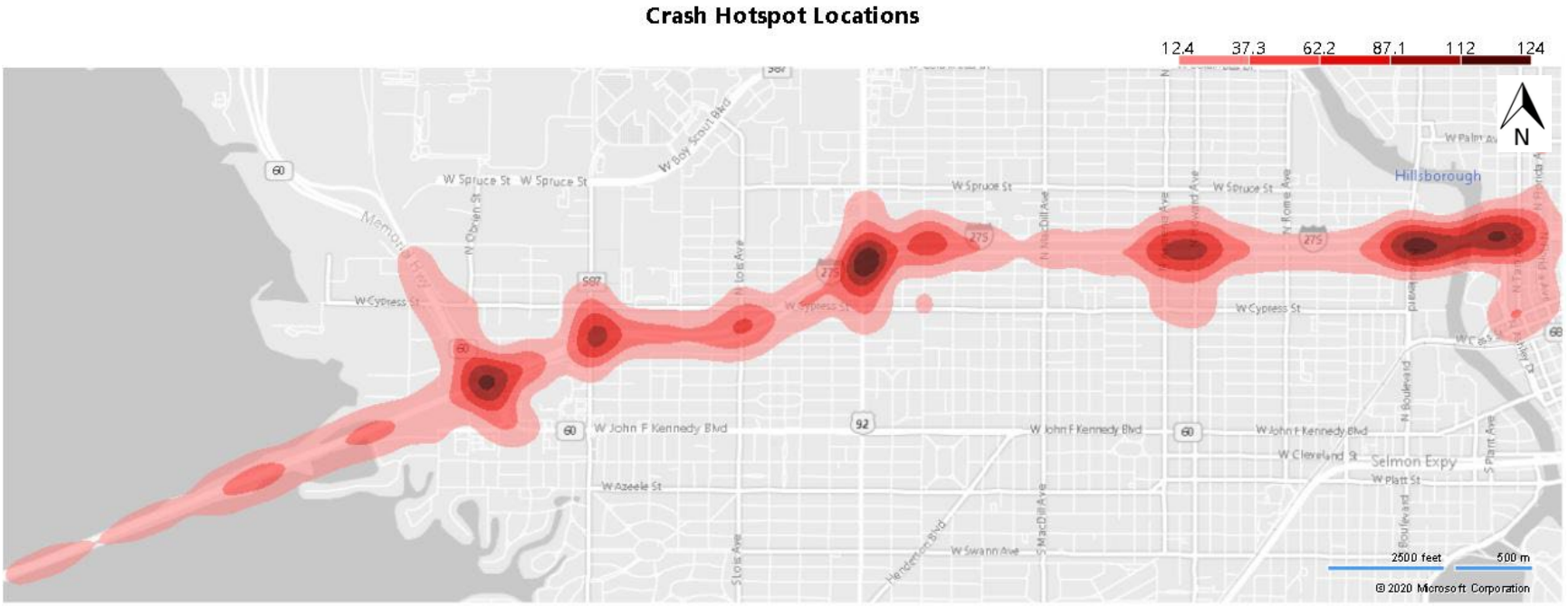


Figure 13: Overall Crash Summary (Part II) - 2013-2017

4.5.1 I-275 Mainline Crash Analysis

The I-275 corridor was divided into 12 segments for the northbound direction and 12 segments for the southbound direction to summarize crashes along I-275 within the study limits. The segments were chosen based on FDOT's Straight Line Diagrams (SLDs) for the corridor. The milepost listed on the SLD for the beginning, or the end of a ramp was used to set the limits. **Figures 14** and **15** show the total crashes, crash rates, crashes by type, and crashes by severity for each segment of northbound and southbound I-275, respectively. The majority of the northbound (11 out of 12 segments) segments and southbound (10 out of 12 segments) segments exceeds the statewide average crash rate of 0.976 per million vehicle miles traveled. The crashes are generally focused on interchanges in the merge and diverge areas of the ramps. With the increase in traffic in the future years, the crash rates are likely to increase further. Additionally, the rear-end crashes appeared to be the predominant type of crashes, followed by sideswipe and other crashes for most segments along northbound and southbound I-275.

4.5.2 SR 60 Crash Analysis

There were 379 crashes located along SR 60 within the study limits. There was 1 (0.3 percent) fatal crash, 123 (32 percent) injury crashes, and 255 (67 percent) property damage only crashes. The most prevalent crash types on SR 60 were rear-end (60 percent), sideswipe (20 percent), and hit a fixed object (12 percent) crash. The number of crashes increased from 42 in 2013 to 140 in 2017, a 233 percent increase. **Figure 16** shows the crash severity and crash type along SR 60.

4.5.3 I-275 Ramp Crash Analysis

Figure 17 shows the distribution of ramp crashes at interchanges along northbound and southbound I-275. In the northbound direction, the interchange with the highest number of ramp crashes was at the I-275 and SR 60/Kennedy Boulevard interchange, with 231 crashes. In the southbound direction, the interchange with the highest number of ramp crashes was at the downtown Tampa interchange with 105. Most crashes On-Ramps were rear end (58 percent), hit a fixed object (17 percent), and sideswipe (15 percent) crashes. Ramp crashes are primarily caused by vehicles slowing down and having other vehicles hit them from behind due to the change in speed or swerving to avoid slowing traffic and hitting either a fixed object or another vehicle.

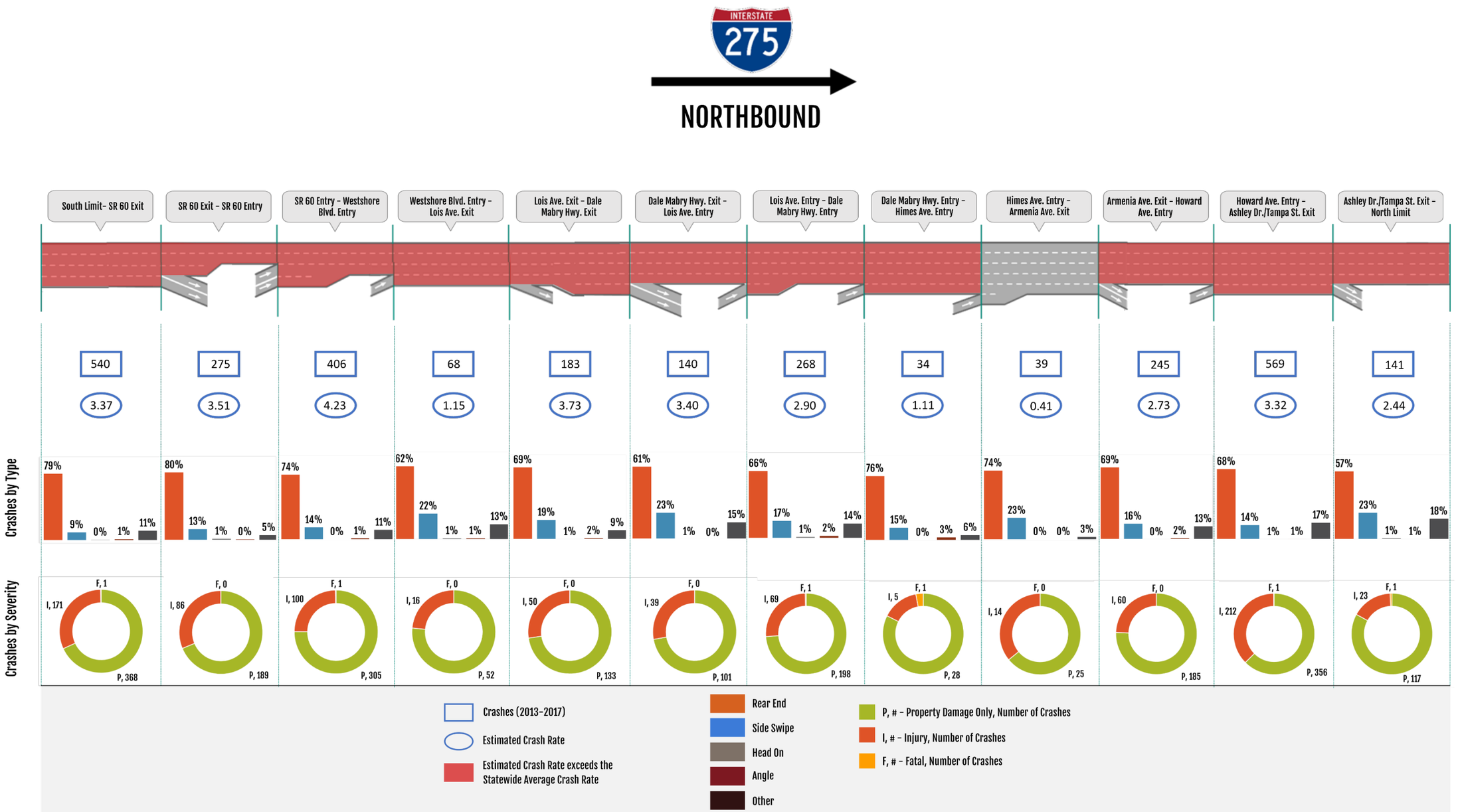


Figure 14: Crash Summary (2013-2017) – I-275 Northbound

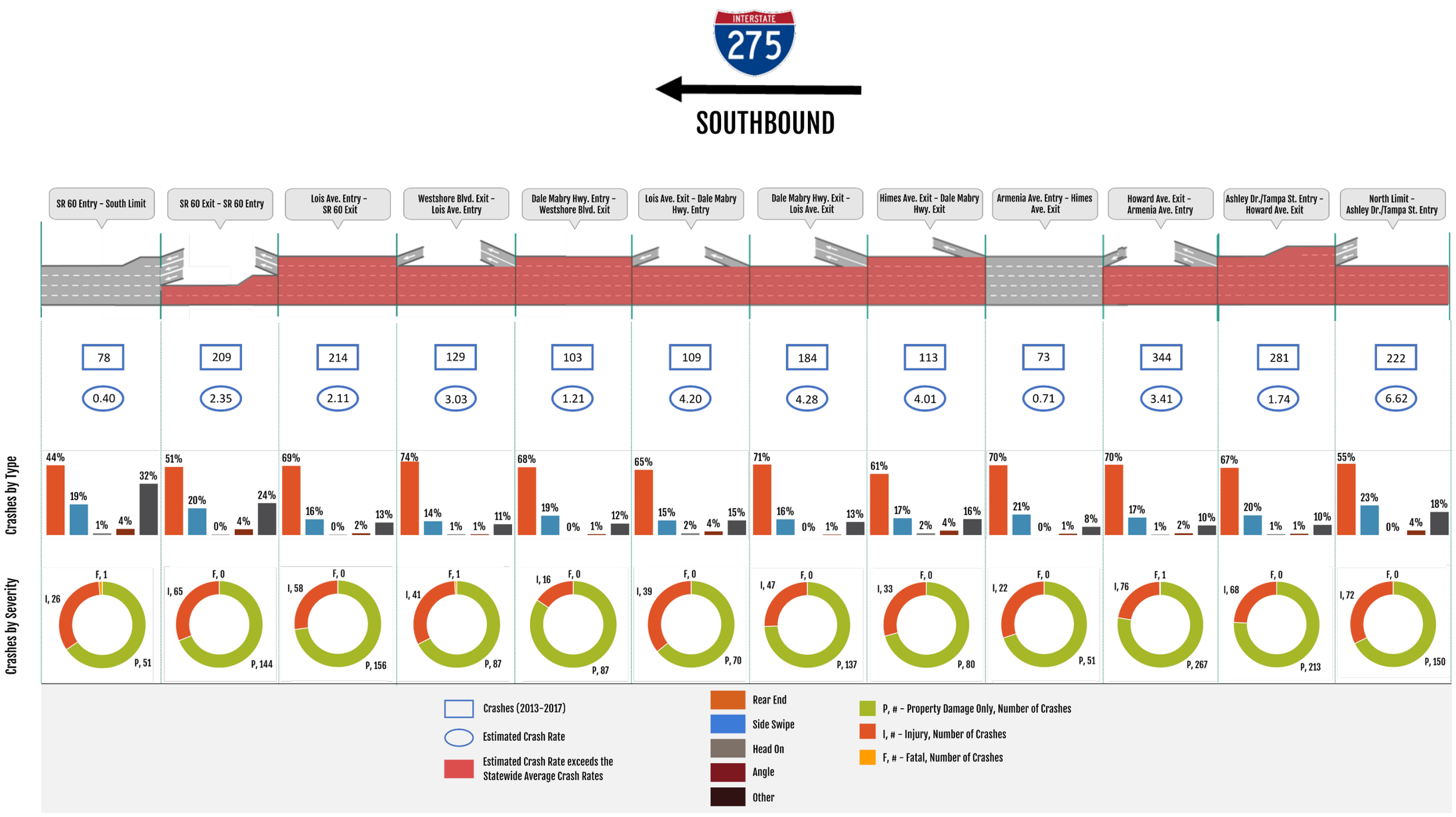
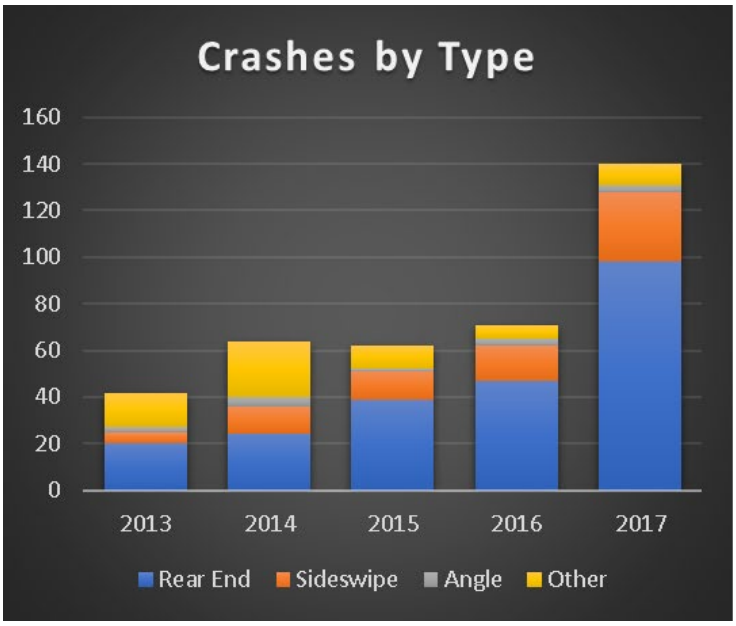


Figure 15: Crash Summary (2013-2017) – I-275 Southbound



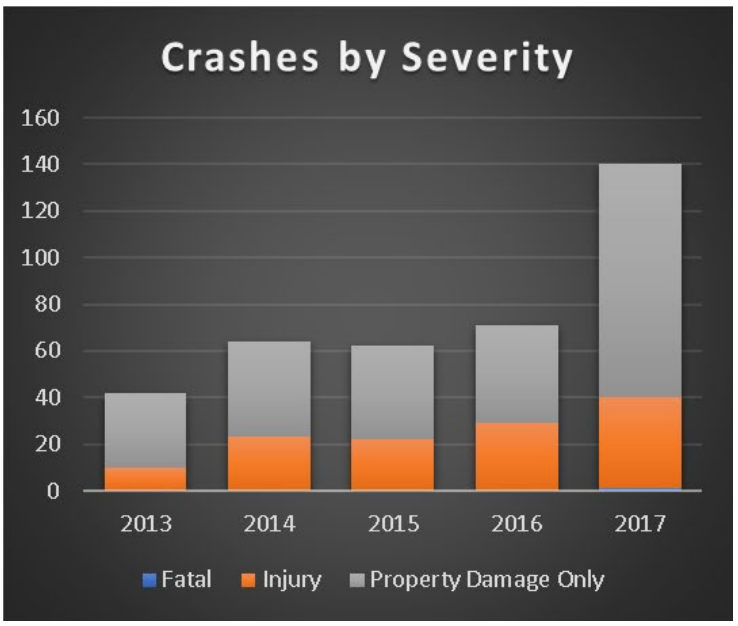
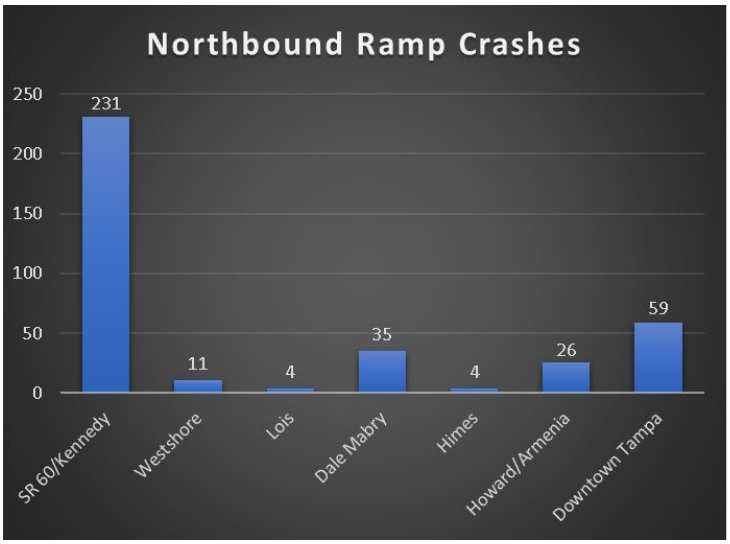


Figure 16: Crash Type and Severity (2013-2017) – SR 60



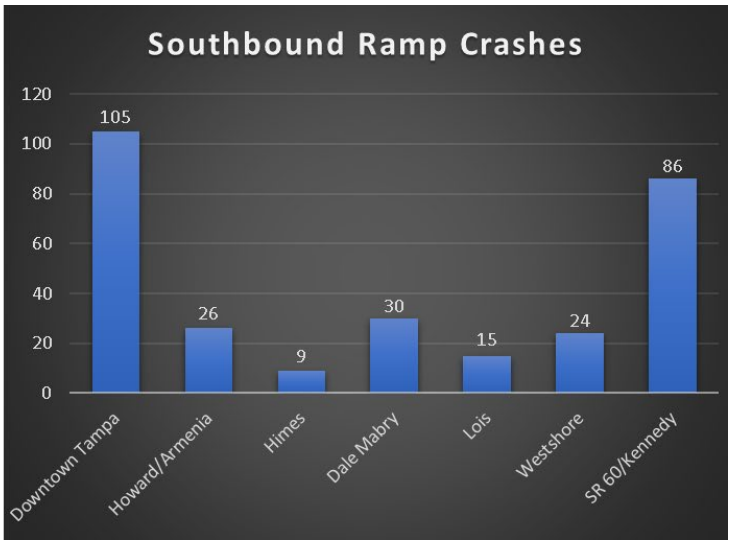


Figure 17: Ramp Crashes (2013-2017)

4.5.4 Ramp Terminal Crash Analysis

787 crashes occurred at ramp terminals within the study limits. There was one fatal (0.1 percent) crash, 292 (37 percent) injury crashes, and 494 (63 percent) property damage only crashes. The most prevalent crash types at ramp terminals were rear end (36 percent), angle (34 percent), and sideswipe (11 percent) crashes. **Figure 18** shows the crashes that occurred at ramp terminals. The Howard/Armenia Avenue ramp terminals had the most crashes, with 240 crashes.

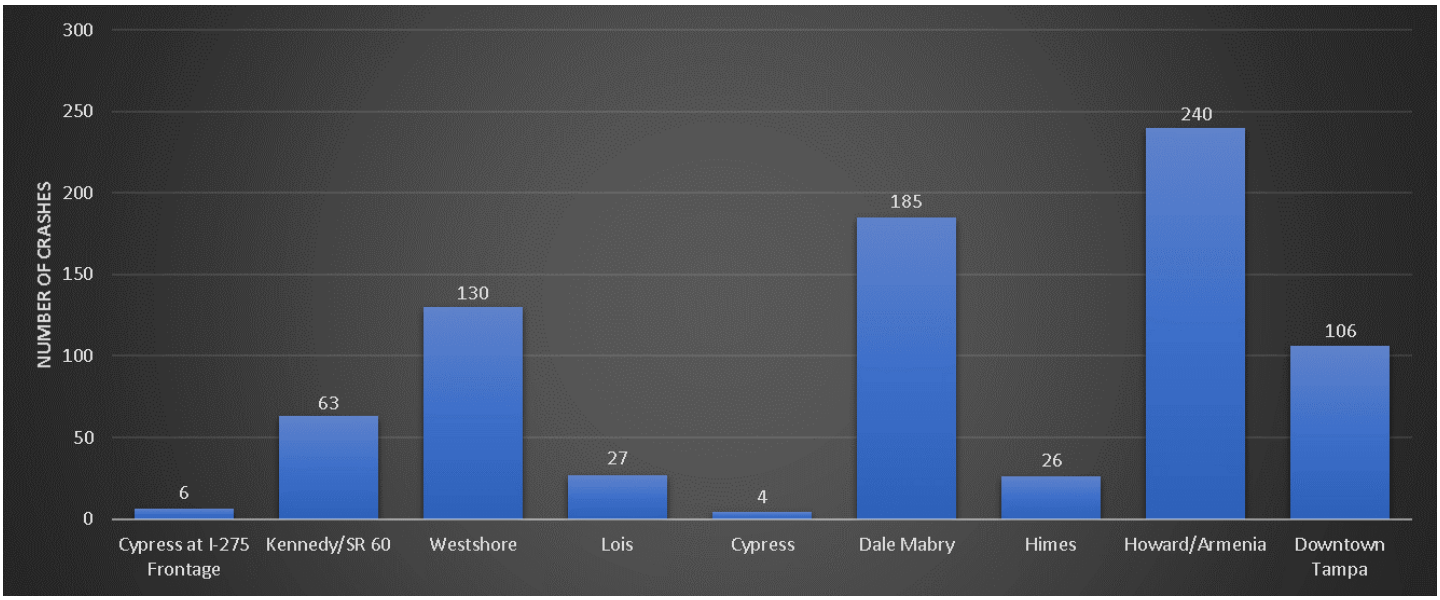


Figure 18: Ramp Terminal Crashes (2013-2017)

4.5.5 Intersection Crash Analysis

1,102 crashes occurred at intersections within the study limits. There was 1 (0.2 percent) fatal crash, 434 (39 percent) injury crashes, and 667 (61 percent) property damage only crashes. The most prevalent crash types at intersections were angle (36 percent), rear-end (30 percent), and sideswipe (12 percent) crashes. **Figure 19** shows the top five intersections with the most crashes. The intersections of Westshore Boulevard at Cypress Boulevard and Dale Mabry Highway at Cypress Boulevard had the most crashes, with 104 crashes.

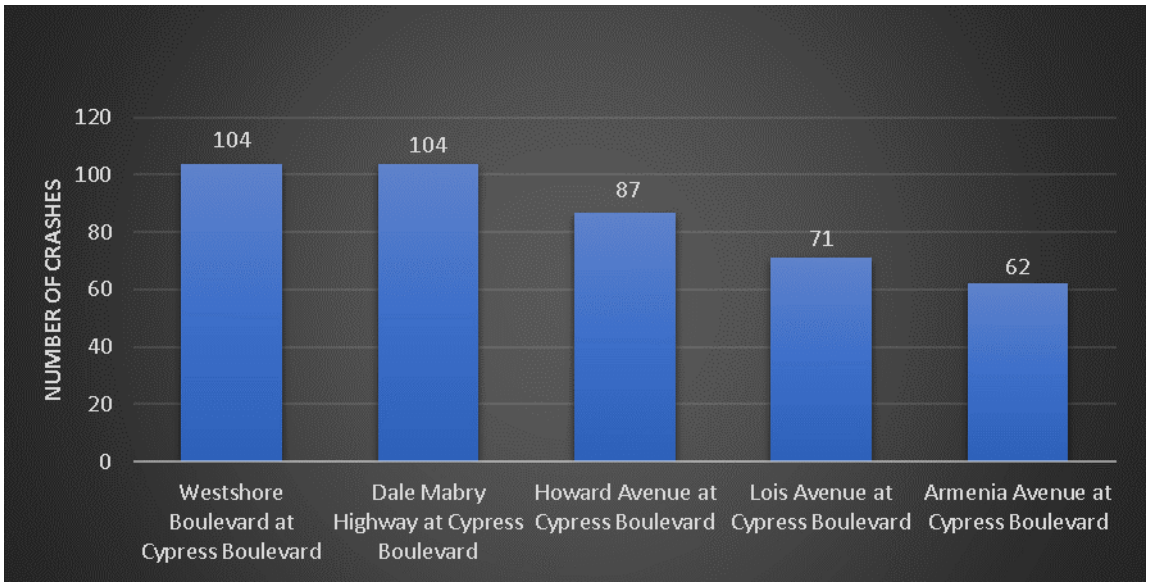


Figure 19: Intersection Crashes (2013-2017)

4.5.6 Economic Loss Due to Crashes

The economic loss due to crashes is summarized in **Table 6**. The economic costs due to crashes were based on Table 122.6.2 of the FDOT Design Manual (FDM). The total economic loss due to 7900 crashes for the analysis years from 2013 through 2017 was estimated to be $613,945,052.

Table 6: Economic Loss Due to Crashes

Crash Severity	Crashes	Comprehensive Crash Cost	Economic Loss
Fatal	13	$10,670,000	$138,710,000
Severe Injury (Incapacitating)	163	$872,612	$142,235,756
Moderate Injury (Non-Incapacitating)	717	$174,018	$124,770,906
Minor Injury (Possible Injury)	1,566	$106,215	$166,332,690
Property Damage Only	5,441	$7,700	$41,895,700
Total	**7,900**		**$613,945,052**

Note - Source: Florida Department of Transportation State Safety Office's Crash Analysis Reporting (CAR) System, analysis years 2013 through 2017.

5 DESCRIPTION OF ALTERNATIVES

5.1 NO-BUILD ALTERNATIVE

This alternative considers existing roadway conditions, including any planned or programmed projects anticipated to be constructed within the study area funded in the FDOT Work Program and City of Tampa's Capital Improvement Program (CIP).

Three projects, including the "Punch Through" project representing the TSM&O Alternative, will be completed by the Opening Year, and included in the No-Build Alternative. These projects are described in **Table 7**.

Table 7: On-going Projects

WPID	Project
422904-4	I-275 (Howard Frankland Bridge) from N of Howard Frankland to S of SR 60
441111-1	I-275 Operational Improvements from West of Memorial Highway (SR 60) to Dale Mabry Highway (SR 600)
442552-1	SR 60 Operational Improvements at SR 589 (Veterans Expressway)

5.2 BUILD ALTERNATIVE

The Build Alternative included in the 2020 I-275 SEIS PTAR is considered the Preferred Build Alternative for this SIMR. The Preferred Build Alternative mainly consists of general use lane improvements and two express lanes in each travel direction within the Sections 4 and 5 study limits. The I-275 northbound express lanes end before the Tampa Street/Ashley Drive Off-Ramp. The I-275 southbound express lanes begin south of Tampa Street/Ashley Drive interchange and continue through Howard Frankland Bridge into Pinellas County. The operational improvements involve the use of express lanes and access changes between general use and express lanes, expansion of I-275 from Howard Frankland Bridge (HFB) to the south of SR 60 to accommodate express lanes along I- 275, and local street improvements, including the relocation of Lemon Street, the extension of Occident Street, modified Trask Street ramp connections, Reo Street extension to Kennedy Boulevard providing connection to the southbound I-275 Ramp, Sherrill Street is being shortened, and Executive Drive has intersection modifications at Reo Street. Additionally, Himes Avenue is connected to express lanes (direct connect from northbound express lanes and direct connect to southbound express lanes). Moreover, the SR 60/Kennedy Boulevard/Memorial Highway improvements (WPID: 447976-2) are included in the Build Alternative. The Build Alternative's concept plan and signing plan are provided in **Appendix H.**

6 FUTURE YEARS TRAFFIC FORECASTING

A Project Traffic Analysis Report (PTAR) for Sections 4, 5, and 6 was prepared in November of 2019 in support of the Tampa Interstate Study (TIS) Supplemental Environmental Impact Statement (SEIS) performed under the National Environmental Policy Act (NEPA). The SEIS study was to determine the Preferred Alternative and resulting traffic impacts for improving the interstate system within the Tampa Bay region, including I-275 and I-4. This SIMR study for Sections 4 and 5 limits is the continuation of the SEIS study. Sections 4 and 5 study limits extend from the north end of the Howard Frankland Bridge to North Ashley Drive/Tampa Street along I-275 and south of I-275 to north of Cypress Street along SR 60.

6.1 SELECTED TRAVEL DEMAND MODEL

The Tampa Bay Regional Planning Model (TBRPM) version 8.1 was utilized to develop future year daily and peak hour traffic projections within the study area. The TBRPM model is based on the Florida Standard Urban Transportation Modeling Structure (FSUTMS) and is recognized by FDOT District Seven, FDOT Central Office, Hillsborough County MPO, Forward Pinellas, Pasco County MPO, and Hernando / Citrus MPO as an acceptable travel demand forecasting tool which has been used to develop design traffic for several recent public projects. This version of the TBRPM model with Base Year 2010 and Cost Feasible Year 2040 is used for volume projections.

The TBRPM v8.1 model process is identified as the traditional "four-step model" including trip generation, trip distribution, mode choice, and trip assignment. The four steps use the socioeconomic data and transportation network in the study area as major inputs to estimate the number of trips generated and then assign the trips to the transportation facilities. The TBRPM v8.1 is a Time-of-Day (TOD) model that estimates the daily trips for the region. Through the Trip Generation model process, the daily trips are subdivided into Peak and Off-Peak trips for distribution through the mode choice modules. In the last step, trip assignment, the trips are assigned based on four time periods:

- AM Peak Period – 6:30 AM to 9:00 AM (2.5 hours)
- Midday Off-Peak Period – 9:00 AM to 3:30 PM (6.5 hours)
- PM Peak Period – 3:30 PM to 6:30 PM (3 hours)
- Evening/Overnight Off-Peak – 6:30 PM to 6:30 AM (12 hours)

A review of the model validation was conducted for the 2010 base year. The review concludes that TBRPM v8.1 provides a valuable tool for developing traffic forecasts for this study.

6.2 BASE YEAR SUB-AREA MODEL CALIBRATION

The Base Year (2010) model was validated at a regional level to ensure that it replicated the study area counts. A sub-area model network was extracted from the validated regional model to calibrate the traffic volumes and sub-area trip tables. The sub-area network includes all the TBNext projects' Sections with roadways in most of Hillsborough and Pinellas Counties and a portion of Manatee County and Pasco County. **Figure 20** provides the extracted network from the 2010 Base Year regional network. The sub-area network and trip tables and the traffic counts provided input for the Origin-Destination Matrix Estimation (ODME) process. Necessary adjustments have been made to the model input, including hourly capacity and free flow speed adjustments. **Table 8** represents a summary of the adjustments made to the sub-area input network. The adjustment process details are documented in Section 2.2.1.2 and Section 3.3 of the "TBRPM v8.1 2010 Base Year Sub-Area Model Calibration for TBNext Projects, May 2018" report.

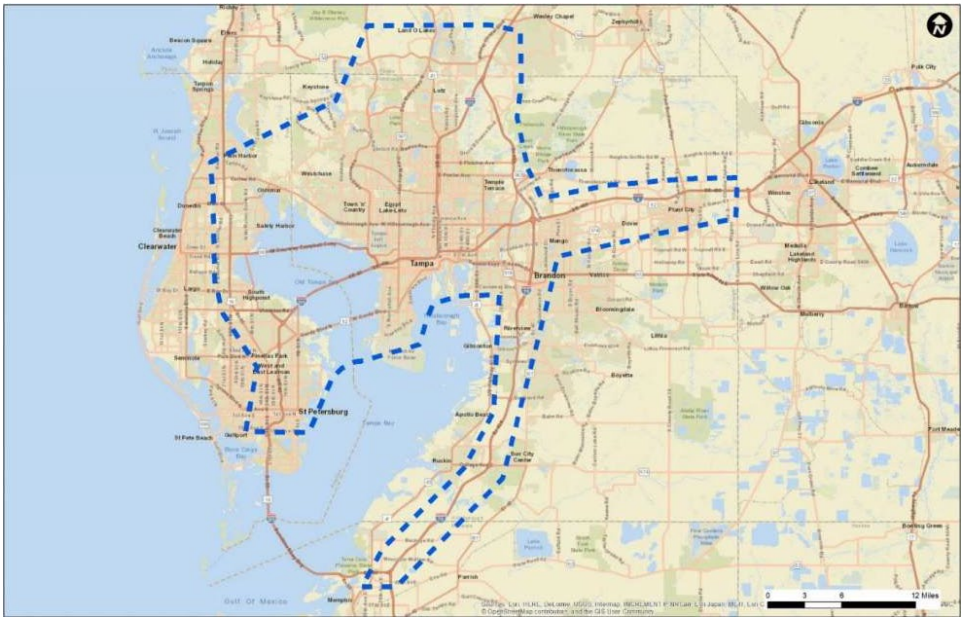


Figure 20: Sub-area Model Coverage Area

The ODME process helped to refine the sub-area and corridor level travel demand. The 2010 Base Year volumes correspond well to observed data, and the majority of the mainline volumes are within the targeted ranges. It provided a good base year model for future year travel demand forecasts.

Table 8: Sub-Area Model Adjustments

Corridor	Segment	Model Inputs	Original Model	Adjusted in Sub-Area Model
I-275	From US 92 to I-4	Hourly Capacity (vehicle per hour per lane)	2,300-2,400	2,000-2,100
I-275	From US 92 to I-4	Free Flow Speed (miles per hour)	50	55
I-4	From I-275 to N 54th St	Hourly Capacity (vehicle per hour per lane)	2,300-2,400	2,000-2,100
		Free Flow Speed (miles per hour)	50	55
I-75	From E Fletcher Ave to I-4	Free Flow Speed (miles per hour)	50	55

Table 9 summarizes the Percent Root Mean Square Error (RMSE) for all the 2010 traffic count locations within the sub-area from the model outputs before and after the ODME process. The percent RMSE is a measure of the average deviation between the actual counts and model assigned volumes. It is one of the indicators to illustrate how closely the model volumes match the observed traffic counts. Details on the sub-area ODME process have been documented in Section 3.4 of the "TBRPM v8.1 2010 Base Year Sub-Area Model Calibration for TBNEXT Projects, May 2018" report, including the

following additional measures. Approximately 88% of the freeway mainline locations in the sub-area model predicts traffic volumes within the acceptable deviation of +/- 7 percent from the observed counts. The rest of the mainline locations are close to the counts as well, with the maximum acceptable deviation of 12 percent. Approximately 50 percent of the ramp locations predict the volumes within the acceptable deviation of +/- 20 percent from the observed counts.

- 2010 Base Year Sub Area Model Volume to Count Comparison by Volume Groups
- 2010 Base Year Sub Area Model Volume to Count Comparison for Freeway Segments
- 2010 Base Year Sub Area Model Volume to Count Comparison for Ramps
- 2010 Base Year Sub Area Model Volume to Count Comparison for All Traffic Count Locations

Table 9: 2010 Base Year Sub-Area Model Volume Group Percent RMSE

Volume Group	Number of Count Locations	% RMSE (Pre ODME)	% RMSE (Post ODME)
<5,000	193	115%	105%
5,000-10,000	260	64%	56%
10,000-20,000	275	40%	39%
20,000-30,000	118	28%	28%
30,000-40,000	105	23%	23%
40,000-50,000	68	21%	20%
>50,000	147	12%	10%
Total	**1,166**	**27%**	**24%**

6.3 NO-BUILD VOLUMES

No-Build Alternative considers existing roadway geometry and any planned or programmed projects anticipated to be constructed within the study area funded in the FDOT Work program and City of Tampa's Capital Improvement Program (CIP). Three projects, "I-275 (Howard Frankland Bridge) from N of Howard Frankland Bridge to S of SR 60 (WPID – 422904-4)", "I-275 Operational Improvements from West of Memorial Highway (SR 60) to Dale Mabry Highway (SR 600) (WPID – 441111-1)", and “SR 60 Operational Improvements at SR 589 (Veterans Expressway) (WPID – 442552-1)”, are included in the No-Build Alternative.

The base year calibration parameters were carried over to 2025 and 2045 No-Build TBPRM and sub-area ODME models. The models provide Peak Season Weekly Average Daily Traffic (PSWADT) volumes for the next steps. Model Output Conversion Factors (MOCFs) are applied to convert PSWADT to Average Annual Daily Traffic (AADTs) for Base Year 2010, Future Year 2025, and 2045. The National Cooperative Highway Research Program (NCHRP) report 765 recommended the "Factoring Procedure-Difference Method" approach was utilized to correct the error associated with regional model projected volumes. Following this procedure, the Existing Year (2018) AADTs were interpolated from the base year and future year TBRPM models. These values were compared to the existing traffic count (the year 2018 count data), and the difference (delta) was calculated. This delta was applied to the future year 2025 and 2045 TBRPM model AADT values to correct the model's error and make sure growth rates are reasonable. The delta adjusted the year 2025 and 2045 AADTs were balanced along the mainline by matching the AADT near Section 7 overlap (North of Martin Luther King Junior Boulevard) and using the TBRPM model ramps AADTs within SEIS limits.

After the AADTs were established, the K- and D-factors recommended for the project were applied to the ramps to calculate the demand on each ramp in the AM and PM peak according to the existing peak direction. Using the Section 7 match line as a reference point, AM and PM mainline demands were matched to Section 7 mainline demands for 2025 and 2045 and were balanced with the ramp demands developed above.

At boundary locations along I-4 and I-275 south of SR 60, DDHV targets were estimated based on the AADT, K, and D factors for each peak hour. The ramp volumes were revised to achieve the DDHV targets at the above boundary locations. The ramp terminal intersections were balanced using the on-/off-ramp demand values and existing turn percentages.

The No-Build AADTs for Opening Year (2025) and Design Year (2045) are shown in **Figure 21**. The Opening Year (2025) and Design Year (2045) DDHV's for the No-Build Alternative is presented in **Figures 22** and **23**, respectively. The detailed volume diagrams are presented in **Appendix I.**

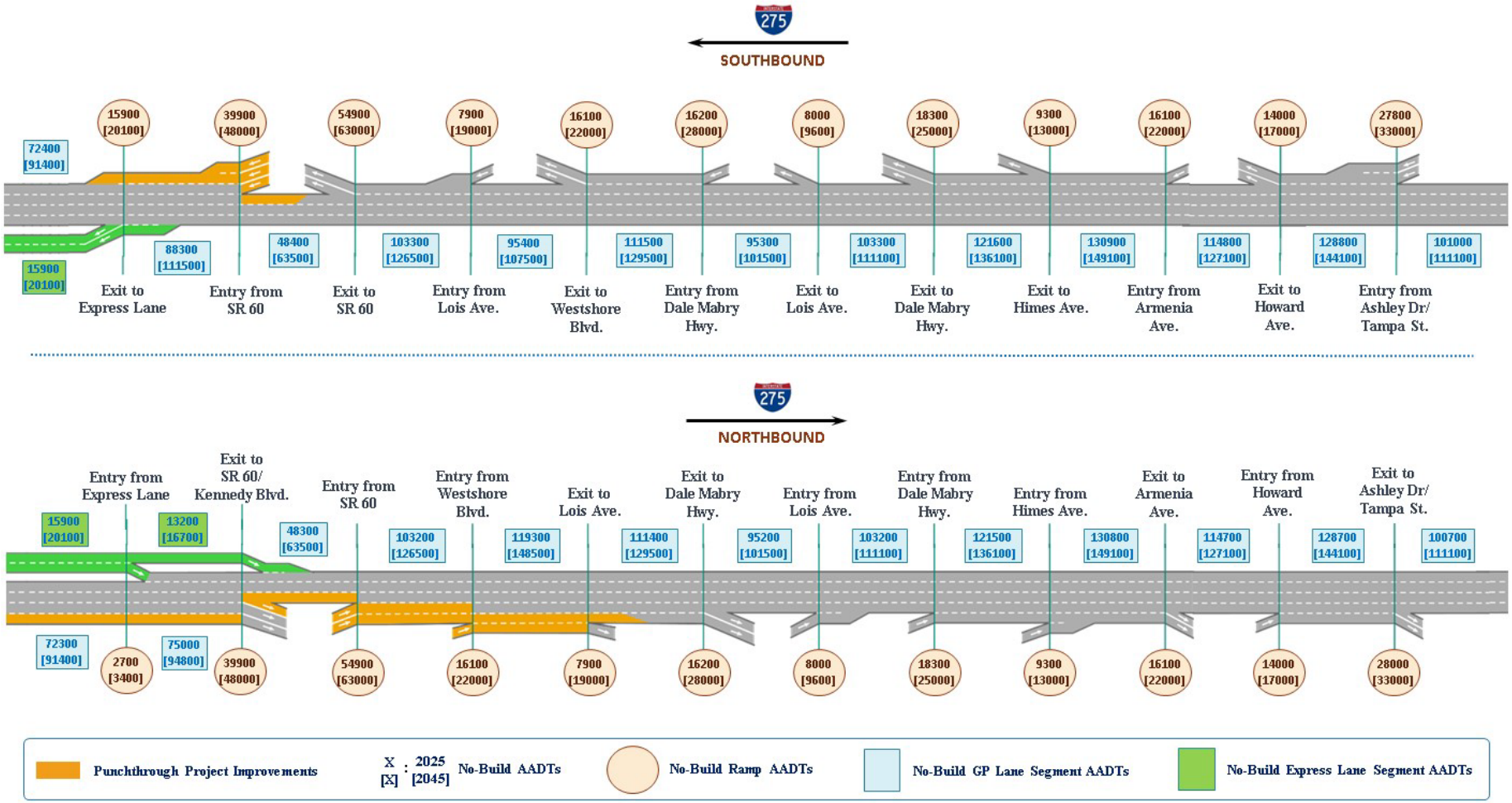


Figure 21: No-Build AADTs – Opening Year (2025) and Design Year (2045)

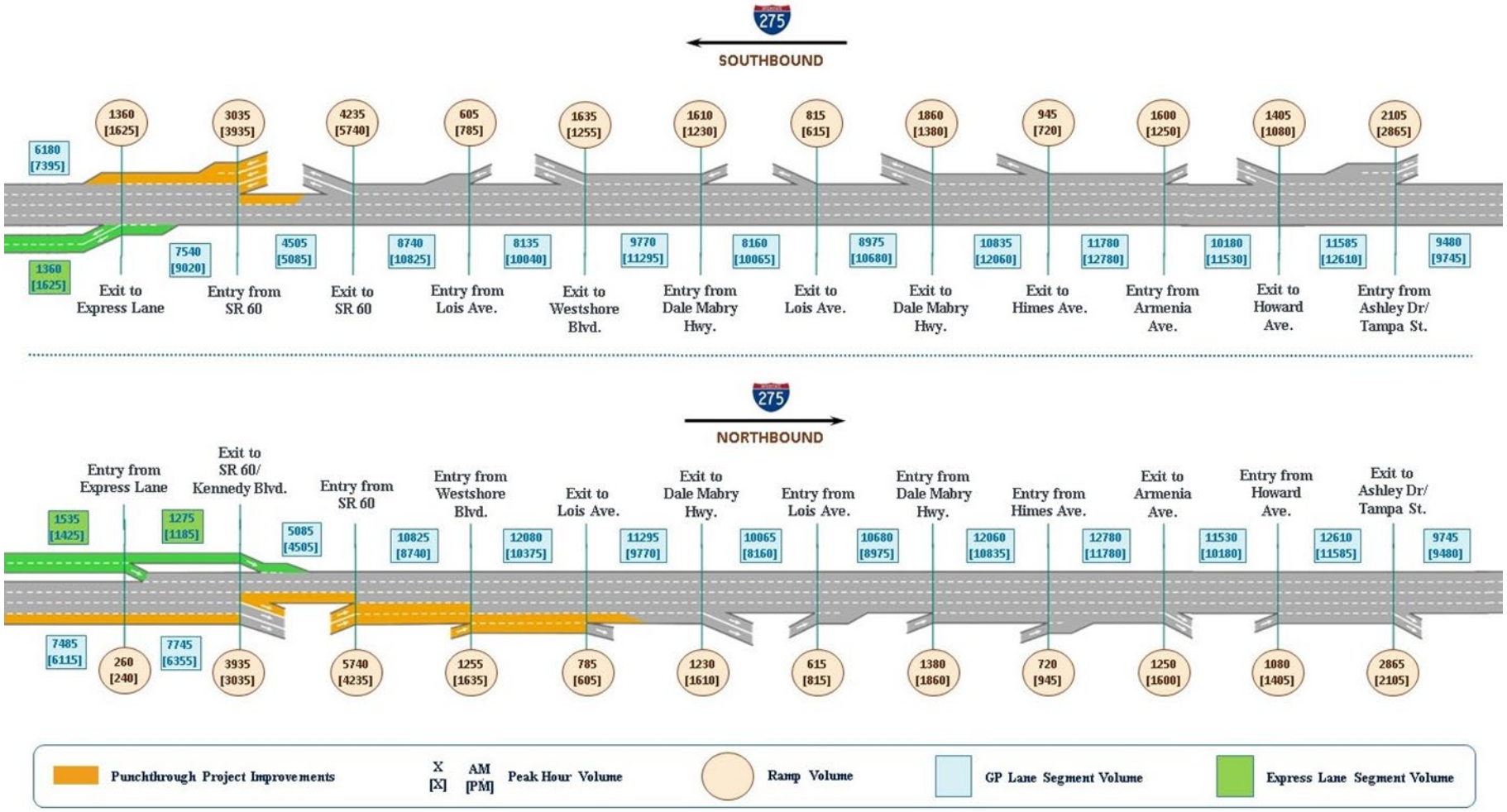


Figure 22: No-Build DDHVs – Opening Year (2025)

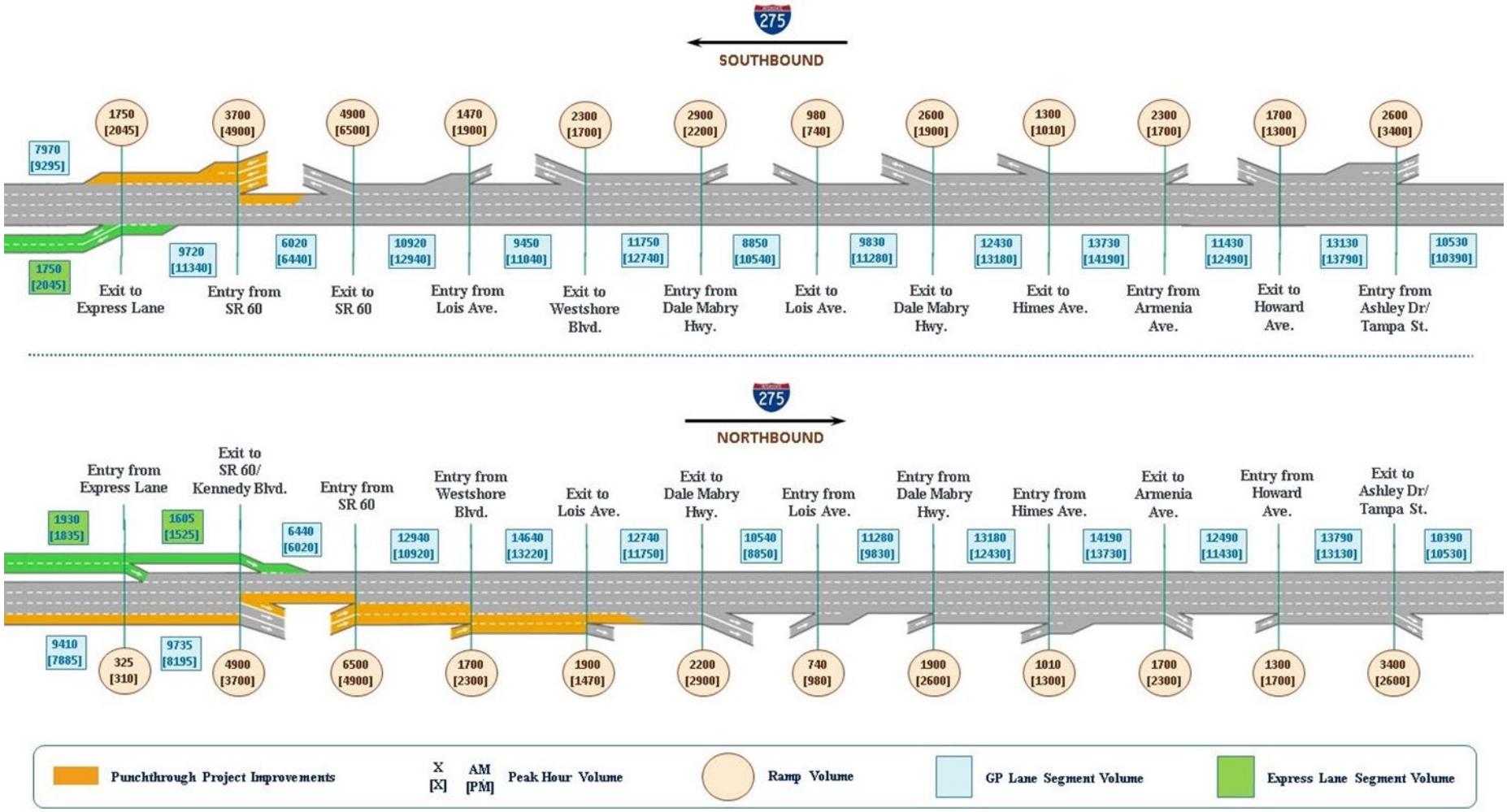


Figure 23: No-Build DDHVs – Design Year (2045)

6.4 BUILD VOLUMES

The traffic volumes for the SIMR were obtained from the approved SEIS PTAR. The SEIS PTAR segments include Sections 4, 5, and 6. The build volumes were developed using the Express Lanes Time of Day (ELToD) v2.3 model. The 2045 ODME sub-area models, including input network, refined trip tables, and associated parameters developed in the previous steps, were used as a base to establish the ELToD models. A corridor level input network was extracted from the ODME sub-area model, as shown in **Figure 24**.

ELToD model analysis was performed under the guidance and review of Florida's Turnpike and its consultant. The model was enhanced during the calibration to include 1) additional directional parameters to support the hourly distributions for each corridor/section, and 2) directional parameters for toll segments were identified using the maximum distance.

The original ELToDv2.3 model includes a directional link file for the model to assign the hourly percent traffic distribution. The directional link file contains link identifications (link A and B nodes) and four-link directions (i.e., north, south, east, or west). This file is used as an indicator for the model to assign hourly distribution percentages to each express lane link. For example, suppose a bi-directional corridor runs from east to west. In that case, all the links along the westbound are assigned to a link direction value (i.e., 1), and all eastbound links are assigned to a different link direction value (i.e., 2). Links then will use the corresponding hourly distribution percentages for each direction. The methodology functions well when the study corridors are relatively simple with a similar hourly distribution. During the development of the ELToD model for this project, it was determined that additional directional indicators should be added due to the complexity of the study network. As indicated in **Figure 24**, the ELToD network included two east-west corridors (I-4 from I-275 Interchange to 50th Street and I-275 from south of SR 60 to I-4) and two north-south corridors (SR 60 from Independence Parkway to I-275 and I-275 from I-4 to Hillsborough Ave) with different hourly distribution and travel patterns. Therefore, two additional direction indicators were added to the directional link file.

The original ELToD model assigns the hourly distribution for each origin or destination zone by the direction of the first link that directly connects to the zone. This methodology works reasonably for one or two corridors with similar directionality. This methodology needed to be improved during the model developed for the project, especially for the origin and destination zones located within the downtown area where all different corridor segments join. The hourly distribution assignment should be robust enough to consider beyond the first link that connects each zone and include a function that scans the entire corridor links and determines the directions that reflect each zone's trips distribution. As a result, the ELToD model scripts for hourly distribution assignments were updated using each direction's maximum link distance.

With the updating of additional directional indicators and hourly distribution assignment by maximum link distance, the ELToD model has enhanced to model the study network's reasonable directionality.

ELToD models provide express lanes and general use lanes volume on an hourly basis (Hours 1 through 24) based on the regional models and ODME. Where necessary, express versus general use splits was utilized from the ELToD output from peak hour volumes for Hour 8 and Hour 17 for AM and PM peak hour traffic operational analysis. A PTAR for I-275 Sections 4, 5, and 6 was prepared and approved in support of the TIS SEIS. The existing traffic volumes, travel demand forecasting, and development of 2025 and 2045 Build alternative traffic volumes were utilized from the approved I-275 SEIS PTAR.

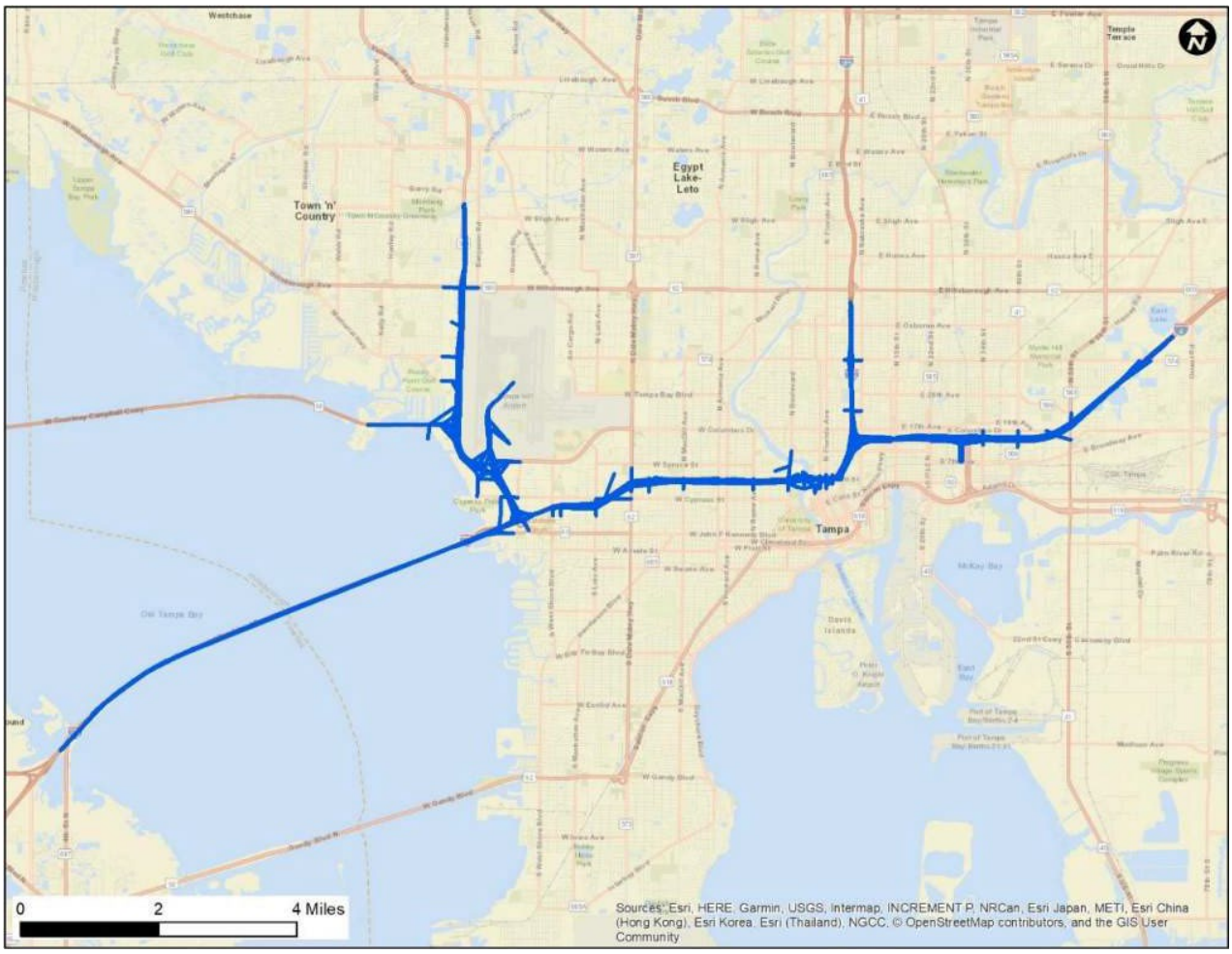


Figure 24: ELToD Model Input Network

The Build Alternative AADTs for Opening Year (2025) and Design Year (2045) are shown in **Figure 25**. The approved K and D factors were utilized to estimate the demand traffic for the Existing Year (2018) and the Design Year (2045). For the Opening Year (2025), the Existing Year (2018) and Design Year (2045) volumes were interpolated to estimate on-ramp and off-ramp volumes. The 2025 volumes were adjusted to match the adjoining Section 7 to the north of Hillsborough Avenue along I-275. Keeping Section 7 and interpolated ramp volumes constant, the mainline segment volumes were balanced by adjusting egress and ingress Express Lane volumes. Due to this process, the I-275 Northbound Express Lane volume is slightly higher in Opening Year (2025) than Design Year (2045) for a few segments, and the Build and No-Build volumes differ at a few locations. **Figures 26** and **27** present the Opening Year (2025) and Design Year (2045) DDHVs for the Preferred Build Alternative. The detailed volume diagrams are presented in **Appendix J**.

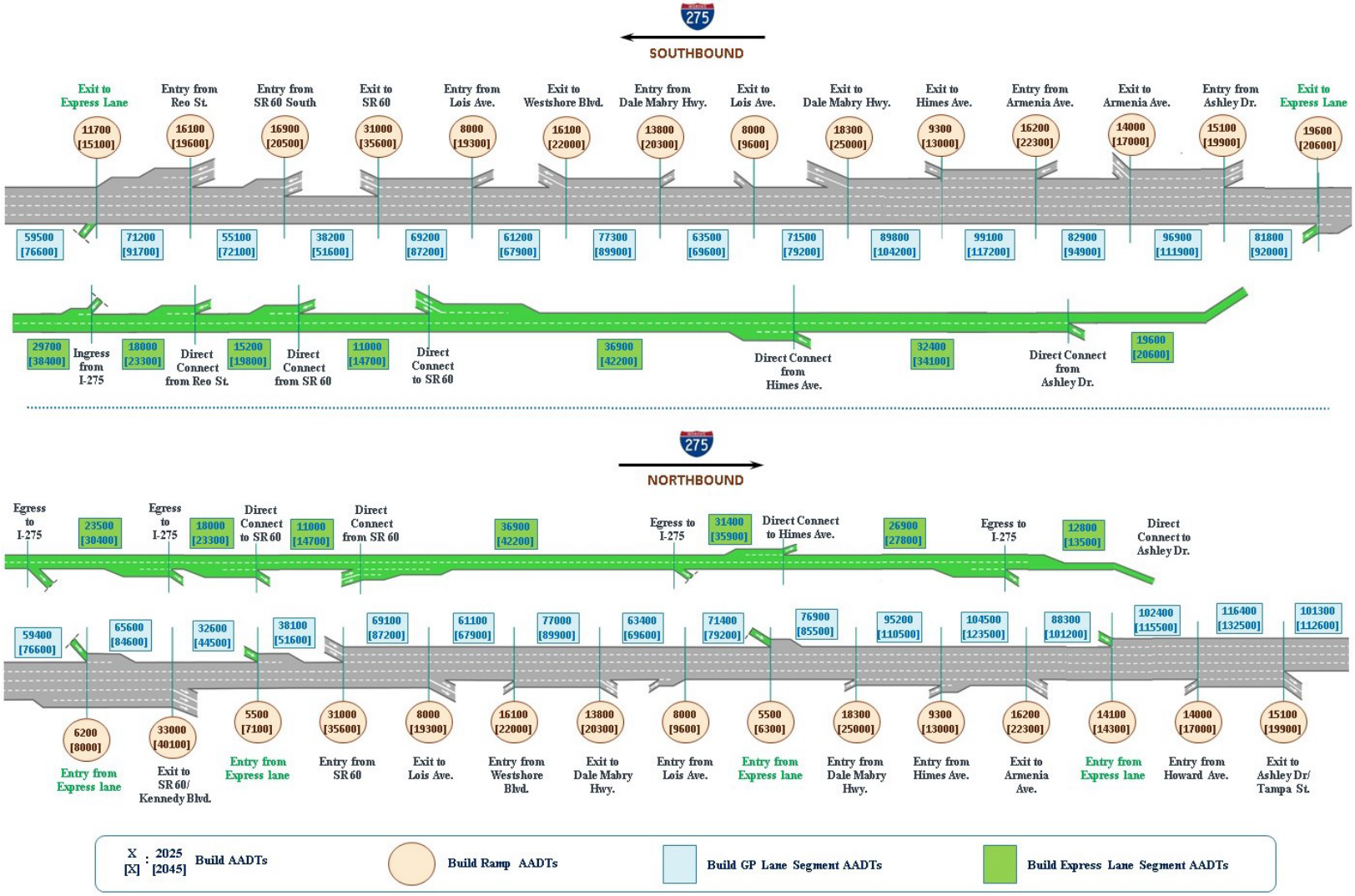


Figure 25: Build Alternative AADTs – Opening Year (2025) and Design Year (2045)

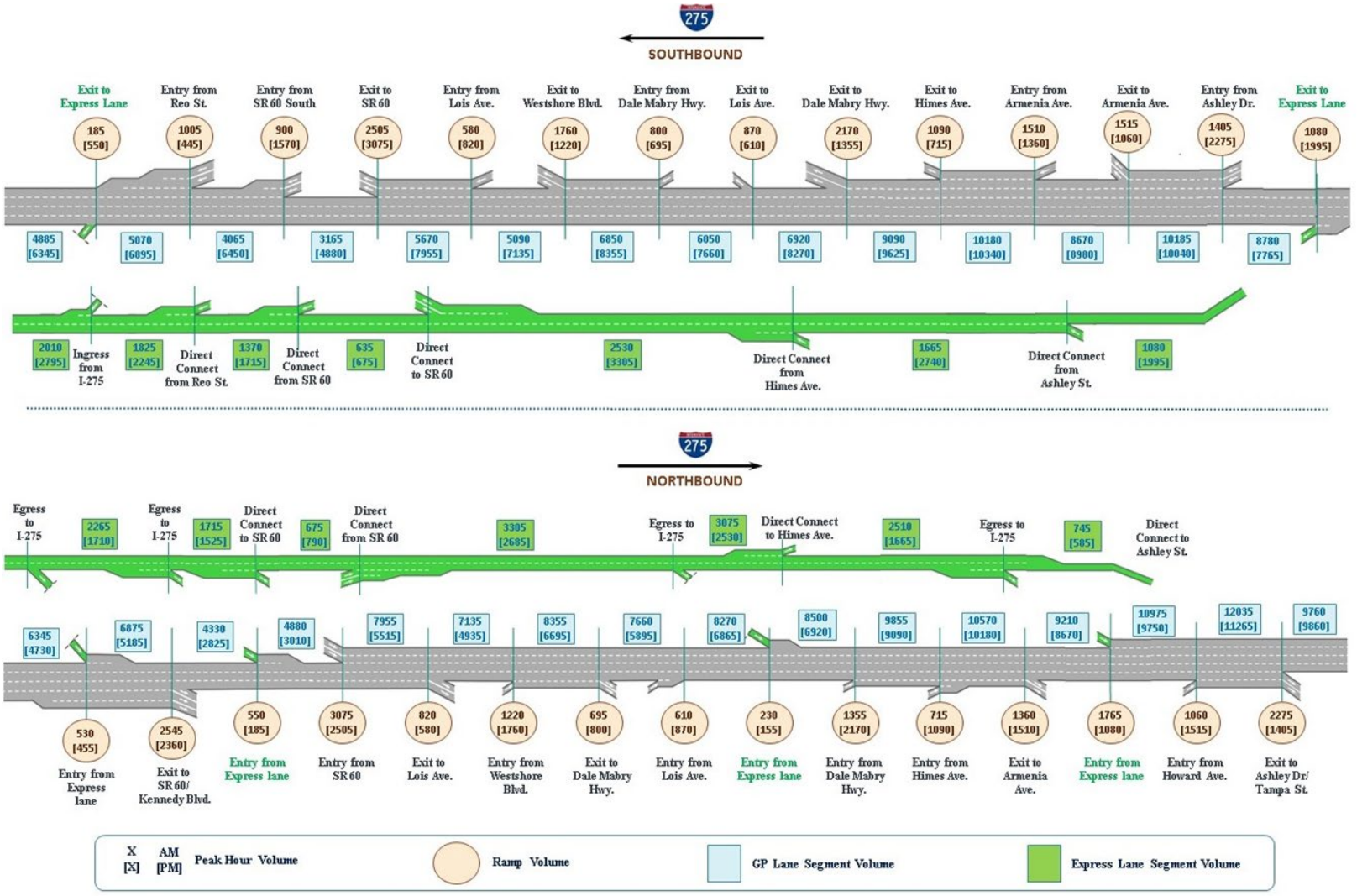


Figure 26: Build Alternative DDHVs – Opening Year (2025)

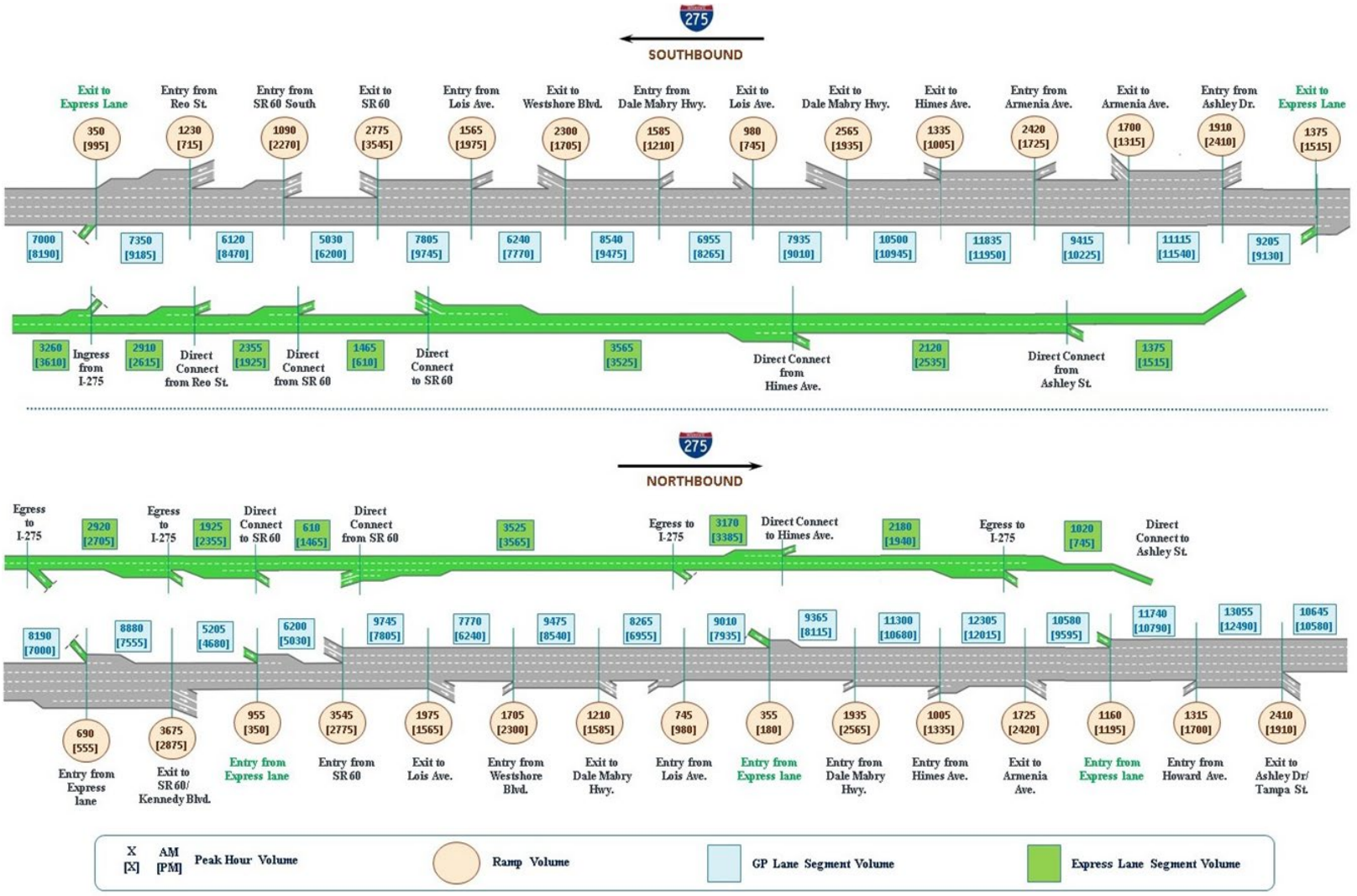


Figure 27: Build Alternative DDHVs – Design Year (2045)

7 FUTURE YEARS OPERATIONAL ANALYSIS

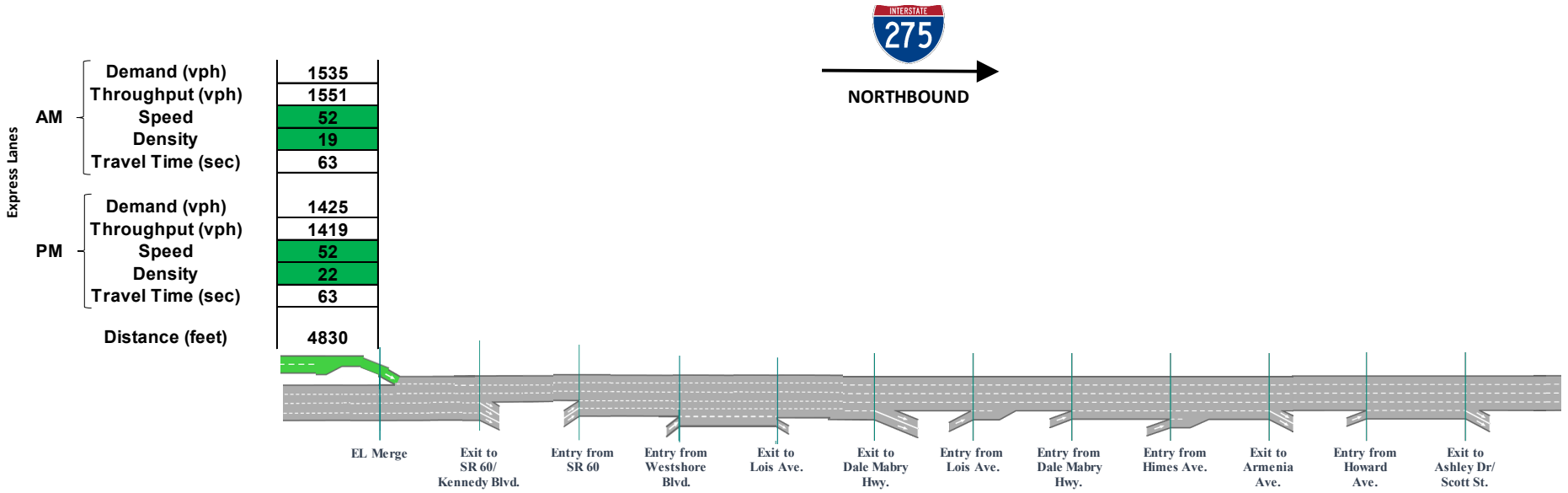
Operational analysis for No-Build and Build Alternatives were performed for Open Year (2025) and Design Year (2045). Segment level demand volume, throughput, density, and speed were reported for the I-275 corridor.

7.1 OPENING YEAR (2025)

7.1.1 No-Build Performance

An average of 10 run results was used to evaluate the study corridor's performance (I-275) for the Opening Year (2025) No-Build Alternative. The throughput, density, speed, and travel time for the I-275 corridor segments are presented in **Figures 28** and **29**. The performance of the study corridor (I-275) during AM and PM peak hours is summarized below.

- With the increase in volumes in the Opening Year (2025), the traffic operations along the study corridor (I-275) will further deteriorate compared to the Existing Year (2018) conditions. Most of the segments will operate at failing conditions during AM and PM peak hours.
- On average, 79 percent and 59 percent of the demand volume was processed along northbound I-275 during AM and PM peak hours, respectively. In comparison, 74 percent and 60 percent of the demand volume was processed along southbound I-275 during AM and PM peak hours, respectively.
- Similar to the Existing Year (2018) conditions, higher delays were observed along I-275 northbound compared to I-275 southbound during AM and PM peak hours.
- High exiting traffic to SR 60 westbound and Kennedy Boulevard Off-Ramp and vehicle slowdowns on the SR 60 westbound flyover ramp are major contributing factors for high delay along I-275 northbound during AM peak hour. However, capacity constraints near the downtown area and I-4 interchange are the major contributing factors for high delays during PM peak hours.
- The I-275 southbound segment north of Howard Avenue Off-Ramp will have severe capacity constraints to accommodate the traffic coming from I-4 westbound, I-275 southbound, and the downtown Tampa area. Therefore, this critical segment fails to operate at acceptable LOS (LOS D or better) in both AM and PM peak hours.
- Due to high exiting traffic, the I-275 southbound between SR 60 westbound Off-Ramp and Dale Mabry Highway On-Ramp will experience moderate congestion in the PM peak hour.

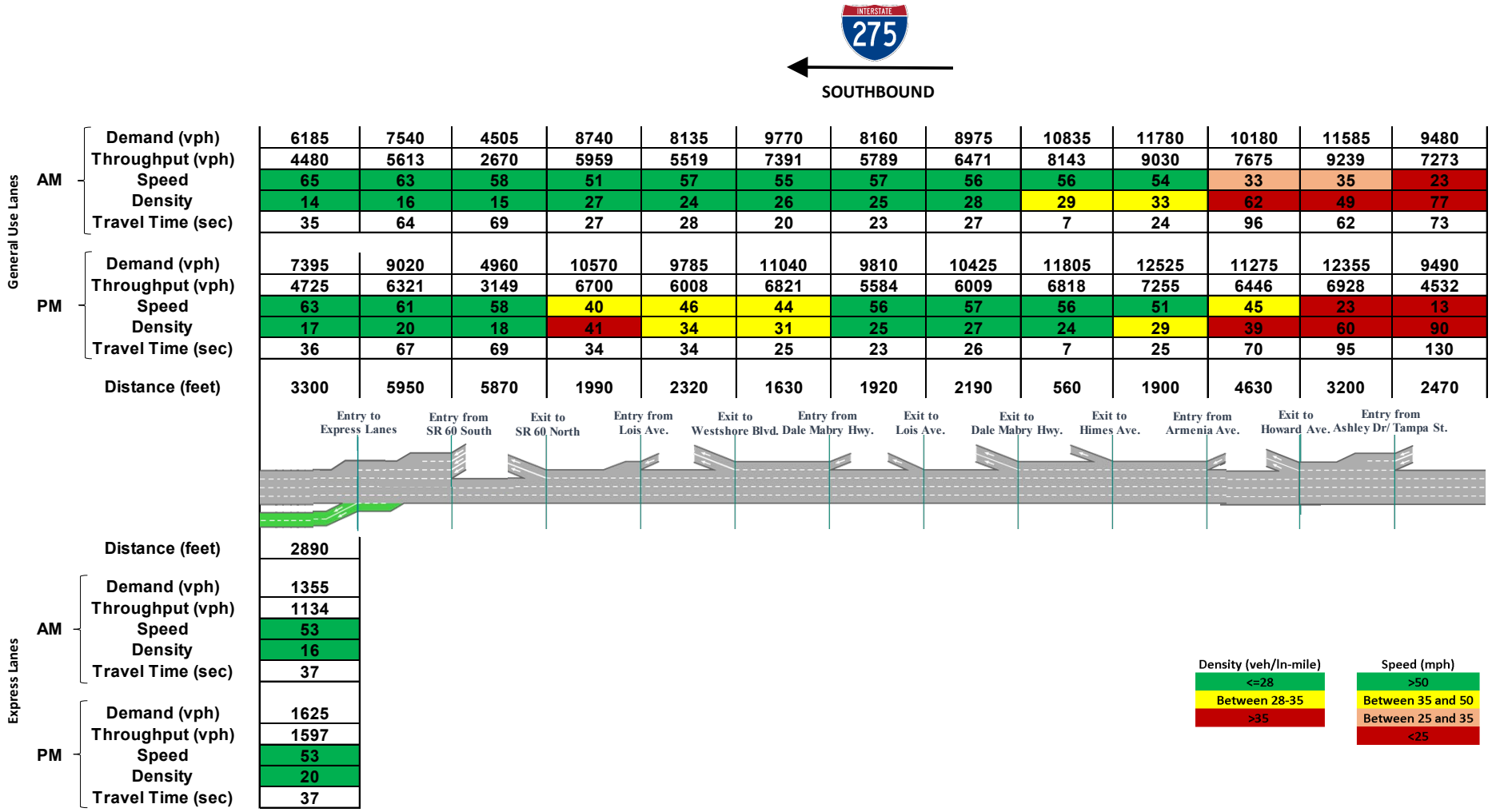


Express Lanes		Demand (vph)	1535											
		Throughput (vph)	1551											
	AM	Speed	52											
		Density	19											
		Travel Time (sec)	63											
		Demand (vph)	1425											
		Throughput (vph)	1419											
	PM	Speed	52											
		Density	22											
		Travel Time (sec)	63											
		Distance (feet)	4830											
		Distance (feet)	4650	3380	5840	3550	900	1520	2270	3220	610	1770	3790	4150	1370
General Use Lanes		Demand (vph)	7485	9020	4960	10570	11825	11040	9810	10425	11805	12525	11275	12355	9490
		Throughput (vph)	4015	5588	3262	7969	9104	8633	7868	8553	10020	10741	9658	10513	8047
	AM	Speed	7	18	26	30	31	49	50	39	25	35	45	36	55
		Density	153	76	45	51	47	34	39	50	71	56	51	56	35
		Travel Time (sec)	453	128	153	81	20	21	31	56	17	35	57	79	17
		Demand (vph)	6115	7540	4505	8740	10375	9770	8160	8975	10835	11780	10180	11585	9480
		Throughput (vph)	2615	4031	2499	4672	5624	5365	4623	5404	6619	7437	6322	7439	6119
	PM	Speed	10	16	14	14	14	12	10	19	14	18	18	22	55
		Density	75	55	62	71	72	91	118	69	93	86	92	73	28
		Travel Time (sec)	317	144	285	173	44	86	155	116	30	67	143	129	17

Density (veh/ln-mile)
<=28
Between 28-35
>35

Speed (mph)
>50
Between 35 and 50
Between 25 and 35
<25

Figure 28: I-275 NB Analysis Summary – No-Build Opening Year (2025)



General Use Lanes														
AM	Demand (vph)	6185	7540	4505	8740	8135	9770	8160	8975	10835	11780	10180	11585	9480
	Throughput (vph)	4480	5613	2670	5959	5519	7391	5789	6471	8143	9030	7675	9239	7273
	Speed	65	63	58	51	57	55	57	56	56	54	33	35	23
	Density	14	16	15	27	24	26	25	28	29	33	62	49	77
	Travel Time (sec)	35	64	69	27	28	20	23	27	7	24	96	62	73
PM	Demand (vph)	7395	9020	4960	10570	9785	11040	9810	10425	11805	12525	11275	12355	9490
	Throughput (vph)	4725	6321	3149	6700	6008	6821	5584	6009	6818	7255	6446	6928	4532
	Speed	63	61	58	40	46	44	56	57	56	51	45	23	13
	Density	17	20	18	41	34	31	25	27	24	29	39	60	90
	Travel Time (sec)	36	67	69	34	34	25	23	26	7	25	70	95	130
	Distance (feet)	3300	5950	5870	1990	2320	1630	1920	2190	560	1900	4630	3200	2470

	Distance (feet)	2890
Express Lanes		
AM	Demand (vph)	1355
	Throughput (vph)	1134
	Speed	53
	Density	16
	Travel Time (sec)	37
PM	Demand (vph)	1625
	Throughput (vph)	1597
	Speed	53
	Density	20
	Travel Time (sec)	37

Figure 29: I-275 SB Analysis Summary – No-Build Opening Year (2025)

7.1.2 Build Performance

An average of 10 run results was used to evaluate the study corridor's performance (I-275) for the Opening Year (2025) Build Alternative. The throughput, density, speed, and travel time for the I-275 corridor segments are presented in **Figures 30** and **31**. There is no complex weave segment within the study limits. The performance of the study corridor (I-275) during AM and PM peak hours is summarized below.

- With general use lane improvements and the addition of two express lanes along the I-275 corridor, the throughput and speeds significantly improved over No-Build conditions within the Sections 4 and 5 study limits.
- On average, 91 percent and 79 percent of the demand volume was processed along northbound I-275 during AM and PM peak hours, respectively. In comparison, 82 percent and 65 percent of the demand volume was processed along southbound I-275 during AM and PM peak hours, respectively.
- Overall, a 17 percent and 28 percent increase in throughput was observed along northbound I-275 during AM and PM peak hours, respectively. Simultaneously, an 8 percent and 12 percent increase in throughput was observed along I-275 southbound during AM and PM peak hours.
- This project mainly addresses the capacity deficiencies for Sections 4 and 5 limits. However, with the presence of existing capacity constraints near the downtown area and I-4 interchange, the I-275 northbound segments south of Ashley Drive Off-Ramp will still experience reduced speeds in the Build conditions.
- The I-275 northbound traffic operations along Howard Frankland Bridge are improved significantly in Build conditions compared to No-Build conditions. Due to improved traffic operations, downstream segments along I-275 northbound experience higher throughput during the pre-peak hour. Since there were no improvements along I-275 northbound between Ashley Drive and I-4, higher peak hour delays are experienced in Build conditions. However, the overall processed volume, including express lanes, is higher in Build conditions than No-Build conditions.

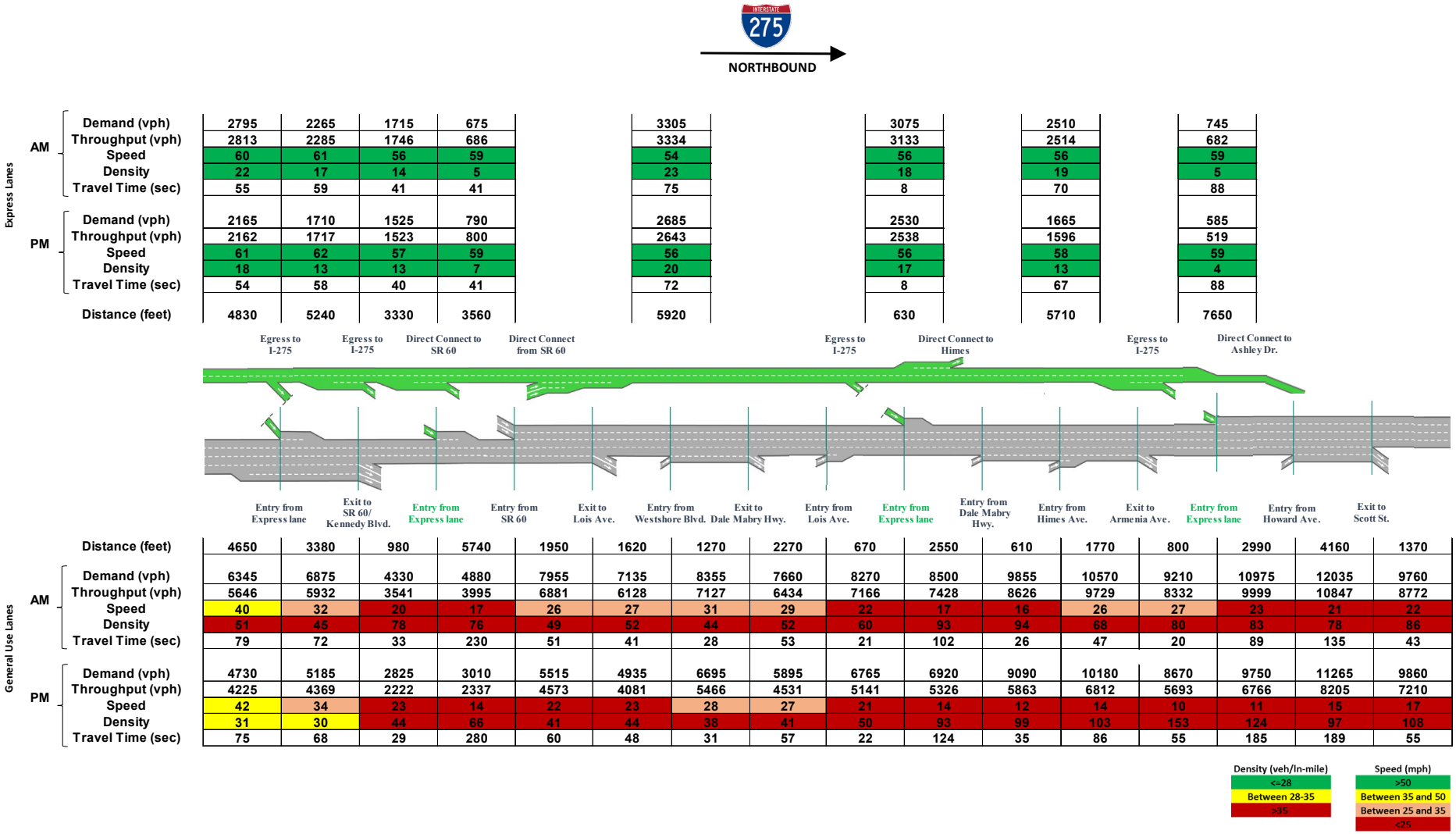
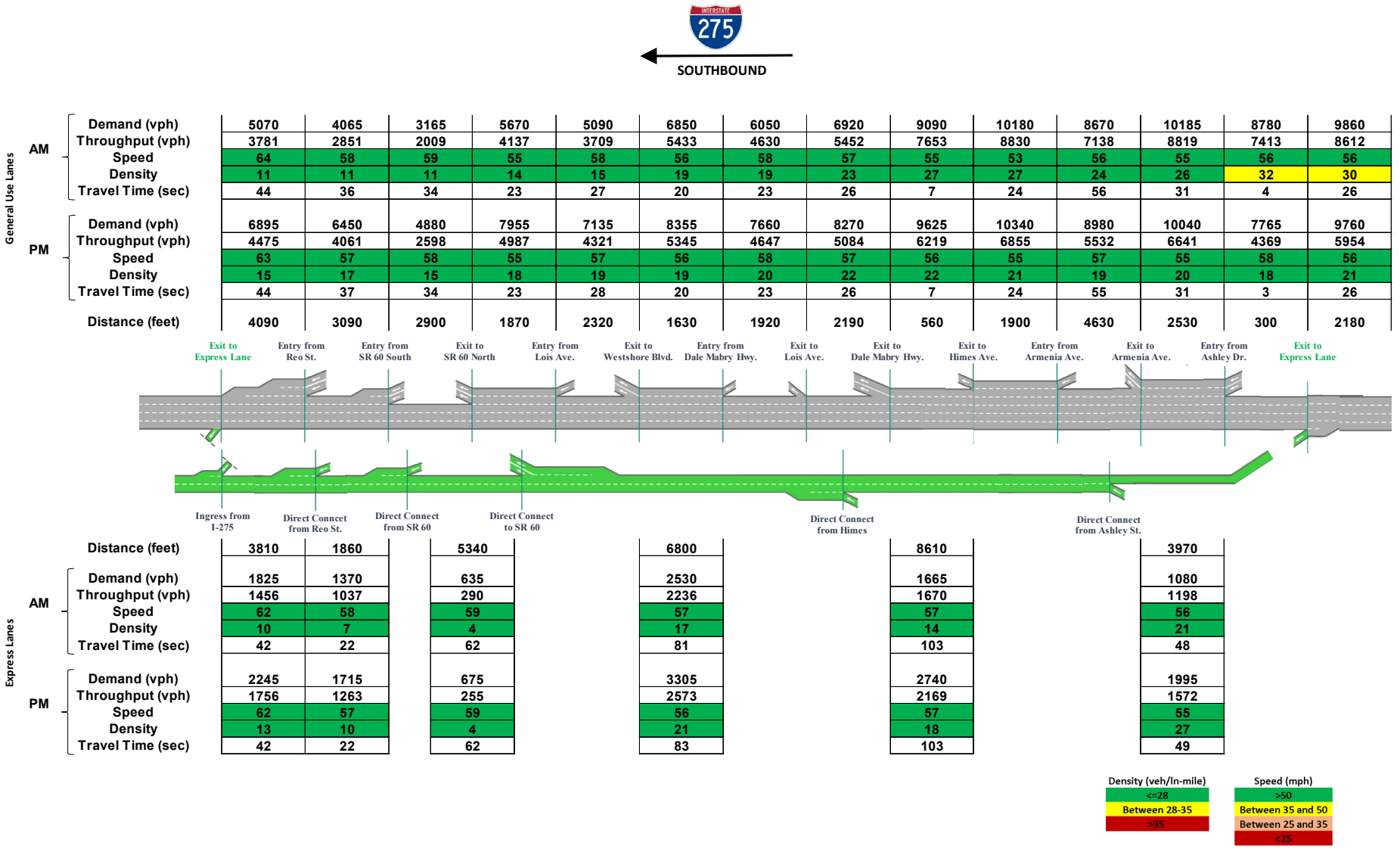


Figure 30: I-275 NB Analysis Summary – Build Opening Year (2025)



General Use Lanes															
	Distance (feet)	4090	3090	2900	1870	2320	1630	1920	2190	560	1900	4630	2530	300	2180
AM	Demand (vph)	5070	4065	3165	5670	5090	6850	6050	6920	9090	10180	8670	10185	8780	9860
	Throughput (vph)	3781	2851	2009	4137	3709	5433	4630	5452	7653	8830	7138	8819	7413	8612
	Speed	64	58	59	55	58	56	58	57	55	53	56	55	56	56
	Density	11	11	11	14	15	19	19	23	27	27	24	26	32	30
	Travel Time (sec)	44	36	34	23	27	20	23	26	7	24	56	31	4	26
PM	Demand (vph)	6895	6450	4880	7955	7135	8355	7660	8270	9625	10340	8980	10040	7765	9760
	Throughput (vph)	4475	4061	2598	4987	4321	5345	4647	5084	6219	6855	5532	6641	4369	5954
	Speed	63	57	58	55	57	56	58	57	56	55	57	55	58	56
	Density	15	17	15	18	19	19	20	22	22	21	19	20	18	21
	Travel Time (sec)	44	37	34	23	28	20	23	26	7	24	55	31	3	26

Express Lanes								
	Distance (feet)	3810	1860	5340	6800	8610	3970	
AM	Demand (vph)	1825	1370	635	2530	1665	1080	
	Throughput (vph)	1456	1037	290	2236	1670	1198	
	Speed	62	58	59	57	57	56	
	Density	10	7	4	17	14	21	
	Travel Time (sec)	42	22	62	81	103	48	
PM	Demand (vph)	2245	1715	675	3305	2740	1995	
	Throughput (vph)	1756	1263	255	2573	2169	1572	
	Speed	62	57	59	56	57	55	
	Density	13	10	4	21	18	27	
	Travel Time (sec)	42	22	62	83	103	49	

Figure 31: I-275 SB Analysis Summary – Build Opening Year (2025)

The following freeway MOEs for peak hours and peak periods were compared for the 2025 No-Build and Build Alternatives:

- Total vehicle miles traveled (miles)
- Average speed (mph)
- Travel delay per vehicle-mile (mins/veh-mile)
- Travel time per vehicle-mile (mins/veh-mile)

Tables 10 and **11** summarize the Opening Year (2025) peak hours and peak periods MOEs for the No-Build and the Build Alternative. The results show that the MOEs are improved with Build Alternative compared to No-Build Alternative. The percentage increase in total vehicle miles traveled in Build conditions ranges between 15 percent and 26 percent during peak hours compared to No-Build conditions. The percentage increase in average speed in Build conditions ranges between 46 percent and 62 percent during peak hours compared to No-Build conditions. Simultaneously, the percentage reduction in delay per vehicle-mile ranges between 54 percent and 71 percent during peak hours compared to No-Build conditions. The percentage reduction in travel time per vehicle-mile ranges between 31 percent and 38 percent during peak hours compared to No-Build conditions.

Table 10: Opening Year (2025) Peak Hour MOE Summary

MOEs	Peak Period	2025 No-Build	2025 Build	Percent Change
Vehicle Miles Traveled (VMT)	AM	352513	405272	15%
	PM	280918	353580	26%
Average Speed (MPH)	AM	26.7	43.2	62%
	PM	23.6	34.5	46%
Delay per Vehicle-Mile (mins/veh-mi)	AM	1.21	0.35	-71%
	PM	1.51	0.70	-54%
Travel Time per Vehicle-Mile (mins/veh-mi)	AM	2.25	1.39	-38%
	PM	2.54	1.74	-31%

Table 11: Opening Year (2025) Peak Period MOE Summary

MOEs	Peak Period	2025 No-Build	2025 Build	Percent Change
Vehicle Miles Traveled (VMT)	AM	1258459	1361313	8%
	PM	1163243	1364566	17%
Average Speed (MPH)	AM	31.7	43.5	37%
	PM	27.9	37.7	35%
Delay per Vehicle-Mile (mins/veh-mi)	AM	0.86	0.34	-60%
	PM	1.12	0.55	-51%
Travel Time per Vehicle-Mile (mins/veh-mi)	AM	1.89	1.38	-27%
	PM	2.15	1.59	-26%

In addition to the overall system MOEs during the AM and PM peak hour and peak period, the latent demand at the end of the peak period simulation along the freeway facility entering the study area from I-275 northbound, I-275 southbound, Veterans Expressway southbound, SR 60 eastbound, George Bean Parkway southbound, I-4 westbound and Selmon Expressway ramp was also analyzed for evaluating the performance of the Build Alternative compared to the No-Build Alternative. **Table 12** shows the latent demand and the percentage change of the Build Alternative compared to the No-Build Alternative. The results show a decrease in latent demand for the Build Alternative compared to No-Build Alternative. The latent demand is reduced by 100 percent by the Build Alternative for I-275 northbound in both AM and PM peak hours, Veterans Expressway southbound in the PM peak hour, George J. Bean Parkway southbound in the PM peak hour, and Selmon Expressway ramp in the AM peak hour. The reductions in latent demand in Build conditions at major entry locations indicate an improved operation compared to No-Build Conditions.

Table 12: Opening Year (2025) Latent Demand Summary along Freeway Facility

Location	Peak Period	2025 No-Build		2025 Build		Percent Change
		Latent Demand	Percent Latent Demand	Latent Demand	Percent Latent Demand	
I-275 Northbound	AM	6257	24%	14	0%	-100%
	PM	7072	30%	7	0%	-100%
I-275 Southbound	AM	5123	16%	5061	16%	-1%
	PM	1996	7%	1157	4%	-42%
Veterans Expressway Southbound	AM	50	0%	49	0%	-3%
	PM	6754	27%	0	0%	-100%
SR 60 Eastbound	AM	15	0%	8	0%	-48%
	PM	15	0%	2	0%	-88%
George J. Bean Parkway Southbound	AM	26	0%	6	0%	-78%
	PM	4345	25%	8	0%	-100%
I-4 Westbound	AM	2525	7%	19	0%	-99%
	PM	22556	65%	11655	33%	-48%
NB Selmon Expressway Ramp to WB I-4	AM	1171	18%	0	0%	-100%
	PM	4388	54%	2753	34%	-37%

7.2 DESIGN YEAR (2045)

7.2.1 No-Build Performance

An average of 10 run results was used to evaluate the study corridor's performance (I-275) for Design Year (2045) No-Build Alternative. The throughput, density, and speed for the I-275 corridor segments are presented in **Figures 32** and **33**. The performance of the study corridor (I-275) during AM and PM peak hours is summarized below.

- As expected, with the increase in traffic volumes in the Design Year (2045), the traffic operations along the study corridor (I-275) will further deteriorate compared to No-Build Opening Year (2025) conditions. Most of the segments will operate at failing conditions during AM and PM peak hours.
- On average, 58 percent and 52 percent of the demand volume was processed along northbound I-275 during AM and PM peak hours, respectively. In comparison, 65 percent and 53 percent of the demand volume was processed along southbound I-275 during AM and PM peak hours, respectively.
- Similar to the Existing Year (2018) and Opening Year (2025) conditions, higher delays were observed along I-275 northbound compared to I-275 southbound during AM and PM peak hours.

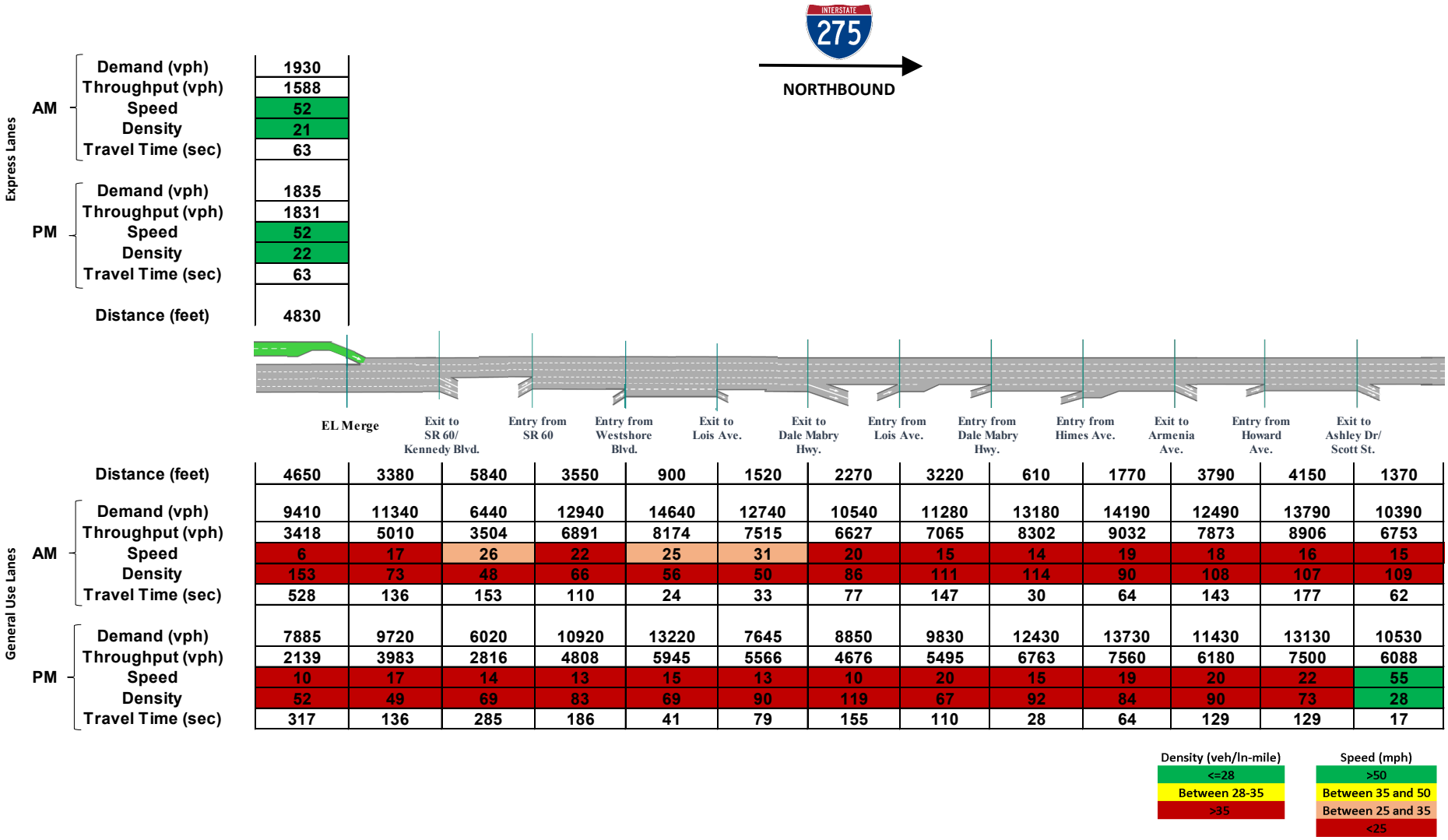


Figure 32: I-275 NB Analysis Summary – No-Build Design Year (2045)

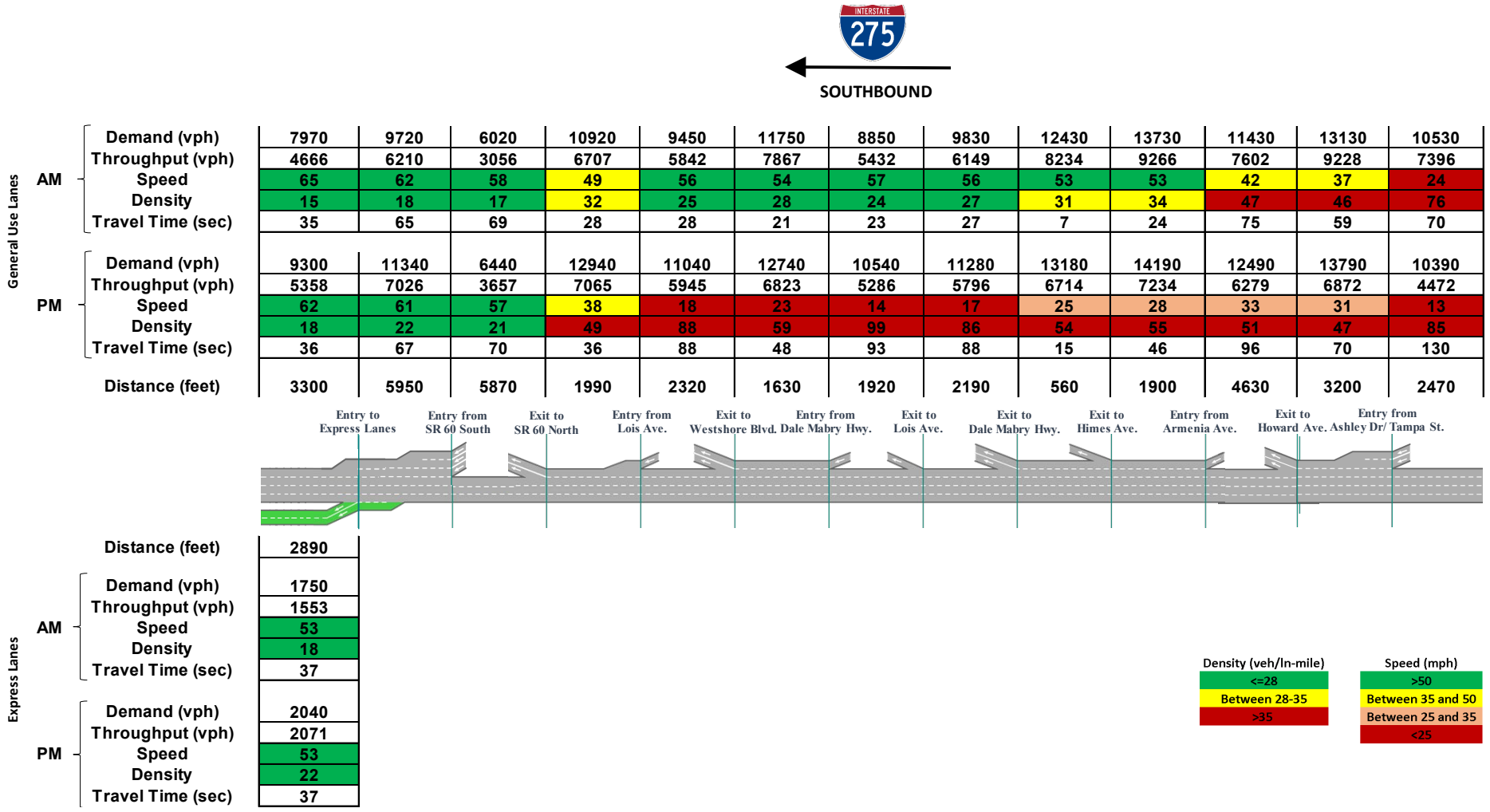


Figure 33: I-275 SB Analysis Summary – No-Build Design Year (2045)

7.2.2 Build Performance

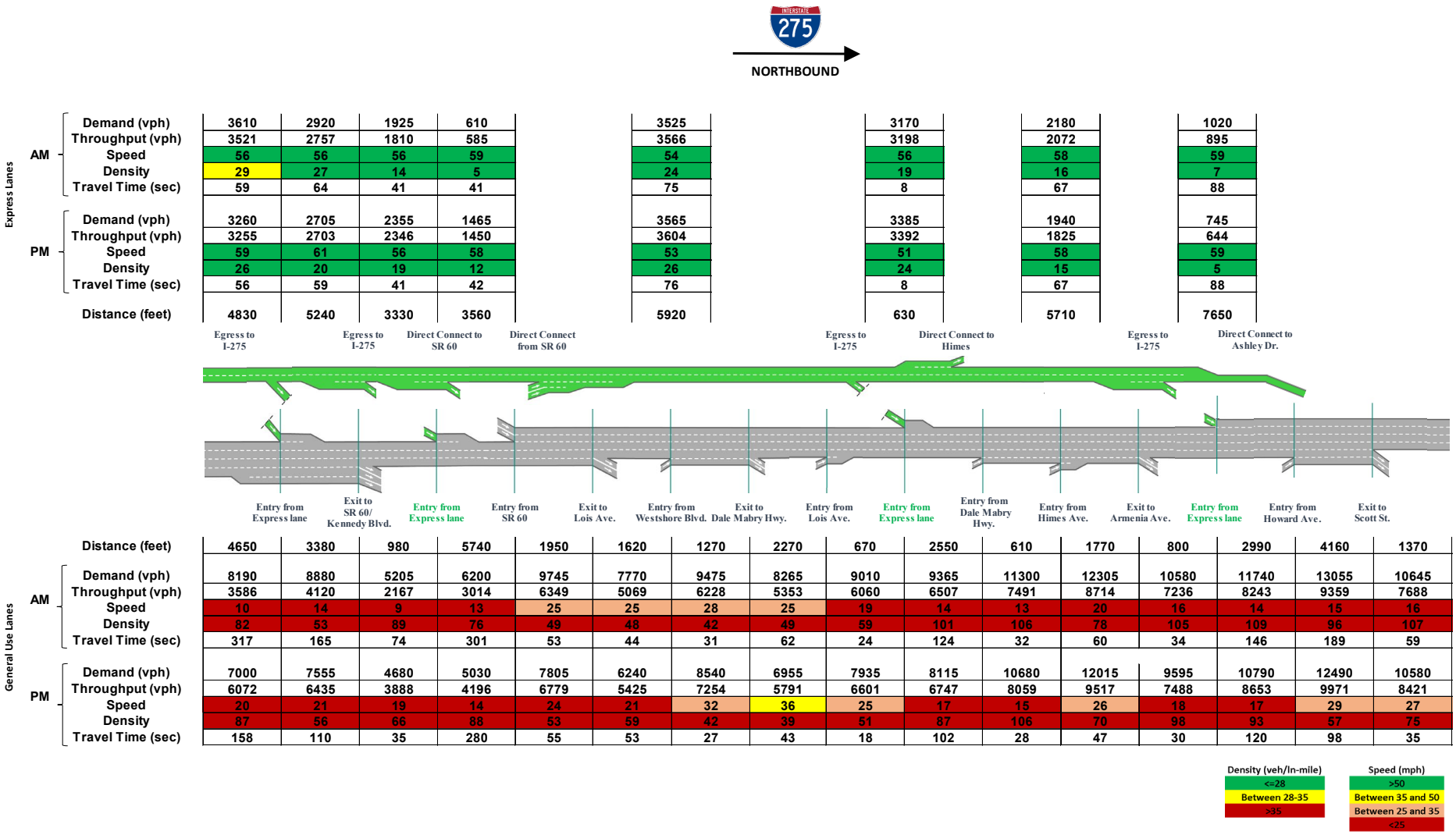
An average of 10 run results was used to evaluate the study corridor's performance (I-275) for Design Year (2045) Build Alternative. There is no complex weave segment within the study limits.

Due to CORSIM limitation, unrealistic pre-positioning of vehicles near the ramps is observed in future year models, leading to an unrealistic lane utilization along I-275 northbound between SR 60 and Himes Avenue. Therefore, the anticipatory lane changing behavior was adjusted at on-ramp locations between SR 60 and Himes Avenue, which generated more realistic operations by shifting the traffic out of the congested lanes. These changes were incorporated in the No-Build and Build models to provide an appropriate comparison.

The throughput, density, and speed for the I-275 corridor segments are presented in **Figures 34** and **35**. The performance of the study corridor (I-275) during AM and PM peak hours is summarized below.

- With the increase in demand volumes in the design, the build improvements will fail to yield the same results compared to the Opening Year (2025) conditions. However, the traffic operations will significantly improve over No-Build conditions.
- On average, 71 percent and 86 percent of the demand volume was processed along northbound I-275 during AM and PM peak hours, respectively. In comparison, 74 percent and 70 percent of the demand volume was processed along southbound I-275 during AM and PM peak hours, respectively.
- Overall, a 20 percent and 70 percent increase in throughput was observed along I-275 northbound during AM and PM peak hours, respectively. Simultaneously, a 16 percent and 32 percent increase in throughput was observed along I-275 southbound during AM and PM peak hours.
- Similar to Build conditions in the Opening Year (2025), due to the presence of existing capacity constraints near the downtown area and I-4 interchange, the I-275 northbound segments south of Ashley Drive Off-Ramp will still experience reduced speeds in the peak hours.
- Due to the improved I-275 northbound congestion along Howard Frankland Bridge, higher throughput is processed downstream of SR 60 before peak hour, resulting in higher delays in some segments in Build conditions given the same capacity constraints near downtown area for both No-Build and Build conditions. However, the overall processed volume, including express lanes, is higher in Build conditions.
- The downstream operating conditions of the I-4 and I-275 interchange will influence the traffic operations along I-275 Northbound within the study limits of Section 4/5. Similarly, the operating conditions on I-4 westbound will influence the traffic operations along I-275 Southbound. With the increase in volumes in the Design Year (2045) conditions, the traffic conditions at the I-4 and I-275 interchange and on I-4 Westbound will deteriorate further compared to the opening Year (2025) conditions. The deteriorating traffic conditions of the Design Year (2045) will result in less throughput along I-275 Northbound and Southbound than the Opening Year (2025). However, the 2045 Build Conditions will process more throughput than the 2045 No-Build conditions.
- Most vehicles exiting Ashely Drive and I-4 are lining up along I-275 Northbound in the lane next to the auxiliary lane near Trask Street On-Ramp. Due to CORSIM limitations, this unusual behavior of vehicles is inevitable. However, this unusual driver behavior occurs in all CORSIM models and will not affect the decision-making when comparing No-Build and Build results.

- In the 2045 Build PM model, due to very high pre-peak hour demand (approximately 3200 vehicles per hour), the traffic is queued from the beginning of the simulation at the Selmon Expressway On-Ramp (single lane On-Ramp) onto the westbound I-4.



Express Lanes																	
	Distance (feet)	4830	5240	3330	3560		5920			630		5710		7650			
AM	Demand (vph)	3610	2920	1925	610		3525			3170		2180		1020			
	Throughput (vph)	3521	2757	1810	585		3566			3198		2072		895			
	Speed	56	56	56	59		54			56		58		59			
	Density	29	27	14	5		24			19		16		7			
	Travel Time (sec)	59	64	41	41		75			8		67		88			
PM	Demand (vph)	3260	2705	2355	1465		3565			3385		1940		745			
	Throughput (vph)	3255	2703	2346	1450		3604			3392		1825		644			
	Speed	59	61	56	58		53			51		58		59			
	Density	26	20	19	12		26			24		15		5			
	Travel Time (sec)	56	59	41	42		76			8		67		88			

General Use Lanes																	
	Distance (feet)	4650	3380	980	5740	1950	1620	1270	2270	670	2550	610	1770	800	2990	4160	1370
AM	Demand (vph)	8190	8880	5205	6200	9745	7770	9475	8265	9010	9365	11300	12305	10580	11740	13055	10645
	Throughput (vph)	3586	4120	2167	3014	6349	5069	6228	5353	6060	6507	7491	8714	7236	8243	9359	7688
	Speed	10	14	9	13	25	25	28	25	19	14	13	20	16	14	15	16
	Density	82	53	89	76	49	48	42	49	59	101	106	78	105	109	96	107
	Travel Time (sec)	317	165	74	301	53	44	31	62	24	124	32	60	34	146	189	59
PM	Demand (vph)	7000	7555	4680	5030	7805	6240	8540	6955	7935	8115	10680	12015	9595	10790	12490	10580
	Throughput (vph)	6072	6435	3888	4196	6779	5425	7254	5791	6601	6747	8059	9517	7488	8653	9971	8421
	Speed	20	21	19	14	24	21	32	36	25	17	15	26	18	17	29	27
	Density	87	56	66	88	53	59	42	39	51	87	106	70	98	93	57	75
	Travel Time (sec)	158	110	35	280	55	53	27	43	18	102	28	47	30	120	98	35

Figure 34: **I-275 NB Analysis Summary – Build Design Year (2045)**

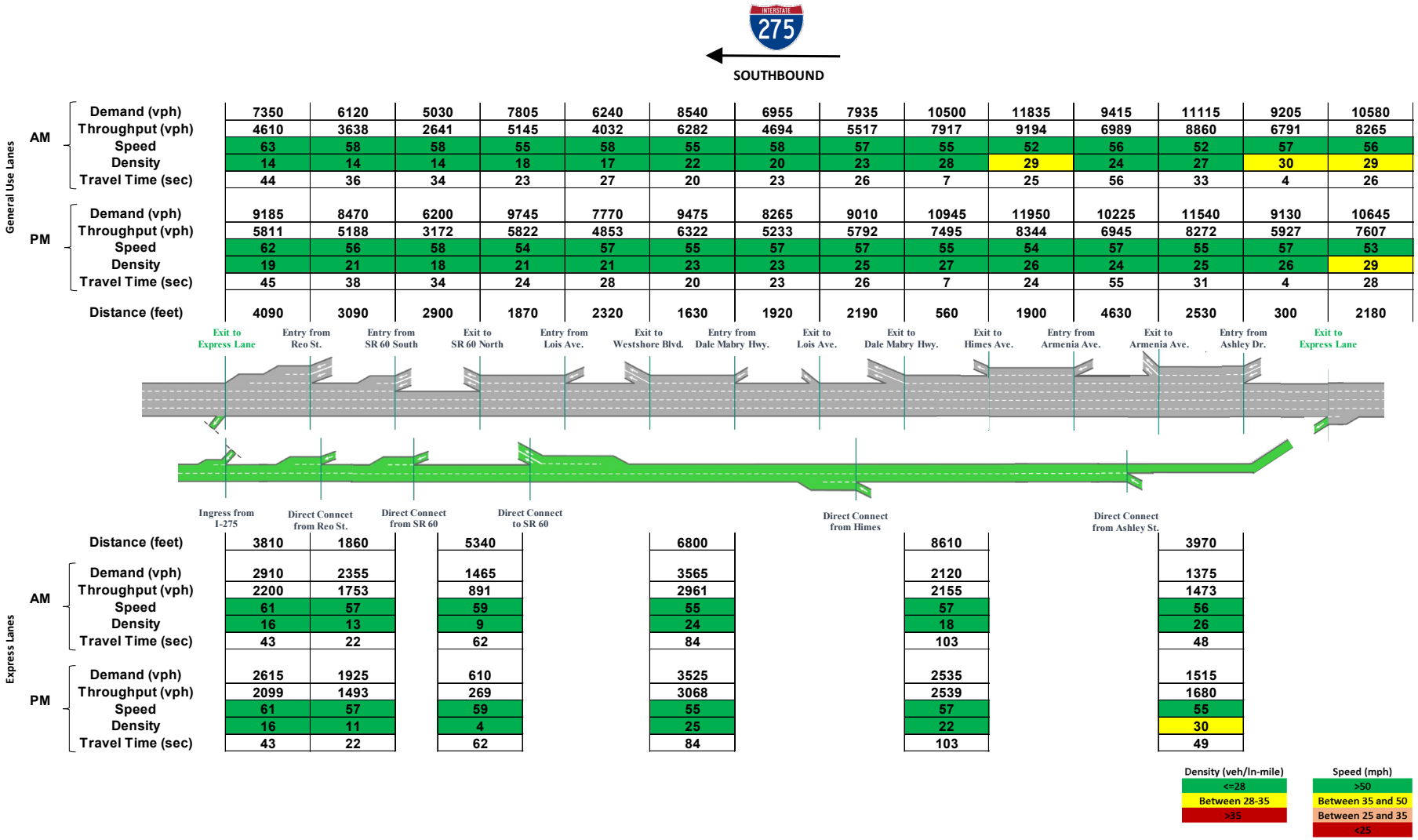


Figure 35: I-275 SB Analysis Summary – Build Design Year (2045)

The following freeway MOEs were compared for the 2045 Build Alternative and 2045 No-Build Alternative at the end of the AM and PM peak hours:

- Total vehicle miles traveled (miles)
- Average speed (mph)
- Travel delay per vehicle-mile (mins/veh-mile)
- Travel time per vehicle-mile (mins/veh-mile)

Tables 13 and **14** summarize the Design Year (2045) peak hour and peak period MOEs for the No-Build and the Build Alternative. The results show that the MOEs are improved with Build Alternative compared to No-Build Alternative. The percentage increase in total vehicle miles traveled in Build conditions ranges between 31 percent and 54 percent during peak hours compared to No-Build conditions. The percentage increase in average speed in Build conditions ranges between 54 percent and 59 percent during peak hours compared to No-Build conditions. Simultaneously, the percentage reduction in delay per vehicle-mile ranges between 57 percent and 60 percent during peak hours compared to No-Build conditions. The percentage reduction in travel time per vehicle-mile ranges between 35 percent and 37 percent during peak hours compared to No-Build conditions.

Table 13: Design Year (2045) Peak Hour MOE Summary

MOEs	Peak Period	2045 No-Build	2045 Build	Percent Change
Vehicle Miles Traveled (VMT)	AM	355798	465122	31%
	PM	299522	462513	54%
Average Speed (MPH)	AM	19.8	31.5	59%
	PM	23.6	36.3	54%
Delay per Vehicle-Mile (mins/veh-mi)	AM	1.99	0.86	-57%
	PM	1.51	0.61	-60%
Travel Time per Vehicle-Mile (mins/veh-mi)	AM	3.03	1.91	-37%
	PM	2.55	1.65	-35%

Table 14: Design Year (2045) Peak Period MOE Summary

MOEs	Peak Period	2045 No-Build	2045 Build	Percent Change
Vehicle Miles Traveled (VMT)	AM	1309651	1583300	21%
	PM	1229926	1679848	37%
Average Speed (MPH)	AM	24.7	35.3	43%
	PM	27.6	38.2	38%
Delay per Vehicle-Mile (mins/veh-mi)	AM	1.39	0.65	-53%
	PM	1.14	0.53	-54%
Travel Time per Vehicle-Mile (mins/veh-mi)	AM	2.43	1.70	-30%
	PM	2.17	1.57	-28%

In addition to the overall system MOEs during the AM and PM peak hour and peak period, the latent demand at the end of the peak period simulation along the freeway facility entering the study area from I-275 northbound, I-275 southbound, Veterans Expressway southbound, SR 60 eastbound, George Bean Parkway southbound, I-4 westbound and Selmon Expressway ramp was also analyzed for evaluating the performance of the Build Alternative compared to the No-Build Alternative. **Table 15** shows the latent demand and the percentage change of the Build Alternative compared to the No-Build Alternative. The results show a decrease in latent demand for the Build Alternative compared to No-Build Alternative. The latent demand is reduced by 95 percent or higher by the Build Alternative for I-275 northbound and southbound in the PM peak hour, Veterans Expressway southbound in both AM and PM peak hours, George J. Bean Parkway southbound in the AM peak hour, and I-4 westbound in AM peak hour. The reductions in latent demand in Build conditions at major entry locations indicate an improved operation compared to No-Build Conditions.

Table 15: Design Year (2045) Latent Demand Summary along Freeway Facility

Location	Peak Period	2045 No-Build		2045 Build		Percent Change
		Latent Demand	Percent Latent Demand	Latent Demand	Percent Latent Demand	
I-275 Northbound	AM	14160	0%	7284	27%	-49%
	PM	15248	100%	243	1%	-98%
I-275 Southbound	AM	9118	23%	7805	20%	-14%
	PM	920	3%	41	0%	-96%
Veterans Expressway Southbound	AM	9831	29%	75	0%	-99%
	PM	12052	38%	74	0%	-99%
SR 60 Eastbound	AM	5	0%	4	0%	-20%
	PM	9	0%	6	0%	-33%
George J. Bean Parkway Southbound	AM	1350	7%	8	0%	-99%
	PM	9902	37%	3298	13%	-67%
I-4 Westbound	AM	5423	17%	132	0%	-98%
	PM	28753	71%	10709	26%	-63%
NB Selmon Expressway Ramp to WB I-4	AM	2789	33%	2080	24%	-25%
	PM	8983	69%	6688	51%	-26%

7.3 ARTERIAL INTERSECTIONS PERFORMANCE

Per approved MLOU, future years arterial intersections performances were analyzed using SYNCHRO 10. The SYNCHRO reports were created using the HCM 6th version for the study intersections. The arterial intersections performance results for Opening Year (2025) and Design Year (2045) are presented in **Tables 16** through **23**. Additionally, a summary comparison of intersection delay and LOS for Existing Year (2018), Opening Year (2025), and Design Year (2045) for AM and PM peak hours are provided in **Tables 24** and **25**, respectively.

Like the existing conditions, the Dale Mabry Highway will be a critical corridor in the Opening Year (2025) for No-Build conditions. Most of the study intersections along Dale Mabry Highway will operate at failing conditions (LOS E or F) in peak hours.

With the increase in volumes in the Design Year (2045) for No-Build conditions, almost all study intersections will have capacity deficiencies and operate at failing conditions (LOS E or F) during peak hours.

Since the proposed Build improvements are mainly focused on freeway facilities, the peak hours traffic operations are very similar on arterial corridors for No-Build and Build conditions within the study limits of Sections 4 and 5. However, with additional capacity available through proposed build improvements, more capacity will be available to satisfy demand on the interstate in the Build conditions as compared to No-Build conditions. Due to an increase in traffic near ramp terminal intersections, the traffic delays will be slightly more for some study intersections in Build conditions compared to No-Build conditions.

In Build conditions, the study intersections along the Himes Avenue corridor will experience higher delays than No-Build conditions. This increase in delays is mainly due to express lanes connection on Himes Avenue, where some of the Dale Mabry Highway traffic will be diverted to Himes Avenue in the Build conditions. With this express lane connection on Himes Avenue, Dale Mabry Highway's traffic operations will significantly improve in the Build conditions compared to No-Build conditions.

The 95th percentile queue length and corresponding storage length are also provided in **Tables 26** through **29** for Opening Year (2025) and Design Year (2045). The 95th percentile queue lengths are provided for No-Build and Build conditions during AM and PM peak hours. Queue lengths exceeding storage length are highlighted.

The observation of the Opening Year (2025) and Design Year (2045) 95th percentile queue results are summarized below.

- The results show that the 95th percentile queue length increased for Design Year (2045) compared to Opening Year (2025) for the majority of the study intersections. With the increased traffic in Design Year (2045), the storage lengths at some intersections are insufficient to accommodate queues in both No-Build and Build conditions.
- The 95th percentile queues at intersections along Tampa Street and Ashley Drive improved with the Build improvements.
- Higher volumes in Build conditions due to the access to/from express lane causes longer queues at intersections along Himes Avenue than No-Build conditions. Consequently, lower volume along Dale Mabry Highway in Build conditions results in shorter queues at Dale Mabry Highway study intersections.
- With the Trask Street improvement, the queues at intersections along Westshore Boulevard get slightly better in Build conditions.
- For the remaining intersections, the 95th percentile queue length is similar in No-Build and Build conditions.

- The WBL queue length along I-275 SB Off-Ramp to Himes Avenue exceeds the storage length in Build conditions. However, the queue length does not exceed the total length of the ramp (1450 feet). The EBL queue length along NB Egress to Himes Avenue exceeds the storage length. However, the queue length does not exceed the total length of the ramp (1500 feet). Additionally, the CORSIM simulation model showed the queues along the off-ramps do not extend to the I-275 mainline.
- The WBL and WBR queue lengths along I-275 SB Off-Ramp to Dale Mabry Highway exceed the storage length in Build conditions. The WBR queue length also exceeds the total length of the ramp (1800 feet). However, the CORSIM simulation model showed the queues along the off-ramps do not extend to the I-275 mainline. Also, EBL and EBR queue length at I-275 NB Off-Ramp exceed the storage length but do not exceed the total length of the ramp (2700 feet).
- The EBL and EBR queue lengths along I-275 NB Off-Ramp to Lois Avenue exceed the storage length in Build conditions. Also, the EBL queue length exceeds the total length of the ramp. However, the CORSIM simulation model showed the queues along the off-ramps do not extend to the I-275 mainline.
- The WBL queue length along I-275 SB Off-Ramp exceeds the storage length in Build conditions. However, the WBL queue length does not exceed the total length of the ramp (3000 feet). Additionally, the simulation model showed the queue along the off-ramp does not extend to the I-275 mainline at the ramp terminal intersection.
- For several study intersections, the 95th percentile queue length from SYNCHRO exceeds the storage length due to the capacity available at these intersections being insufficient to handle the high peak hour demand. However, due to the upstream constraints from outside the study area and within the study area, not all the demand reaches the ramp terminals. The associated queues observed from the CORSIM models were significantly shorter than the queues reported from SYNCHRO. Additionally, All the improvements considered as part of the SIMR are consistent with the approved SEIS. All the improvements proposed as part of the Preferred Build alternative have been extensively coordinated with agencies and extensive public workshops and hearings. Additionally, FDOT has undertaken several ‘Early Works’ projects within the vicinity of the study area to help alleviate the congestion issues. Therefore, no additional improvements were proposed to mitigate queues at these intersections.
- Overall, the queue lengths are improved in Build conditions compared to No-Build conditions.

Table 16: Opening Year (2025) No-Build – LOS and Delay (AM Peak Hour)

Arterial	Intersecting Roadway	Eastbound		Westbound		Northbound		Southbound		Intersection	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Tampa St.	Kay St.	--	--	D	42.9	--	--	B	10.3	B	19.9
	Scott St.	D	44.7	--	--	--	--	C	35.7	D	39.1
	Tyler St.	D	39.1	E	58.5	--	--	D	36.2	D	38.8
Florida Ave.	Scott St.	D	52.4	--	--	C	22.6	--	--	C	33.8
Ashley Dr.	Tyler St.	D	50.6	C	29.6	C	25.8	B	18.9	C	23.5
Howard Ave.	Main St.	D	51.0	E	58.7	B	15.3	--	--	C	20.0
	I-275 SB Off-Ramp	--	--	D	41.7	D	41.0	--	--	D	41.3
	I-275 NB On-Ramp	E	58.6	--	--	D	41.7	--	--	D	46.5
	Cypress St.	C	23.7	C	34.0	B	14.9	--	--	B	18.1
Armenia Ave.	Main St.	C	24.5	C	25.5	--	--	B	14.3	B	16.3
	I-275 SB On-Ramp	--	--	D	48.1	--	--	D	44.9	D	47.2
	I-275 NB Off-Ramp	C	32.1	--	--	--	--	D	53.7	D	41.9
	Cypress St.	D	52.2	D	46.5	--	--	C	25.7	D	30.8
Himes Ave.	Spruce St.	D	39.2	E	65.6	A	4.7	C	26.5	C	23.2
	I-275 SB Off-Ramp	--	--	C	34.4	A	0.5	A	2.8	B	12.5
	I-275 NB On-Ramp	--	--	--	--	A	1.5	A	4.5	A	3.4
	Cypress St.	D	38.8	D	45.1	C	30.1	B	15.5	C	27.3
Dale Mabry Hwy.	Shopping Plaza	F	266.1	E	58.7	A	3.1	C	26.8	C	21.5
	I-275 SB Off-Ramp	--	--	F	236.0	D	50.1	F	134.2	F	134.2
	I-275 NB Off-Ramp	F	232.9	--	--	C	31.0	C	28.0	F	80.8
	Cypress St.	E	60.2	E	69.1	D	38.0	B	10.5	D	35.7
Lois Ave.	Cypress St.	C	33.0	F	91.5	E	62.8	E	66.2	E	70.2
	I-275 SB On-Ramp	--	--	--	--	A	7.5	A	9.7	A	8.4
	I-275 NB Off-Ramp	D	42.8	--	--	D	35.4	A	8.6	C	30.6
Westshore Blvd.	Cypress St.	D	36.4	E	60.2	D	35.4	D	43.6	D	42.2
	I-275 SB Off-Ramp	--	--	E	70.2	A	9.8	D	35.8	D	44.6
	I-275 NB On-Ramp	--	--	--	--	C	30.6	A	3.1	B	17.8
	Gray St.	E	57.2	E	60.7	C	22.8	A	1.0	B	16.9
Kennedy Blvd.	S. Hoover Blvd.	B	15.3	B	16.0	D	52.7	D	42.6	B	19.4
	Memorial Hwy.	D	44.6	--	--	C	30.4	C	34.6	C	35.0
Cypress St.	E. Frontage Rd.	A	0.7	C	21.1	D	54.5	D	46.3	B	17.9
	W. Frontage Rd.	B	11.6	A	3.1	E	66.5	--	--	A	6.6

Table 17: Opening Year (2025) No-Build – LOS and Delay (PM Peak Hour)

Arterial	Intersecting Roadway	Eastbound		Westbound		Northbound		Southbound		Intersection	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Tampa St.	Kay St.	--	--	D	40.4	--	--	B	12.3	C	23.0
	Scott St.	D	46.9	--	--	--	--	C	25.3	C	33.4
	Tyler St.	D	47.6	E	56.3	--	--	C	23.3	C	27.6
Florida Ave.	Scott St.	E	67.4	--	--	D	47.9	--	--	D	52.9
Ashley Dr.	Tyler St.	F	132.2	C	29.7	F	87.6	C	22.6	E	60.7
Howard Ave.	Main St.	E	55.5	E	55.3	C	21.7	--	--	C	27.0
	I-275 SB Off-Ramp	--	--	D	45.1	D	38.9	--	--	D	41.4
	I-275 NB On-Ramp	E	57.0	--	--	E	57.8	--	--	E	57.5
	Cypress St.	A	9.6	C	23.0	C	27.8	--	--	C	23.3
Armenia Ave.	Main St.	D	50.3	E	55.8	--	--	A	3.5	B	15.2
	I-275 SB On-Ramp	--	--	D	47.2	--	--	C	32.9	D	41.8
	I-275 NB Off-Ramp	C	30.3	--	--	--	--	D	52.9	D	39.8
	Cypress St.	D	52.0	B	18.5	--	--	D	35.1	D	36.6
Himes Ave.	Spruce St.	D	38.5	E	71.9	A	9.2	F	87.1	D	51.6
	I-275 SB Off-Ramp	--	--	D	39.8	B	12.1	A	0.5	B	12.3
	I-275 NB On-Ramp	--	--	--	--	A	2.0	A	4.2	A	3.4
	Cypress St.	D	42.7	C	29.4	D	41.4	C	27.6	D	35.4
Dale Mabry Hwy.	Shopping Plaza	E	71.1	F	218.4	A	5.5	D	47.2	D	36.8
	I-275 SB Off-Ramp	--	--	F	143.0	B	12.4	E	58.2	E	58.1
	I-275 NB Off-Ramp	F	121.6	--	--	E	59.3	F	92.2	F	87.7
	Cypress St.	E	68.1	F	109.5	E	63.1	C	21.5	E	54.7
Lois Ave.	Cypress St.	F	160.8	E	61.2	D	43.1	F	89.2	F	100.2
	I-275 SB On-Ramp	--	--	--	--	A	9.7	A	6.6	A	7.6
	I-275 NB Off-Ramp	D	45.1	--	--	D	36.4	A	7.8	C	23.7
Westshore Blvd.	Cypress St.	F	157.8	F	101.4	D	37.3	E	59.3	F	86.2
	I-275 SB Off-Ramp	--	--	E	68.4	A	8.6	B	15.5	C	30.9
	I-275 NB On-Ramp	--	--	--	--	D	55.0	B	11.7	C	27.2
	Gray St.	F	95.6	F	92.4	C	34.5	C	27.7	D	40.0
Kennedy Blvd.	S. Hoover Blvd.	D	35.4	C	24.2	F	87.0	E	74.9	D	40.0
	Memorial Hwy.	E	61.7	--	--	D	51.3	D	46.6	D	51.9
Cypress St.	E. Frontage Rd.	A	0.8	C	22.8	D	54.0	D	46.7	B	14.6
	W. Frontage Rd.	B	16.3	B	12.1	E	77.8	--	--	C	21.5

Table 18: Opening Year (2025) Build – LOS and Delay (AM Peak Hour)

Arterial	Intersecting Roadway	Eastbound		Westbound		Northbound		Southbound		Intersection	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Tampa St.	Kay St.	--	--	D	42.7	--	--	B	10.1	C	20.0
	Scott St.	C	27.1	--	--	--	--	D	45.3	C	34.1
	Fortune St.	D	46.5	D	35.2	--	--	D	41.4	D	41.7
	Harrison St.	D	46.1	D	54.8	--	--	C	34.7	D	36.0
	Tyler St.	D	50.4	E	57.5	--	--	C	28.7	C	31.4
Florida Ave.	Scott St.	D	53.6	--	--	C	27.7	--	--	D	38.2
Ashley Dr.	Fortune St.	D	51.9	D	44.4	A	0.3	A	4.6	A	5.4
	Tyler St.	D	53.4	D	45.2	B	19.2	A	1.8	B	12.6
Howard Ave.	Main St.	E	57.4	E	58.4	B	17.8	--	--	C	22.2
	I-275 SB Off-Ramp	--	--	D	42.0	D	44.9	--	--	D	43.5
	I-275 NB On-Ramp	D	47.1	--	--	D	43.4	--	--	D	44.3
	Cypress St.	C	25.4	C	34.9	B	14.7	--	--	B	18.2
Armenia Ave.	Main St.	D	52.8	E	57.3	--	--	A	2.5	B	11.5
	I-275 SB On-Ramp	--	--	D	46.4	--	--	D	40.6	D	44.5
	I-275 NB Off-Ramp	D	35.6	--	--	--	--	D	36.4	D	36.0
	Cypress St.	D	46.0	C	32.2	--	--	D	36.6	D	36.9
Himes Ave.	Spruce St.	E	66.5	F	100.1	D	37.7	D	53.8	D	51.2
	I-275 SB Off-Ramp	--	--	E	66.0	C	34.0	A	3.7	C	28.3
	NB Egress/SB Ingress Ramp	E	75.8	--	--	C	22.5	C	22.9	C	30.9
	I-275 NB On-Ramp	--	--	--	--	C	20.2	B	15.8	B	17.6
	Cypress St.	D	52.3	E	60.0	D	39.2	B	19.5	D	35.6
Dale Mabry Hwy.	Shopping Plaza	F	128.5	E	64.3	A	2.8	C	22.1	B	14.4
	I-275 SB Off-Ramp	--	--	F	133.9	C	22.1	F	117.0	F	94.7
	I-275 NB Off-Ramp	F	153.5	--	--	D	53.8	C	25.5	E	57.4
	Cypress St.	D	46.6	E	74.9	D	36.0	B	15.3	D	35.2
Lois Ave.	Cypress St.	C	30.7	F	97.7	D	53.8	E	69.5	E	70.6
	I-275 SB On-Ramp	--	--	--	--	A	7.8	A	9.2	A	8.4
	I-275 NB Off-Ramp	D	44.3	--	--	C	34.5	B	10.8	C	31.4
Trask St.	I-275 NB On-Ramp	B	10.0	--	--	C	30.6	D	37.5	B	16.8
Westshore Blvd.	Cypress St.	D	42.8	D	41.5	C	23.0	D	37.6	C	33.2
	I-275 SB Off-Ramp	--	--	C	31.3	B	12.8	C	33.8	C	26.8
	I-275 NB On-Ramp	--	--	--	--	B	15.9	A	2.2	A	9.4
	Gray St.	E	57.2	E	60.7	C	23.1	A	4.1	B	17.7
Kennedy Blvd.	S. Hoover Blvd.	C	24.3	C	26.3	D	49.1	C	32.7	C	28.6
	Memorial Hwy.	D	44.0	--	--	C	32.5	D	36.8	D	36.4
Cypress St.	E. Frontage Rd.	A	0.2	A	5.4	E	64.3	D	55.0	A	7.7
	Reo St.	D	45.1	C	32.0	E	59.1	D	52.3	D	39.4

Table 19: Opening Year (2025)-Build – LOS and Delay (PM Peak Hour)

Arterial	Intersecting Roadway	Eastbound		Westbound		Northbound		Southbound		Intersection	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Tampa St.	Kay St.	--	--	D	40.4	--	--	B	12.0	C	23.5
	Scott St.	D	36.3	--	--	--	--	C	27.2	C	32.6
	Fortune St.	C	32.2	C	27.4	--	--	C	34.6	C	34.0
	Harrison St.	D	49.8	E	56.1	--	--	C	27.7	C	30.0
	Tyler St.	D	54.0	D	47.9	--	--	B	19.7	C	25.9
Florida Ave.	Scott St.	E	77.0	--	--	D	44.8	--	--	D	53.1
Ashley Dr.	Fortune St.	D	50.5	D	36.2	A	0.6	A	8.3	A	6.5
	Tyler St.	E	86.7	D	52.6	C	23.2	C	22.5	C	25.9
Howard Ave.	Main St.	E	55.5	E	55.4	C	21.9	--	--	C	27.1
	I-275 SB Off-Ramp	--	--	D	48.9	D	40.6	--	--	D	43.5
	I-275 NB On-Ramp	E	58.6	--	--	E	72.6	--	--	E	67.0
	Cypress St.	B	14.2	C	25.7	C	25.6	--	--	C	23.3
Armenia Ave.	Main St.	D	50.2	E	55.9	--	--	A	3.7	B	14.0
	I-275 SB On-Ramp	--	--	D	45.1	--	--	D	38.8	D	42.7
	I-275 NB Off-Ramp	D	35.8	--	--	--	--	D	39.7	D	37.7
	Cypress St.	D	37.6	A	9.6	--	--	D	42.2	D	37.3
Himes Ave.	Spruce St.	F	105.1	F	118.3	D	39.5	E	65.8	E	66.6
	I-275 SB Off-Ramp	--	--	F	93.2	D	53.9	C	21.0	D	44.4
	NB Egress/SB Ingress Ramp	F	84.8	--	--	A	2.9	C	34.7	D	37.4
	I-275 NB On-Ramp	--	--	--	--	A	9.0	C	28.2	C	20.9
	Cypress St.	E	68.8	D	41.6	E	60.6	B	19.4	D	45.8
Dale Mabry Hwy.	Shopping Plaza	F	566.2	E	73.0	A	4.5	D	44.8	E	77.4
	I-275 SB Off-Ramp	--	--	F	96.0	A	9.4	A	8.8	C	28.3
	I-275 NB Off-Ramp	F	120.5	--	--	D	49.2	F	129.4	F	94.4
	Cypress St.	E	69.9	F	99.8	E	59.3	B	10.2	D	51.2
Lois Ave.	Cypress St.	F	150.7	E	61.5	D	45.1	F	84.0	F	95.9
	I-275 SB On-Ramp	--	--	--	--	A	9.5	B	12.4	B	11.6
	I-275 NB Off-Ramp	D	53.8	--	--	D	37.6	A	7.6	C	25.5
Trask St.	I-275 NB On-Ramp	B	19.1	--	--	C	23.2	D	45.8	C	24.6
Westshore Blvd.	Cypress St.	F	189.3	E	66.1	C	29.1	E	55.2	F	88.0
	I-275 SB Off-Ramp	--	--	C	33.7	B	12.9	B	11.9	B	18.0
	I-275 NB On-Ramp	--	--	--	--	B	16.3	A	2.7	A	7.5
	Gray St.	D	45.8	E	66.7	C	25.2	C	23.7	C	28.1
Kennedy Blvd.	S. Hoover Blvd.	C	34.3	B	12.9	E	64.4	D	50.9	C	30.6
	Memorial Hwy.	E	61.7	--	--	E	61.3	C	32.5	D	52.1
Cypress St.	E. Frontage Rd.	A	0.7	A	3.8	E	55.1	D	47.7	A	8.1
	Reo St..	B	18.4	C	34.8	F	97.2	D	53.7	D	49.4

Table 20: Design Year (2045) No-Build – LOS and Delay (AM Peak Hour)

Arterial	Intersecting Roadway	Eastbound		Westbound		Northbound		Southbound		Intersection	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Tampa St.	Kay St.	--	--	E	64.4	--	--	C	22.7	C	30.4
	Scott St.	F	117.5	--	--	--	--	F	94.2	F	100.5
	Tyler St.	D	46.4	F	166.4	--	--	F	176.4	F	172.2
Florida Ave.	Scott St.	E	65.3	--	--	E	68.4	--	--	E	67.1
Ashley Dr.	Tyler St.	F	237.1	F	112.6	E	72.0	C	25.1	E	58.6
Howard Ave.	Main St.	E	57.0	E	56.8	B	17.2	--	--	C	22.4
	I-275 SB Off-Ramp	--	--	E	58.2	D	44.6	--	--	D	50.9
	I-275 NB On-Ramp	E	59.2	--	--	D	52.1	--	--	D	54.2
	Cypress St.	C	28.3	D	36.4	B	16.2	--	--	B	19.8
Armenia Ave.	Main St.	D	47.6	E	57.3	--	--	A	4.2	B	12.8
	I-275 SB On-Ramp	--	--	F	126.4	--	--	F	128.2	F	127.0
	I-275 NB Off-Ramp	F	81.8	--	--	--	--	F	115.3	F	96.3
	Cypress St.	D	52.5	D	47.3	--	--	C	33.0	D	36.4
Himes Ave.	Spruce St.	E	74.1	F	334.3	E	56.5	F	99.2	F	106.1
	I-275 SB Off-Ramp	--	--	F	119.8	C	26.3	B	16.3	D	48.1
	I-275 NB On-Ramp	--	--	--	--	A	2.5	A	5.9	A	4.7
	Cypress St.	F	119.2	F	211.6	C	33.3	C	27.4	E	69.6
Dale Mabry Hwy.	Shopping Plaza	F	594.2	F	135.8	B	17.9	C	32.5	D	41.4
	I-275 SB Off-Ramp	--	--	F	655.0	F	137.5	F	498.0	F	413.1
	I-275 NB Off-Ramp	F	586.7	--	--	D	50.8	F	134.2	F	250.9
	Cypress St.	E	62.8	F	97.4	E	58.5	C	33.0	E	57.0
Lois Ave.	Cypress St.	D	48.9	F	278	F	136.3	F	218.3	F	190.4
	I-275 SB On-Ramp	--	--	--	--	A	9.3	B	15.1	B	11.5
	I-275 NB Off-Ramp	F	130.5	--	--	F	138.5	E	70.9	F	120.7
Westshore Blvd.	Cypress St.	E	72.4	F	125.1	E	78.1	E	71.1	F	85.6
	I-275 SB Off-Ramp	--	--	F	208.8	C	20.5	D	47.6	F	114.9
	I-275 NB On-Ramp	--	--	--	--	F	106.4	A	6.6	E	61.0
	Gray St.	E	60.8	F	88.1	B	19.9	A	1.5	B	17.9
Kennedy Blvd.	S. Hoover Blvd.	D	49.7	C	31.4	E	75.9	D	52.6	D	45.6
	Memorial Hwy.	E	74.1	--	--	D	40.1	D	52.8	D	51.1
Cypress St.	E. Frontage Rd.	B	19.8	C	26.3	D	53.8	D	43.4	C	26.7
	W. Frontage Rd.	C	26.8	A	5.0	E	66.5	--	--	B	12.8

Table 21: Design Year (2045) No-Build – LOS and Delay (PM Peak Hour)

Arterial	Intersecting Roadway	Eastbound		Westbound		Northbound		Southbound		Intersection	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Tampa St.	Kay St.	--	--	D	50.5	--	--	B	18.8	C	27.1
	Scott St.	E	62.0	--	--	--	--	D	49.4	D	52.8
	Tyler St.	D	49.1	E	68.9	--	--	D	41.8	D	44.7
Florida Ave.	Scott St.	F	177.6	--	--	F	164.5	--	--	F	169.3
Ashley Dr.	Tyler St.	F	230.3	C	26.0	F	279.9	E	75.0	F	172.4
Howard Ave.	Main St.	E	55.2	D	53.9	C	25.2	--	--	C	29.6
	I-275 SB Off-Ramp	--	--	D	48.2	D	41.4	--	--	D	44.1
	I-275 NB On-Ramp	F	96.9	--	--	F	86.8	--	--	F	91.1
	Cypress St.	C	33.9	C	23.4	C	31.9	--	--	C	31.3
Armenia Ave.	Main St.	D	46.9	E	55.1	--	--	A	5.3	B	14.0
	I-275 SB On-Ramp	--	--	D	47.1	--	--	D	43.2	D	45.4
	I-275 NB Off-Ramp	F	102.5	--	--	--	--	F	97.5	F	100.5
	Cypress St.	E	70.6	B	17.7	--	--	D	43.2	D	45.3
Himes Ave.	Spruce St.	F	241.4	F	567.3	F	105.2	F	484.5	F	330.3
	I-275 SB Off-Ramp	--	--	F	132.4	A	0.3	D	41.2	D	48.1
	I-275 NB On-Ramp	--	--	--	--	A	1.6	A	5.6	A	4.2
	Cypress St.	F	314.9	E	64.9	F	197.4	F	135.1	F	186.4
Dale Mabry Hwy.	Shopping Plaza	F	727.6	F	263.0	E	61.4	F	180.4	F	169.6
	I-275 SB Off-Ramp	--	--	F	402.2	D	48.3	F	178.7	F	168.6
	I-275 NB Off-Ramp	F	345.0	--	--	F	194.2	F	269.9	F	266.9
	Cypress St.	F	175.9	F	202.3	F	182.1	A	1.9	F	121.1
Lois Ave.	Cypress St.	F	386.5	F	181.0	F	89.1	F	286.1	F	262.6
	I-275 SB On-Ramp	--	--	--	--	B	13.1	F	150.3	F	103.5
	I-275 NB Off-Ramp	F	141.5	--	--	E	58.8	B	17.6	E	68.6
Westshore Blvd.	Cypress St.	F	320.8	F	178.9	F	108.2	F	284.1	F	226.6
	I-275 SB Off-Ramp	--	--	F	185.7	C	22.1	C	20.4	E	69.8
	I-275 NB On-Ramp	--	--	--	--	F	128.1	F	96.0	F	107.3
	Gray St.	E	74.8	F	123.4	C	32.5	A	6.7	C	27.6
Kennedy Blvd.	S. Hoover Blvd.	D	37.8	C	26.0	E	75.1	E	62.6	D	39.6
	Memorial Hwy.	E	67.3	--	--	F	103.3	E	65.3	F	82.5
Cypress St.	E. Frontage Rd.	A	0.8	A	8.1	D	52.9	D	44.5	A	9.9
	W. Frontage Rd.	D	39.7	B	15.8	F	136.4	--	--	D	42.7

Table 22: Design Year (2045) Build – LOS and Delay (AM Peak Hour)

Arterial	Intersecting Roadway	Eastbound		Westbound		Northbound		Southbound		Intersection	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Tampa St.	Kay St.	--	--	E	60.9	--	--	C	20.1	C	27.9
	Scott St.	F	89.3	--	--	--	--	F	102.0	F	96.3
	Fortune St.	F	155.8	D	48.3	--	--	F	96.0	F	100.0
	Harrison St.	D	51.3	F	99.2	--	--	E	70.3	E	72.0
	Tyler St.	E	68.7	F	110.4	--	--	E	62.1	E	65.2
Florida Ave.	Scott St.	E	77.2	--	--	E	64.6	--	--	E	69.8
Ashley Dr.	Fortune St.	E	59.7	D	43.9	A	0.6	B	13.4	B	10.1
	Tyler St.	F	84.3	F	114.4	C	21.2	D	37.8	D	35.0
Howard Ave.	Main St.	D	46.9	E	56.7	D	43.0	--	--	D	44.2
	I-275 SB Off-Ramp	--	--	E	70.5	D	49.5	--	--	E	58.1
	I-275 NB On-Ramp	E	58.8	--	--	D	50.0	--	--	D	52.2
	Cypress St.	C	29.7	C	23.0	B	18.4	--	--	B	20.0
Armenia Ave.	Main St.	D	47.5	E	56.3	--	--	A	4.5	B	12.3
	I-275 SB On-Ramp	--	--	E	68.7	--	--	E	63.7	E	67.1
	I-275 NB Off-Ramp	D	36.5	--	--	--	--	D	45.1	D	40.7
	Cypress St.	E	61.6	E	68.7	--	--	D	41.2	D	45.4
Himes Ave.	Spruce St.	F	143.1	F	206.5	F	97.0	F	208.1	F	157.1
	I-275 SB Off-Ramp	--	--	F	165.3	F	151.4	A	4.6	F	84.1
	NB Egress/SB Ingress Ramp	F	209.9	--	--	D	45.3	D	52.3	E	78.3
	I-275 NB On-Ramp	--	--	--	--	A	9.2	C	20.2	B	15.5
	Cypress St.	F	109.6	E	77.2	F	107.5	D	37.3	E	75.9
Dale Mabry Hwy.	Shopping Plaza	F	360.9	F	91.7	C	26.2	C	27.1	D	36.6
	I-275 SB Off-Ramp	--	--	F	337.3	A	8.2	F	234.7	F	194.4
	I-275 NB Off-Ramp	F	324.6	--	--	F	171.7	D	45.3	F	155.4
	Cypress St.	E	61.4	F	98.6	D	52.9	E	57.2	E	60.7
Lois Ave.	Cypress St.	D	48.9	F	279.9	F	106.7	F	219.8	F	181.9
	I-275 SB On-Ramp	--	--	--	--	A	8.6	B	16.6	B	11.5
	I-275 NB Off-Ramp	F	139.8	--	--	F	148.5	E	73.9	F	129.7
Trask St.	I-275 NB On-Ramp	B	14.7	--	--	C	30.0	D	46.1	C	21.1
Westshore Blvd.	Cypress St.	E	69.2	F	80.1	E	74.0	E	68.7	E	73.5
	I-275 SB Off-Ramp	--	--	F	80.6	C	29.7	D	46.4	E	55.4
	I-275 NB On-Ramp	--	--	--	--	B	19.1	A	4.2	B	12.3
	Gray St.	E	69.0	F	84.0	C	26.0	A	1.8	C	21.3
Kennedy Blvd.	S. Hoover Blvd.	C	29.7	C	28.6	D	54.0	C	33.8	C	32.4
	Memorial Hwy.	F	170.7	--	--	D	42.1	D	52.6	E	67.1
Cypress St.	E. Frontage Rd.	A	1.1	A	7.7	E	62.6	D	51.9	A	9.5
	Reo St..	E	72.3	B	15.2	C	31.9	E	66.7	D	42.0

Table 23: Design Year (2045) Build – LOS and Delay (PM Peak Hour)

Arterial	Intersecting Roadway	Eastbound		Westbound		Northbound		Southbound		Intersection	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Tampa St.	Kay St.	--	--	D	42.1	--	--	B	16.4	C	23.5
	Scott St.	D	38.0	--	--	--	--	D	50.4	D	44.5
	Fortune St.	D	41.5	C	30.7	--	--	D	46.4	D	45.1
	Harrison St.	D	46.6	D	54.6	--	--	C	33.6	D	35.1
	Tyler St.	D	49.4	D	45.3	--	--	C	30.4	C	33.2
Florida Ave.	Scott St.	F	181.3	--	--	F	164.1	--	--	F	170.4
Ashley Dr.	Fortune St.	E	68.9	D	37.2	A	4.5	B	18.4	B	13.9
	Tyler St.	F	121.8	D	45.0	E	55.1	B	15.5	D	38.2
Howard Ave.	Main St.	E	55.0	E	60.3	D	36.6	--	--	D	39.0
	I-275 SB Off-Ramp	--	--	F	112.1	D	52.7	--	--	E	70.8
	I-275 NB On-Ramp	F	86.5	--	--	F	105.8	--	--	F	97.6
	Cypress St.	D	46.8	C	30.7	C	33.4	--	--	D	35.6
Armenia Ave.	Main St.	D	46.8	D	54.7	--	--	A	5.7	B	13.8
	I-275 SB On-Ramp	--	--	D	45.5	--	--	D	48.6	D	46.8
	I-275 NB Off-Ramp	E	57.9	--	--	--	--	E	61.2	E	59.4
	Cypress St.	F	95.7	C	21.4	--	--	D	46.4	D	52.3
Himes Ave.	Spruce St.	F	364.5	F	279.6	F	158.0	F	365.2	F	285.9
	I-275 SB Off-Ramp	--	--	F	193.0	F	226.4	C	26.0	F	116.6
	NB Egress/SB Ingress Ramp	F	393.4	--	--	C	30.1	D	54.1	F	121.5
	I-275 NB On-Ramp	--	--	--	--	B	14.5	E	76.6	E	55.4
	Cypress St.	F	264.7	F	83.6	C	30.0	F	425.5	F	247.6
Dale Mabry Hwy.	Shopping Plaza	F	395.3	F	199.9	D	49.9	F	89.1	F	102.8
	I-275 SB Off-Ramp	--	--	F	280.1	B	11.4	D	48.8	F	86.2
	I-275 NB Off-Ramp	F	251.5	--	--	F	139.3	F	181.5	F	178.3
	Cypress St.	F	160.3	F	189.3	F	132.2	E	62.3	F	122.3
Lois Ave.	Cypress St.	F	385.5	F	177.5	F	94.8	F	316.3	F	272.5
	I-275 SB On-Ramp	--	--	--	--	B	11.2	F	161.2	F	109.7
	I-275 NB Off-Ramp	F	173.7	--	--	D	51.9	B	18.3	E	79.8
Trask St.	I-275 NB On-Ramp	D	41.7	--	--	C	29.7	F	180.4	E	62.6
Westshore Blvd.	Cypress St.	F	397.5	F	161.2	F	109.8	F	221.8	F	230.2
	I-275 SB Off-Ramp	--	--	F	84.1	F	85.8	B	18.3	D	50.0
	I-275 NB On-Ramp	--	--	--	--	C	21.2	C	25.1	C	23.7
	Gray St.	F	80.2	F	150.0	C	30.5	A	7.1	C	27.7
Kennedy Blvd.	S. Hoover Blvd.	C	23.4	D	35.7	E	61.0	D	42.1	D	35.2
	Memorial Hwy.	F	102.4	--	--	F	117.5	D	53.5	F	93.7
Cypress St.	E. Frontage Rd.	A	2.9	A	5.2	D	53.7	D	44.6	B	10.1
	Reo St.	C	24.8	D	48.0	F	104.9	D	54.7	E	57.0

Table 24: Summary of Intersection LOS and Delay – AM Peak Hour

Arterial	Intersecting Roadway	Existing Year (2018)		2025				2045			
				No-Build		Build		No-Build		Build	
		LOS	Int. Delay (sec/veh)	LOS	Int. Delay (sec/veh)	LOS	Int. Delay (sec/veh)	LOS	Int. Delay (sec/veh)	LOS	Int. Delay (sec/veh)
Tampa St.	Kay St.	C	24.2	B	19.9	C	20.0	C	30.4	C	27.9
	Scott St.	D	40.1	D	39.1	C	34.1	F	100.5	F	96.3
	Fortune St.	--	--	--	--	D	41.7	--	--	F	100.0
	I-275 SB Ramp/Harrison St.	--	--	--	--	D	36.0	--	--	E	72.0
	Tyler St.	C	21.6	D	38.8	C	31.4	F	172.2	E	65.2
Florida Ave.	Scott St.	C	33.2	C	33.8	D	38.2	E	67.1	E	69.8
Ashley Dr.	Fortune St.	--	--	--	--	A	5.4	--	--	B	10.1
	Tyler St.	C	24.7	C	23.5	B	12.6	E	58.6	D	35.0
Howard Ave.	Main St.	E	55.4	C	20.0	C	22.2	C	22.4	D	44.2
	I-275 SB Off-Ramp	D	48.0	D	41.3	D	43.5	D	50.9	E	58.1
	I-275 NB On-Ramp	D	44.5	D	46.5	D	44.3	D	54.2	D	52.2
	Cypress St.	B	17.7	B	18.1	B	18.2	B	19.8	B	20.0
Armenia Ave.	Main St.	B	12.0	B	16.3	B	11.5	B	12.8	B	12.3
	I-275 SB On-Ramp	D	43.3	D	47.2	D	44.5	F	127.0	E	67.1
	I-275 NB Off-Ramp	D	39.0	D	41.9	D	36.0	F	96.3	D	40.7
	Cypress St.	C	29.3	D	30.8	D	36.9	D	36.4	D	45.4
Himes Ave.	Spruce St.	C	22.2	C	23.2	D	45.7	F	106.1	F	157.1
	I-275 SB Off-Ramp	B	15.8	B	12.5	C	28.3	D	48.1	F	84.1
	NB Egress/SB Ingress Ramp	--	--	--	--	C	30.9	--	--	E	78.3
	I-275 NB On-Ramp	A	9.0	A	3.4	B	17.6	A	4.7	B	15.5
	Cypress St.	B	18.4	C	27.3	D	35.6	E	69.6	E	75.9
Dale Mabry Hwy.	Shopping Plaza	B	17.6	C	21.5	B	14.4	D	41.4	D	36.6
	I-275 SB Off-Ramp	F	98.2	F	134.2	F	94.8	F	413.1	F	194.4
	I-275 NB Off-Ramp	E	64.9	F	80.8	E	55.9	F	250.9	F	155.4
	Cypress St.	C	33.5	D	35.7	C	33.2	E	57.0	E	60.7
Lois Ave.	Cypress St.	D	49.0	E	70.2	E	70.6	F	190.4	F	181.9
	I-275 SB On-Ramp	A	7.3	A	8.4	A	8.4	B	11.5	B	11.5
	I-275 NB Off-Ramp	C	27.1	C	30.6	C	31.4	F	120.7	F	129.7
Trask St.	I-275 NB On-Ramp	--	--	--	--	B	16.8	--	--	C	21.1
Westshore Blvd.	Cypress St.	D	53.4	D	42.2	C	33.2	F	85.6	E	73.5
	I-275 SB Off-Ramp	D	36.4	D	44.6	C	26.8	F	114.9	E	55.4
	I-275 NB Off-Ramp	C	22.6	B	17.8	A	9.4	E	61.0	B	12.3
	W. Gray St.	A	7.5	B	16.9	B	17.7	B	17.9	C	21.3
Kennedy Blvd.	S. Hoover Blvd.	C	33.8	B	19.4	C	28.6	D	45.6	C	32.4
	Memorial Hwy.	D	42.0	C	35.0	D	36.4	D	51.1	E	67.1
Cypress St.	E. Frontage Rd.	A	9.7	B	17.9	A	7.7	C	26.7	A	9.5
	W. Frontage Rd.	A	5.1	A	6.6	--	--	B	12.8	--	--
	Reo St.	--	--	--	--	D	39.4	--	--	D	42.0

Table 25: Summary of Intersection LOS and Delay – PM Peak Hour

Arterial	Intersecting Roadway	Existing Year (2018)		2025				2045			
				No-Build		Build		No-Build		Build	
		LOS	Int. Delay (sec/veh)	LOS	Int. Delay (sec/veh)	LOS	Int. Delay (sec/veh)	LOS	Int. Delay (sec/veh)	LOS	Int. Delay (sec/veh)
Tampa St.	Kay St.	C	27.7	C	23.0	C	23.5	C	27.1	C	23.5
	Scott St.	D	37.2	C	33.4	C	32.6	D	52.8	D	44.5
	Fortune St.	--	--	--	--	C	34.0	--	--	D	45.1
	I-275 SB Ramp/Harrison St.	--	--	--	--	C	30.0	--	--	D	35.1
	Tyler St.	C	20.6	C	27.6	C	25.9	D	44.7	C	33.2
Florida Ave.	Scott St.	C	26.2	D	52.9	D	53.1	F	169.3	F	170.4
Ashley Dr.	Fortune St.	--	--	--	--	A	6.5	--	--	B	13.9
	Tyler St.	D	50.0	E	60.7	C	25.9	F	172.4	D	38.2
Howard Ave.	Main St.	C	26.1	C	27.0	C	27.1	C	29.6	D	39.0
	I-275 SB Off-Ramp	D	41.1	D	41.4	D	43.5	D	44.1	E	70.8
	I-275 NB On-Ramp	D	52.5	E	57.5	E	67.0	F	91.1	F	97.6
	Cypress St.	C	25.0	C	23.3	C	23.3	C	31.3	D	35.6
Armenia Ave.	Main St.	B	16.3	B	15.2	B	14.0	B	14.0	B	13.8
	I-275 SB On-Ramp	D	41.1	D	41.8	D	42.7	D	45.4	D	46.8
	I-275 NB Off-Ramp	E	65.5	D	39.8	D	37.7	F	100.5	E	59.4
	Cypress St.	D	37.2	D	36.6	D	37.3	D	45.3	D	52.3
Himes Ave.	Spruce St.	C	31.9	D	51.6	E	66.6	F	330.3	F	285.9
	I-275 SB Off-Ramp	B	11.5	B	12.3	D	44.4	D	48.1	F	116.6
	NB Egress/SB Ingress Ramp	--	--	--	--	D	37.4	--	--	F	121.5
	I-275 NB On-Ramp	B	10.5	A	3.4	C	20.9	A	4.2	E	55.4
	Cypress St.	C	27.1	D	35.4	D	45.8	F	186.4	F	247.6
Dale Mabry Hwy.	Shopping Plaza	C	34.1	D	36.8	E	77.4	F	169.6	F	102.8
	I-275 SB Off-Ramp	E	63.0	E	58.1	C	28.3	F	168.6	F	86.2
	I-275 NB Off-Ramp	D	54.6	F	87.7	F	94.4	F	266.9	F	178.3
	Cypress St.	D	45.0	E	54.7	D	51.2	F	121.1	F	122.3
Lois Ave.	Cypress St.	E	61.8	F	100.2	F	95.9	F	262.6	F	272.5
	I-275 SB On-Ramp	A	7.0	A	7.6	B	11.6	F	103.5	F	109.7
	I-275 NB Off-Ramp	B	19.4	C	23.7	C	25.5	E	68.6	E	79.8
Trask St.	I-275 SB On-Ramp	--	--	--	--	C	24.6	--	--	E	62.6
Westshore Blvd.	Cypress St.	D	52.6	F	86.2	F	88.0	F	226.6	F	230.2
	I-275 SB Off-Ramp	C	25.5	C	30.9	B	18.0	E	69.8	D	50.0
	I-275 NB Off-Ramp	B	18.9	C	27.2	A	7.5	F	107.3	C	23.7
	W. Gray St.	D	36.5	D	40.0	C	28.1	C	27.6	C	27.7
Kennedy Blvd.	S. Hoover Blvd.	C	34.7	D	40.0	C	30.6	D	39.6	D	35.2
	Memorial Hwy.	D	47.2	D	51.9	D	52.1	F	82.5	F	93.7
Cypress St.	E. Frontage Rd.	B	12.2	B	14.6	A	8.1	A	9.9	B	10.1
	W. Frontage Rd.	C	23.9	C	21.5	D	49.4	D	42.7	E	57.0
	Reo St.	--	--	--	--	C	26.6	--	--	D	47.7

Table 26: Opening Year (2025) No-Build – 95th Percentile Queue Length (feet)

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Tampa St. at Kay St.	AM	-	-	-	23	341	-	-	-	-	-	323	175
	PM	-	-	-	30	386	-	-	-	-	-	229	322
	Storage Length	-	-	-	170	400	-	-	-	-	-	800	450
Tampa St. at Scott St.	AM	-	385	-	-	-	-	-	-	-	-	54	-
	PM	-	300	-	-	-	-	-	-	-	-	0	-
	Storage Length	-	1000	-	-	-	-	-	-	-	-	250	-
Tampa St. at Tyler St.	AM	-	m49	-	33	341	-	-	-	-	-	241	m2
	PM	-	m55	-	49	231	-	-	-	-	-	168	5
	Storage Length	-	200	-	100	200	-	-	-	-	-	1550	135
Florida Ave. at Scott St.	AM	-	147	-	-	-	-	-	449	-	-	-	-
	PM	-	#492	-	-	-	-	-	#904	-	-	-	-
	Storage Length	-	400	-	-	-	-	-	625	-	-	-	-
Ashley Dr. at Tyler St.	AM	63	17	-	m20	#105	-	83	683	-	-	339	139
	PM	#354	40	-	m15	161	-	95	#1271	-	-	407	122
	Storage Length	220	325	-	175	200	-	170	170	-	-	650	150
Howard Ave. at Main St.	AM	26	53	-	-	92	-	-	84	m5	-	-	-
	PM	45	126	-	-	167	-	-	117	m4	-	-	-
	Storage Length	110	580	-	-	600	-	-	200	200	-	-	-
Howard Ave. at I-275 SB Off-Ramp	AM	-	-	-	-	410	-	213	208	-	-	-	-
	PM	-	-	-	-	349	-	185	183	-	-	-	-
	Storage Length	-	-	-	-	2000	-	275	310	-	-	-	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Howard Ave. at I-275 NB On-Ramp	AM	313	389	-	-	-	-	-	150	477	-	-	-
	PM	483	#778	-	-	-	-	-	102	#770	-	-	-
	Storage Length	600	600	-	-	-	-	-	1100	1100	-	-	-
Howard Ave. at Cypress St.	AM	45	121	-		176	89	43	342	-	-	-	-
	PM	m74	243	-		172	82	64	471	-	-	-	-
	Storage Length	110	600	-	-	4000	600	220	2600	-	-	-	-
Armenia Ave. at Main St.	AM	-	56	-	27	25	-	-	-	-	-	104	-
	PM	-	145	-	85	126	-	-	-	-	-	59	-
	Storage Length	-	600	-	100	580	-	-	-	-	-	2500	-
Armenia Ave. at I-275 SB On -Ramp	AM	-	-	-	268	541	-	-	-	-	-	28	433
	PM	-	-	-	217	304	-	-	-	-	-	134	256
	Storage Length	-	-	-	590	590	-	-	-	-	-	200	200
Armenia Ave. at I-275 NB Off-Ramp	AM	-	171	#895	-	-	-	-	-	-	m64	m276	-
	PM	-	555	#830	-	-	-	-	-	-	116	225	-
	Storage Length	-	1600	1140[6]	-	-	-	-	-	-	300	300	-
Armenia Ave. at Cypress St.	AM	-	208	-	21	111	-	-	-	-	m31	271	m1
	PM	-	464	-	13	115	-	-	-	-	m78	378	m5
	Storage Length	-	2550	-	150	590	-	-	-	-	200	1150	200
Himes Ave. at Spruce St.	AM	89	212	-	129	#319	-	#209	242	-	96	551	-
	PM	169	541	-	#281	314	-	#160	172	-	#281	#801	-
	Storage Length	200	1200	-	140	1240	300	180	930		175	2500	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Himes Ave. at I-275 SB Off-Ramp	AM	-	-	-	200	248	211	-	8	-	-	96	-
	PM	-	-	-	203	262	150	-	422	-	-	m64	-
	Storage Length	-	-	-	300	1450	800	-	350	-	-	970	-
Himes Ave. at I-275 NB On-Ramp	AM	-	-	-	-	-	-	-	187	-	248	0	-
	PM	-	-	-	-	-	-	-	118	-	245	0	-
	Storage Length	-	-	-	-	-	-	-	500	-	350	350	-
Himes Ave. at Cypress St.	AM	65	143	-	48	371	-	74	290	-	40	104	-
	PM	#231	#720	-	#93	384	-	70	372	-	#152	358	-
	Storage Length	220	1175	-	225	2500	-	190	2500	-	210	1100	-
Dale Mabry Hwy. at Shopping Plaza	AM	27	30	23	#74	45	0	m101	m312	m0	31	501	0
	PM	#171	80	#469	127	#122	0	m269	m376	m59	76	817	76
	Storage Length	300	300	175	125	200	125	350	500	150	250	550	185
Dale Mabry Hwy. at I-275 SB Off-Ramp	AM	-	-	-	244	-	#1205	m#242	m67	-	-	64	#864
	PM	-	-	-	311	-	#1010	m#192	m30	-	-	126	1216
	Storage Length	-	-	-	225	-	200	200	200	-	-	550	250
Dale Mabry Hwy. at I-275 NB Off-Ramp	AM	#768	-	142	-	-	-	-	148	587	345	51	-
	PM	#951	-	428	-	-	-	-	357	m#829	#860	125	-
	Storage Length	440	-	390	-	-	-	-	740	200	500	360	-
Dale Mabry Hwy. at Cypress St.	AM	175	115	-	71	250	-	321	514	-	65	351	3
	PM	#628	540	-	90	#391	-	#257	844	-	m#181	708	m15
	Storage Length	220	2500	-	180	1200	-	300	1200	-	425	710	710

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Lois Ave.at Cypress St.	AM	45	126	38	110	#792	-	#379	374	-	79	#452	-
	PM	74	#574	#594	#339	323	-	#165	341	-	152	#758	-
	Storage Length	100	565	425	100	2500	-	190	600	-	80	2500	-
Lois Ave.at I-275 SB On-Ramp	AM	-	-	-	-	-	-	102	0	-	-	m69	-
	PM	-	-	-	-	-	-	70	0	-	-	m153	-
	Storage Length	-	-	-	-	-	-	250	250	-	-	215	-
Lois Ave.at I-275 NB Off-Ramp	AM	340	-	48	-	-	-	-	443	-	111	7	-
	PM	189	-	129	-	-	-	-	323	-	223	36	-
	Storage Length	600	-	600	-	-	-	-	1800	-	450	300	-
Westshore Blvd. at Cypress St.	AM	70	#307	102	#181	286	-	m203	m343	-	#125	282	-
	PM	167	#858	#649	#460	344	-	141	762	-	#269	#948	-
	Storage Length	225	2500	540	400	560	-	280	475	-	200	1230	-
Westshore Blvd. at I-275 SB Off-Ramp	AM	-	-	-	431	447	#903	78	16	-	-	324	-
	PM	-	-	-	#669	#687	548	m2	66	-	-	m338	-
	Storage Length	-	-	-	440	3000	2540[6]	370	170	-	-	475	-
Westshore Blvd. at I-275 NB On-Ramp	AM	-	-	-	-	-	-	-	63	#681	274	7	-
	PM	-	-	-	-	-	-	-	197	#921	m#973	m23	-
	Storage Length	-	-	-	-	-	-	-	380	380	310	170	-
Westshore Blvd. at Gray St.	AM	36	22	-	58	45	-	32	378	-	32	110	-
	PM	316	136	-	50	119	-	61	339	-	40	206	-
	Storage Length	125	450	-	30	550	-	270	590	-	155	400	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Kennedy Blvd. at Hoover Blvd.	AM	43	431	-	m71	m194	m9	-	211	0	23	22	-
	PM	10	305	-	m4	14	m0	-	252	0	#268	58	-
	Storage Length	250	1700	-	410	1400	600	-	460	100	100	100	-
Kennedy Blvd. at Memorial Hwy.	AM	#250	#251	232	-	-	-	#270	594	0	70	#721	75
	PM	#554	#567	283	-	-	-	412	#1478	0	#255	#782	27
	Storage Length	430	1400	1400	-	-	-	420	750	125	310	1500	200
Cypress St. at E. Frontage Rd.	AM	m7	96	-	19	435	-	-	171	-	-	21	0
	PM	m5	66	-	8	153	-	-	167	-	-	37	26
	Storage Length	70	285	-	70	450	-	-	750	-	-	800	75
Cypress St. at W. Frontage Road	AM	-	318	-	54	26	-	17	-	23	-	-	-
	PM	-	403	-	86	7	-	61	-	66	-	-	-
	Storage Length	-	1000	-	150	285	-	180	-	650	-	-	-

Notes:

1) The # footnote indicates that the volume for the 95th percentile cycle exceeds capacity. This traffic was simulated for two complete cycles to account for the effects of spillover between cycles. If the reported v/c <1for this movement, this is a valid method for estimating the 95th percentile queue.
2) The m footnote indicates that the volume for the 95th percentile queue is metered by an upstream signal (Trafficware).
3) The storage length values were calculated from aerials or design drawings.
4) L = left, T = through, R = right.
5) Storage Length for through movement is considered as the distance from the upstream signalized intersection.
6) Storage Length for right-turn/left-turn at ramp terminals that extends to the gore is estimated by subtracting the deceleration length based on FDM Exhibit 212-1 from the total length of the ramp.

Table 27: Opening Year (2025) Build – 95th Percentile Queue Length (feet)

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Tampa St. at Kay St.	AM	-	-	-	20	340	-	-	-	-	-	296	174
	PM	-	-	-	30	386	-	-	-	-	-	193	322
	Storage Length	-	-	-	170	400	-	-	-	-	-	800	450
Tampa St. at Scott St.	AM	-	334	438	-	-	-	-	-	-	-	136	-
	PM	-	236	166	-	-	-	-	-	-	-	0	-
	Storage Length	-	1000	550	-	-	-	-	-	-	-	250	-
Tampa St. at E. Fortune St.	AM	-	14	238	-	52	-	-	-	-	-	532	-
	PM	-	19	188	-	85	-	-	-	-	-	281	-
	Storage Length	-	425	100	-	200	-	-	-	-	-	575	-
Tampa St. at Harrison St.	AM	-	4	1		211	-	-	-	-	-	70	m0
	PM	-	10	2		156	-	-	-	-	-	64	2
	Storage Length	-	275	250		525	-	-	-	-	-	500	300
Tampa St. at Tyler St.	AM	-	m36	44	31	195	-	-	-	-	-	3	m0
	PM	-	m22	m69	30	126	-	-	-	-	-	4	0
	Storage Length	-	200	200	100	475	-	-	-	-	-	200	150
Florida Ave. at Scott St.	AM	-	217	-	-	-	-	-	488	-	-	-	-
	PM	-	#503	-	-	-	-	-	#820	-	-	-	-
	Storage Length	-	400	-	-	-	-	-	625	-	-	-	-
Ashley Dr. at W. Fortune St.	AM	40	26	-	m9	42	-	-	12	-	-	247	19
	PM	#156	46	-	11	94	-	-	m52	-	-	333	16
	Storage Length	150	625	-	200	250	-	-	275	-	-	425	250

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Ashley Dr. at Tyler St.	AM	40	18	-	m17	51	-	81	355	-	101	97	7
	PM	#203	51	-	15	38	-	146	636	-	#229	#631	20
	Storage Length	220	325	-	175	200	-	170	170	-	200	650	150
Howard Ave. at Main St.	AM	28	59	-	-	111	-	-	126	m8	-	-	-
	PM	45	126	-	-	168	-	-	134	m2	-	-	-
	Storage Length	110	580	-	-	600	-	-	200	200	-	-	-
Howard Ave. at I-275 SB Off-Ramp	AM	-	-	-	-	448	-	304	241	-	-	-	-
	PM	-	-	-	-	353	-	438	363	-	-	-	-
	Storage Length	-	-	-	-	2000	-	275	310	-	-	-	-
Howard Ave. at I-275 NB On-Ramp	AM	113	350	-	-	-	-	-	90	87	-	-	-
	PM	364	#695	-	-	-	-	-	73	#1097	-	-	-
	Storage Length	600	600	-	-	-	-	-	1100	1100	-	-	-
Howard Ave. at Cypress St.	AM	50	118	-	-	178	100	42	356	-	-	-	-
	PM	m63	197	-	-	183	95	59	491	-	-	-	-
	Storage Length	110	600	-	-	4000	600	220	2600	-	-	-	-
Armenia Ave. at Main St.	AM	-	82	-	78	96	-	-	-	-	-	47	-
	PM	-	146	-	83	99	-	-	-	-	-	75	-
	Storage Length	-	600	-	100	580	-	-	-	-	-	2500	-
Armenia Ave. at I-275 SB On-Ramp	AM	-	-	-	337	548	-	-	-	-	-	124	229
	PM	-	-	-	389	380	-	-	-	-	-	174	150
	Storage Length	-	-	-	590	590	-	-	-	-	-	200	200

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Armenia Ave. at I-275 NB Off-Ramp	AM	-	314	468	-	-	-	-	-	-	m34	417	-
	PM	-	453	432	-	-	-	-	-	-	232	318	-
	Storage Length	-	1600	1140[6]	-	-	-	-	-	-	300	300	-
Armenia Ave. at Cypress St.	AM	-	211	-	21	112	-	-	-	-	m46	530	m8
	PM	-	464	-	14	120	-	-	-	-	m89	350	m18
	Storage Length	-	2550	-	150	590	-	-	-	-	200	1150	200
Himes Ave. at Spruce St.	AM	#134	227	-	147	#420	-	m#373	m826	m0	#169	#1178	22
	PM	#298	#646	-	#274	#402	-	m#216	m#157	m0	#254	#1093	12
	Storage Length	200	1200	-	140	1240	-	180	930	300	175	2500	140
Himes Ave. at I-275 SB Off-Ramp	AM	-	-	-	325	#653	173	-	681	-	-	m63	-
	PM	-	-	-	#252	#479	49	-	m#854	-	-	m509	-
	Storage Length	-	-	-	300	1450	800	-	350	-	-	970	-
Himes Ave. at NB Egress/SB Ingress Ramp	AM	#358	-	55	-	-	-	#325	3	-	-	658	-
	PM	391	-	#300	-	-	-	m153	3	-	-	489	-
	Storage Length	500	-	500	-	-	-	150	150	-	-	200	-
Himes Ave. at I-275 NB On-Ramp	AM	-	-	-	-	-	-	-	164	-	321	0	-
	PM	-	-	-	-	-	-	-	m104	-	#375	0	-
	Storage Length	-	-	-	-	-	-	-	1000	-	350	350	-
Himes Ave. at Cypress St.	AM	90	191	-	64	499	-	86	528	-	59	162	-
	PM	#309	#904	-	#127	489	-	#120	#641	-	#391	214	-
	Storage Length	220	1175	-	225	2500	-	190	2500	-	210	1100	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Dale Mabry Hwy. at Shopping Plaza	AM	27	30	0	58	45	0	m82	m373	m0	35	348	0
	PM	111	54	#314	#110	85	0	m158	m381	m1	65	589	25
	Storage Length	300	300	175	125	200	125	350	500	150	250	550	185
Dale Mabry Hwy. at I-275 SB Off-Ramp	AM	-	-	-	206	-	#1269	m#125	m70	-	-	237	571
	PM	-	-	-	#257	-	#750	m85	m69	-	-	41	m0
	Storage Length	-	-	-	225	-	200	200	200	-	-	550	250
Dale Mabry Hwy. at I-275 NB Off-Ramp	AM	#436	-	96	-	-	-	-	233	#563	397	47	-
	PM	#405	-	184	-	-	-	-	m104	m#798	#774	24	-
	Storage Length	440	-	390	-	-	-	-	740	200	500	360	-
Dale Mabry Hwy. at Cypress St.	AM	154	118	-	59	#266	-	324	483	-	57	216	18
	PM	#545	#455	-	74	#307	-	#199	#755	-	m#111	360	m0
	Storage Length	220	2500	-	180	1200	-	300	1200	-	425	710	710
Lois Ave.at Cypress St.	AM	36	124	37	88	#834	-	#381	408	-	86	#470	-
	PM	81	#632	#618	#373	363	-	#142	267	-	165	#864	-
	Storage Length	100	565	425	100	2500	-	190	600	-	80	2500	-
Lois Ave.at I-275 SB On-Ramp	AM	-	-	-	-	-	-	83	0	-	-	m67	-
	PM	-	-	-	-	-	-	82	0	-	-	m227	-
	Storage Length	-	-	-	-	-	-	250	250	-	-	215	-
Lois Ave.at I-275 NB Off-Ramp	AM	359	-	49	-	-	-	-	443	-	141	9	-
	PM	211	-	101	-	-	-	-	376	-	276	8	-
	Storage Length	600	-	600	-	-	-	-	1800	-	450	300	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Trask St. at I-275 SB Off-Ramp	AM	-	-	-	-	-	0	-	3	-	-	20	-
	PM	-	-	-	-	-	0	-	m21	-	-	m0	-
	Storage Length	-	-	-	-	-	700	-	450	-	-	400	-
Trask St. at I-275 NB On-Ramp	AM	-	211	5	-	-	-	-	143	27	116	38	-
	PM	-	330	32	-	-	-	-	129	146	#200	118	-
	Storage Length	-	500	300	-	-	-	-	450	250	300	350	-
Westshore Blvd. at Cypress St.	AM	69	#307	189	168	283	-	m234	315	-	78	289	-
	PM	98	#650	#715	#349	237	-	m85	467	-	#193	#685	-
	Storage Length	225	2500	540	400	560	-	280	475	-	200	1230	-
Westshore Blvd. at I-275 SB Off-Ramp	AM	-	-	-	320	328	600	91	46	-	-	258	-
	PM	-	-	-	315	#322	230	m4	37	-	-	m240	-
	Storage Length	-	-	-	440	3000	2540[6]	370	170	-	-	475	-
Westshore Blvd. at I-275 NB On-Ramp	AM	-	-	-	-	-	-	-	252	296	253	5	-
	PM	-	-	-	-	-	-	-	145	216	547	21	-
	Storage Length	-	-	-	-	-	-	-	380	380	310	170	-
Westshore Blvd. at Gray St.	AM	36	22	-	58	45	-	32	331	-	29	105	-
	PM	213	76	-	35	75	-	72	264	-	40	296	-
	Storage Length	125	450	-	30	550	-	270	590	-	155	400	-
Kennedy Blvd. at Hoover Blvd.	AM	50	442	-	m17	m324	m0	-	329	0	20	20	-
	PM	15	293	-	m4	63	m0	-	272	0	198	50	-
	Storage Length	250	1700	-	410	1400	600	-	460	100	100	100	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Kennedy Blvd. at Memorial Hwy.	AM	#280	#286	218	-	-	-	#275	591	0	81	#827	90
	PM	#504	#502	162	-	-	-	296	#1447	0	#205	613	0
	Storage Length	430	1400	1400	-	-	-	420	750	125	310	1500	200
Cypress St. at E. Frontage Rd.	AM	m1	m38	-	13	279	-	-	185	-	-	24	0
	PM	m12	265	-	4	80	-	-	148	-	-	38	10
	Storage Length	70	680	-	70	450	-	-	750	-	-	800	75
Cypress St. at Reo St.	AM	-	#811	397	#561	58	-	-	96	24	-	30	-
	PM	-	411	26	163	40	-	-	119	284	-	97	-
	Storage Length	-	1100	1100	400	800	-	-	150	500	-	150	-

Notes:

1) The # footnote indicates that the volume for the 95th percentile cycle exceeds capacity. This traffic was simulated for two complete cycles to account for the effects of spillover between cycles. If the reported v/c <1for this movement, this is a valid method for estimating the 95th percentile queue.
2) The m footnote indicates that the volume for the 95th percentile queue is metered by an upstream signal (Trafficware).
3) The storage length values were calculated from aerials or design drawings.
4) L = left, T = through, R = right.
5) Storage Length for through movement is considered as the distance from the upstream signalized intersection.
6) Storage Length for right-turn/left-turn at ramp terminals that extends to the gore is estimated by subtracting the deceleration length based on FDM Exhibit 212-1 from the total length of the ramp.

Table 28: Design Year (2045) No-Build – 95th Percentile Queue Length (feet)

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Tampa St. at Kay St.	AM	-	-	-	42	#533	-	-	-	-	-	1009	169
	PM	-	-	-	75	523	-	-	-	-	-	697	337
	Storage Length	-	-	-	170	400	-	-	-	-	-	800	450
Tampa St. at Scott St.	AM	-	#825	-	-	-	-	-	-	-	-	#1327	-
	PM	-	493	-	-	-	-	-	-	-	-	34	-
	Storage Length	-	1000	-	-	-	-	-	-	-	-	250	-
Tampa St. at Tyler St.	AM	-	m125	-	61	#798	-	-	-	-	-	m#1899	m12
	PM	-	m84	-	63	370	-	-	-	-	-	291	m2
	Storage Length	-	200	-	100	200	-	-	-	-	-	1550	135
Florida Ave. at Scott St.	AM	-	m225	-	-	-	-	-	#884	-	-	-	-
	PM	-	#1237	-	-	-	-	-	#1412	-	-	-	-
	Storage Length	-	400	-	-	-	-	-	625	-	-	-	-
Ashley Dr. at Tyler St.	AM	#170	19	-	m32	m#469	-	107	#1521	-	-	556	258
	PM	#533	47	-	m42	226	-	#127	#2169	-	-	#1023	211
	Storage Length	220	325	-	175	200	-	170	170	-	-	650	150
Howard Ave. at Main St.	AM	44	82	-	-	121	-	-	m91	m2	-	-	-
	PM	52	141	-	-	183	-	-	152	m0	-	-	-
	Storage Length	110	580	-	-	600	-	-	200	200	-	-	-
Howard Ave. at I-275 SB Off-Ramp	AM	-	-	-	-	#606	-	m#806	m406	-	-	-	-
	PM	-	-	-	-	456	-	m387	m353	-	-	-	-
	Storage Length	-	-	-	-	2000	-	275	310	-	-	-	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Howard Ave. at I-275 NB On-Ramp	AM	#599	#535	-	-	-	-	-	178	#818	-	-	-
	PM	m#719	m#787	-	-	-	-	-	108	#1037	-	-	-
	Storage Length	600	600	-	-	-	-	-	1100	1100	-	-	-
Howard Ave. at Cypress St.	AM	m72	171	-	-	211	110	46	449	-	-	-	-
	PM	m80	m297	-	-	201	86	74	571	-	-	-	-
	Storage Length	110	600	-	-	4000	600	220	2600	-	-	-	-
Armenia Ave. at Main St.	AM	-	94	-	121	69	-	-	-	-	-	79	-
	PM	-	177	-	m#122	121	-	-	-	-	-	111	-
	Storage Length	-	600	-	100	580	-	-	-	-	-	2500	-
Armenia Ave. at I-275 SB On-Ramp	AM	-	-	-	m#713	m#1155	-	-	-	-	-	64	#1120
	PM	-	-	-	m289	#745	-	-	-	-	-	160	#275
	Storage Length	-	-	-	590	590	-	-	-	-	-	200	200
Armenia Ave. at I-275 NB Off-Ramp	AM	-	239	#1431	-	-	-	-	-	-	m123	m#423	-
	PM	-	#1229	#1468	-	-	-	-	-	-	m#549	m#584	-
	Storage Length	-	1600	1140[6]	-	-	-	-	-	-	300	300	-
Armenia Ave. at Cypress St.	AM	-	247	-	m24	123	-	-	-	-	m27	m296	m0
	PM	-	#681	-	43	332	-	-	-	-	m56	m328	m0
	Storage Length	-	2550	-	150	590	-	-	-	-	200	1150	200
Himes Ave. at Spruce St.	AM	#205	#512	-	#383	#734	-	m#491	m473	-	#316	#1314	-
	PM	#504	#1189	-	#498	#640	-	m#254	#946	-	#476	#1567	-
	Storage Length	200	1200	-	140	1240	300	180	930	-	175	2500	-
Himes Ave. at I-275 SB Off-Ramp	AM	-	-	-	352	#776	#716	-	180	-	-	m131	-
	PM	-	-	-	#352	#560	#503	-	m1	-	-	m24	-
	Storage Length	-	-	-	300	1450	800	-	350	-	-	970	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Himes Ave. at Cypress St.	AM	#211	306	-	96	#1069	-	#187	488	-	#227	334	-
	PM	#519	#1461	-	#135	830	-	#203	#835	-	#496	#886	-
	Storage Length	220	1175	-	225	2500	-	190	2500	-	210	1100	-
Himes Ave. at I-275 NB On-Ramp	AM	-	-	-	-	-	-	-	m166	-	m332	m0	-
	PM	-	-	-	-	-	-	-	m114	-	m393	m0	-
	Storage Length	-	-	-	-	-	-	-	1000	-	350	350	-
Dale Mabry Hwy. at Shopping Plaza	AM	41	48	80	#150	68	0	m164	m392	m6	50	1054	0
	PM	201	85	#938	#242	143	4	m#435	m#1222	m108	#132	#1733	113
	Storage Length	300	300	175	125	200	125	350	500	150	250	550	185
Dale Mabry Hwy. at I-275 SB Off-Ramp	AM	-	-	-	#525	-	#2493	m#491	m40	-	-	m147	m#4319
	PM	-	-	-	#569	-	#1616	m#268	m38	-	-	m184	m#1781
	Storage Length	-	-	-	225	-	200	200	200	-	-	550	250
Dale Mabry Hwy. at I-275 NB Off-Ramp	AM	#2019	-	325	-	-	-	-	284	m#1192	m#878	m120	-
	PM	#1982	-	#960	-	-	-	-	m408	m#771	m#1408	m247	-
	Storage Length	440	-	390	-	-	-	-	740	200	500	360	-
Dale Mabry Hwy. at Cypress St.	AM	#323	225	-	102	#494	-	#644	1030	-	#109	612	52
	PM	#1064	#979	-	#234	#614	-	#478	#1576	-	m190	m#1073	m14
	Storage Length	220	2500	-	180	1200	-	300	1200	-	425	710	710
Lois Ave.at Cypress St.	AM	68	246	70	163	#1692	-	#1027	#1113	-	#150	#1249	-
	PM	#236	#1250	#1302	#684	#831	-	#395	667	-	#352	#2148	-
	Storage Length	100	565	425	100	2500	-	190	600	-	80	2500	-
Lois Ave.at I-275 SB On-Ramp	AM	-	-	-	-	-	-	m171	m0	-	-	m87	-
	PM	-	-	-	-	-	-	m150	m0	-	-	m238	-
	Storage Length	-	-	-	-	-	-	250	250	-	-	215	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Lois Ave.at I-275 NB Off-Ramp	AM	#1366	-	78	-	-	-	-	#1222	-	#420	44	-
	PM	#678	-	#1057	-	-	-	-	739	-	m264	m58	-
	Storage Length	600	-	600	-	-	-	-	1800	-	450	300	-
Westshore Blvd. at Cypress St.	AM	#157	#627	183	#419	#618	-	m312	m595	-	#272	487	-
	PM	#234	#1430	#1973	#825	535	-	m189	#1482	-	#580	#1643	-
	Storage Length	225	2500	540	400	560	-	280	475	-	200	1230	-
Westshore Blvd. at I-275 SB Off-Ramp	AM	-	-	-	#872	#908	#1855	#325	42	-	-	m459	-
	PM	-	-	-	#1100	#1080	#1110	m3	249	-	-	m308	-
	Storage Length	-	-	-	440	3000	2540[6]	370	170	-	-	475	-
Westshore Blvd. at I-275 NB On-Ramp	AM	-	-	-	-	-	-	-	216	#1563	m598	m18	-
	PM	-	-	-	-	-	-	-	282	#1636	m#2413	m33	-
	Storage Length	-	-	-	-	-	-	-	380	380	310	170	-
Westshore Blvd. at Gray St.	AM	50	40	-	95	85	-	49	708	-	100	267	-
	PM	#428	210	-	63	#208	-	#207	672	-	m149	654	-
	Storage Length	125	450	-	30	550	-	270	590	-	155	400	-
Kennedy Blvd. at Hoover Blvd.	AM	46	661	-	m75	m110	m3	-	431	0	35	28	-
	PM	12	376	-	m5	m16	m0	-	267	0	#287	58	-
	Storage Length	250	1700	-	410	1400	600	-	460	100	100	100	-
Kennedy Blvd. at Memorial Hwy.	AM	#447	#452	272	-	-	-	#562	1079	0	#127	#1334	176
	PM	#660	#649	277	-	-	-	#523	#1853	0	#315	#1087	34
	Storage Length	430	1400	1400	-	-	-	420	750	125	310	1500	200
Cypress St. at E. Frontage Rd.	AM	m0	0	-	23	597	-	-	216	-	-	21	0
	PM	m3	53	-	8	161	-	-	192	-	-	42	29
	Storage Length	70	285	-	70	450	-	-	750	-	-	800	75

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Cypress St. at W. Frontage Road	AM	-	#460	-	467	25	-	17	-	23	-	-	-
	PM	-	483	-	388	13	-	66	-	72	-	-	-
	Storage Length	-	1000	-	150	285	-	180	-	650	-	-	-

Notes:

1) The # footnote indicates that the volume for the 95th percentile cycle exceeds capacity. This traffic was simulated for two complete cycles to account for the effects of spillover between cycles. If the reported v/c <1for this movement, this is a valid method for estimating the 95th percentile queue.
2) The m footnote indicates that the volume for the 95th percentile queue is metered by an upstream signal (Trafficware).
3) The storage length values were calculated from aerials or design drawings.
4) L = left, T = through, R = right.
5) Storage Length for through movement is considered as the distance from the upstream signalized intersection.
6) Storage Length for right-turn/left-turn at ramp terminals that extends to the gore is estimated by subtracting the deceleration length based on FDM Exhibit 212-1 from the total length of the ramp.

Table 29: Design Year (2045) Build – 95th Percentile Queue Length (feet)

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Tampa St. at Kay St.	AM	-	-	-	42	#507	-	-	-	-	-	933	177
	PM	-	-	-	64	440	-	-	-	-	-	537	313
	Storage Length	-	-	-	170	400	-	-	-	-	-	800	450
Tampa St. at Scott St.	AM	-	585	#821	-	-	-	-	-	-	-	#1324	-
	PM	-	382	400	-	-	-	-	-	-	-	84	-
	Storage Length	-	1000	550	-	-	-	-	-	-	-	250	-
Tampa St. at E. Fortune St.	AM	-	27	#560	-	82	-	-	-	-	-	m954	-
	PM	-	25	331	-	130	-	-	-	-	-	557	-
	Storage Length	-	425	100	-	200	-	-	-	-	-	575	-
Tampa St. at Harrison St.	AM	-	5	1		#465	-	-	-	-	-	m108	m0
	PM	-	5	1		204	-	-	-	-	-	108	m0
	Storage Length	-	275	250		525	-	-	-	-	-	500	300
Tampa St. at Tyler St.	AM	-	m82	m#135	46	#426	-	-	-	-	-	m57	m0
	PM	-	m15	m17	35	165	-	-	-	-	-	9	m0
	Storage Length	-	200	200	100	475	-	-	-	-	-	200	150
Florida Ave. at Scott St.	AM	-	m#807	-	-	-	-	-	#869	-	-	-	-
	PM	-	#1086	-	-	-	-	-	#1232	-	-	-	-
	Storage Length	-	400	-	-	-	-	-	625	-	-	-	-
Ashley Dr. at W. Fortune St.	AM	64	29	-	m0	m0	-	-	m38	-	-	754	38
	PM	#235	62	-	m10	143	-	-	m50	-	-	741	22
	Storage Length	150	625	-	200	250	-	-	275	-	-	425	250

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Ashley Dr. at Tyler St.	AM	#88	22	-	m24	m278	-	175	683	-	m128	#1064	m93
	PM	#266	55	-	31	100	-	#176	#1060	-	m#238	#1041	m26
	Storage Length	220	325	-	175	200	-	170	170	-	200	650	150
Howard Ave. at Main St.	AM	44	83	-	-	138	-	-	m163	m1	-	-	-
	PM	53	143	-	-	204	-	-	m142	m0	-	-	-
	Storage Length	110	580	-	-	600	-	-	200	200	-	-	-
Howard Ave. at I-275 SB Off-Ramp	AM	-	-	-	-	#689	-	m#538	m#490	-	-	-	-
	PM	-	-	-	-	#600	-	m#209	m#236	-	-	-	-
	Storage Length	-	-	-	-	2000	-	275	310	-	-	-	-
Howard Ave. at I-275 NB On-Ramp	AM	m251	m#515	-	-	-	-	-	m#551	m414	-	-	-
	PM	m#392	m#515	-	-	-	-	-	m#904	m#1076	-	-	-
	Storage Length	600	600	-	-	-	-	-	1100	1100	-	-	-
Howard Ave. at Cypress St.	AM	m60	m147	-	-	129	65	26	#467	-	-	-	-
	PM	m90	m276	-	-	232	109	61	#801	-	-	-	-
	Storage Length	110	600	-	-	4000	600	220	2600	-	-	-	-
Armenia Ave. at Main St.	AM	-	114	-	117	99	-	-	-	-	-	102	-
	PM	-	181	-	m82	m117	-	-	-	-	-	136	-
	Storage Length	-	600	-	100	580	-	-	-	-	-	2500	-
Armenia Ave. at I-275 SB On - Ramp	AM	-	-	-	m#868	m#1021	-	-	-	-	-	218	#796
	PM	-	-	-	m324	m341	-	-	-	-	-	436	#495
	Storage Length	-	-	-	590	590	-	-	-	-	-	200	200

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Armenia Ave. at I-275 NB Off-Ramp	AM	-	524	#743	-	-	-	-	-	-	m110	m518	-
	PM	-	#993	#982	-	-	-	-	-	-	m#758	#802	-
	Storage Length	-	1600	1140[6]	-	-	-	-	-	-	300	300	-
Armenia Ave. at Cypress St.	AM	-	#284	-	m49	#353	-	-	-	-	m29	818	m2
	PM	-	#718	-	m15	130	-	-	-	-	m62	m505	m7
	Storage Length	-	2550	-	150	590	-	-	-	-	200	1150	200
Himes Ave. at Spruce St.	AM	#317	#524	-	#362	#812	-	m#387	m658	m0	#337	#2502	72
	PM	#712	#1345	-	#545	#832	-	m#317	m#182	m1	#507	#2687	57
	Storage Length	200	1200	-	140	1240	-	180	930	300	175	2500	140
Himes Ave. at I-275 SB Off-Ramp	AM	-	-	-	#563	#1164	#482	-	m#1393	-	-	m72	-
	PM	-	-	-	#543	#824	127	-	m#1385	-	-	m257	-
	Storage Length	-	-	-	300	1450	800	-	350	-	-	970	-
Himes Ave. at NB Egress/ SB Ingress Ramp	AM	#850	-	76	-	-	-	m#740	3	-	-	#991	-
	PM	#861	-	#999	-	-	-	m#361	3	-	-	m#1019	-
	Storage Length	500	-	500	-	-	-	150	150	-	-	200	-
Himes Ave. at I-275 NB On-Ramp	AM	-	-	-	-	-	-	-	m101	-	m381	m0	-
	PM	-	-	-	-	-	-	-	m100	-	m#487	m0	-
	Storage Length	-	-	-	-	-	-	-	1000	-	350	350	-
Himes Ave. at Cypress St.	AM	#216	329	-	97	#1110	-	#186	#1290	-	#475	953	-
	PM	#601	#1823	-	#192	944	-	#175	#1342	-	#921	#1938	-
	Storage Length	220	1175	-	225	2500	-	190	2500	-	210	1100	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Dale Mabry Hwy. at Shopping Plaza	AM	39	45	8	#100	65	0	203	1068	26	56	656	0
	PM	179	78	#745	#213	131	0	m#313	m872	m50	#135	#1110	130
	Storage Length	300	300	175	125	200	125	350	500	150	250	550	185
Dale Mabry Hwy. at I-275 SB Off-Ramp	AM	-	-	-	369	-	#1980	m148	m40	-	-	398	#1451
	PM	-	-	-	#426	-	#1416	m131	m41	-	-	m235	m776
	Storage Length	-	-	-	225	-	200	200	200	-	-	550	250
Dale Mabry Hwy. at I-275 NB Off-Ramp	AM	#957	-	176	-	-	-	-	394	#1266	682	0	-
	PM	#980	-	#478	-	-	-	-	m270	m#738	m#1212	m79	-
	Storage Length	440	-	390	-	-	-	-	740	200	500	360	-
Dale Mabry Hwy. at Cypress St.	AM	#330	221	-	101	#490	-	#609	954	-	#107	547	11
	PM	#946	#876	-	#196	#555	-	#387	#1380	-	m#234	m#889	m9
	Storage Length	220	2500	-	180	1200	-	300	1200	-	425	710	710
Lois Ave.at Cypress St.	AM	68	246	70	163	#1700	-	#1042	#1119	-	#164	#1255	-
	PM	#227	#1190	#1218	#645	#790	-	#402	#774	-	#377	#2124	-
	Storage Length	100	565	425	100	2500	-	190	600	-	80	2500	-
Lois Ave.at I-275 SB On-Ramp	AM	-	-	-	-	-	-	m176	m0	-	-	m91	-
	PM	-	-	-	-	-	-	m142	m0	-	-	m209	-
	Storage Length	-	-	-	-	-	-	250	250	-	-	215	-
Lois Ave.at I-275 NB Off-Ramp	AM	#1431	-	77	-	-	-	-	#1240	-	m#407	m48	-
	PM	#720	-	#1086	-	-	-	-	684	-	m244	m54	-
	Storage Length	600	-	600	-	-	-	-	1800	-	450	300	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Trask St. at I-275 SB Off-Ramp	AM	-	-	-	-	-	138	-	37	-	-	59	-
	PM	-	-	-	-	-	13	-	m16	-	-	m21	-
	Storage Length	-	-	-	-	-	700	-	450	-	-	400	-
Trask St. at I-275 NB On-Ramp	AM	-	423	12	-	-	-	-	177	105	#142	32	-
	PM	-	#699	41	-	-	-	-	210	276	#388	189	-
	Storage Length	-	500	300	-	-	-	-	450	250	300	350	-
Westshore Blvd. at Cypress St.	AM	#138	#570	286	#378	#552	-	#302	m#771	-	#247	#474	-
	PM	#216	#1227	#1663	#707	#467	-	m125	m#991	-	#472	#1391	-
	Storage Length	225	2500	540	400	560	-	280	475	-	200	1230	-
Westshore Blvd. at I-275 SB Off-Ramp	AM	-	-	-	503	515	#1221	m#277	#667	-	-	m478	-
	PM	-	-	-	#692	#680	517	m2	#836	-	-	m300	-
	Storage Length	-	-	-	440	3000	2540[6]	370	170	-	-	475	-
Westshore Blvd. at I-275 NB On-Ramp	AM	-	-	-	-	-	-	-	370	690	m423	m6	-
	PM	-	-	-	-	-	-	-	m283	m11	m#915	m29	-
	Storage Length	-	-	-	-	-	-	-	380	380	310	170	-
Westshore Blvd. at Gray St.	AM	47	39	-	89	82	-	48	575	-	48	149	-
	PM	#410	178	-	56	#191	-	#195	478	-	m55	348	-
	Storage Length	125	450	-	30	550	-	270	590	-	155	400	-
Kennedy Blvd. at Hoover Blvd.	AM	56	544	-	m44	m377	m0	-	#394	0	27	24	-
	PM	19	411	-	m31	m528	m0	-	358	0	232	50	-
	Storage Length	250	1700	-	410	1400	600	-	460	100	100	100	-

Intersection	Time Period	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Kennedy Blvd. at Memorial Hwy.	AM	m#349	m#341	345	-	-	-	#329	#981	0	#111	#1090	134
	PM	#667	#694	172	-	-	-	#469	#1877	0	#246	#970	0
	Storage Length	430	1400	1400	-	-	-	420	750	125	310	1500	200
Cypress St. at E. Frontage Rd.	AM	m1	24	-	17	405	-	-	223	-	-	23	0
	PM	m12	406	-	5	108	-	-	194	-	-	42	29
	Storage Length	70	680	-	70	450	-	-	750	-	-	800	75
Cypress St. at Reo St.	AM	20	#1002	326	#711	100	-	-	62	75	-	32	-
	PM	18	606	40	236	90	-	-	122	429	-	110	-
	Storage Length	50	1100	1100	400	800	-	-	150	500	-	150	-

Notes:

1) The # footnote indicates that the volume for the 95th percentile cycle exceeds capacity. This traffic was simulated for two complete cycles to account for the effects of spillover between cycles. If the reported v/c <1for this movement, this is a valid method for estimating the 95th percentile queue.
2) The m footnote indicates that the volume for the 95th percentile queue is metered by an upstream signal (Trafficware).
3) The storage length values were calculated from aerials or design drawings.
4) L = left, T = through, R = right.
5) Storage Length for through movement is considered as the distance from the upstream signalized intersection.
6) Storage Length for right-turn/left-turn at ramp terminals that extends to the gore is estimated by subtracting the deceleration length based on FDM Exhibit 212-1 from the total length of the ramp.

8 PREDICTIVE SAFETY ANALYSIS

An analysis of the predicted number of crashes along mainline I-275 was conducted for both the No-Build and Build concepts to assess and compare both alternatives' safety conditions. The study area limits for the safety analysis on the I-275 extend from the north end of the Howard Frankland Bridge to North Ashley Drive/Tampa Street and south of the I-275 to north of Cypress Street along the SR 60.

The study period for this project is between 2025 and 2045.

8.1 DATA COLLECTION

- The Opening Year (2025) and the Design Year (2045) traffic volumes for all the basic freeway segments and ramps were used.
- All the required geometric design and traffic control data were obtained from the design files that were provided.

8.2 METHODOLOGY

The analysis followed the procedures from Chapters 18 and 19 of the Highway Safety Manual (HSM) – 1st Edition Supplement 2014 by the American Association of State Highway and Transportation Officials (AASHTO). The HSM provides techniques to estimate crashes for a given facility, test the effectiveness of design alternatives on crash reduction, and evaluate their economic crash benefits. The analysis compares the anticipated number of crashes between the No-Build and Build Alternatives within the study limits for the study period. This analysis was completed using the Enhanced Interchange Safety Analysis Tool (ISATe). This Excel-based worksheet helps analyze the safety performance of freeways, ramps, and ramp terminals based on facility type, traffic volumes, and geometric conditions of the roadway. The HSM freeway crash-predictive models have not been calibrated with Florida jurisdiction-specific data. Default calibration parameters were used for analysis to compare the No-Build and Build Alternatives. The crash severity distribution was taken from the FDOT Design Manual (FDM) 2021, HSM Crash Distribution for Florida, Table 122.6.4, and can be seen in **Table 30**.

Table 30: HSM Crash Severity Distribution for Florida Freeways

Freeways	K	A	B	C	O
Urban	0.006	0.035	0.113	0.206	0.641
Ramps	0.004	0.032	0.107	0.210	0.647

Note: K – Fatality, A - Incapacitating Injury, B - Non-incapacitating Injury, C - Possible (or minor) Injury, O - Property Damage Only

8.3 ANALYSIS

The project was divided into freeway segments and ramps segments. All the freeway segments within the study limits were included in the freeway analysis, whereas the ramps at the interchange were included in the ramp analysis. However, most of the improvements proposed as part of the SIMR are on the mainline and the ramp terminals for No-Build and Build Alternatives are equivalent. Therefore, the predictive safety analysis was not performed for the terminals. The results from the analysis are summarized in the following sections. The ISATe output summary sheets are provided in **Appendix K**.

8.3.1 Predicted Crashes for the No-Build Alternative

The ISATe worksheet was utilized to analyze the predicted crashes for the No-Build Alternative using the Opening Year (2025) and the Design Year (2045) traffic projections. The summary results for the I-275 and SR 60 No Build Alternatives by severity are shown in **Tables 31** and **32**, respectively, while the results by crash type are shown in **Tables 33** and **34**, respectively.

The predicted number of crashes along I-275 over the study period is 12,117, with 69 fatal (K) crashes, 419 incapacitating injury (A) crashes, 1,359 non-incapacitating (B) crashes, 2,503 possible injury (C) crashes, and 7,767 property damage only (PDO) crashes. Approximately 64 percent of crashes are PDO crashes. Of the 12,117 total crashes, 10,394 crashes occur on freeway segments, accounting for 86 percent of the total crashes. The top three collision types are rear-end crashes (56%), sideswipe crashes (19%), and crashes with fixed objects (15%). 80 percent of crashes involved multiple-vehicle crashes.

The predicted number of crashes on SR 60 over the study period is 1,795, with 10 fatal (K) crashes, 61 incapacitating injury (A) crashes, 199 non-incapacitating (B) crashes, 372 possible injury (C) crashes, and 1,153 property damage only (PDO) crashes. Approximately 64 percent of crashes are PDO crashes. Of the 1795 total crashes, 1,228 crashes occur on freeway segments, accounting for 68 percent of the total crashes. The top three collision types are rear-end crashes (58%), sideswipe crashes (20%), and crashes with fixed objects (12%). 84 percent of crashes involved multiple-vehicle crashes.

Table 31: Predicted Crashes for the I-275 No-Build Alternative by Severity

Crash Severity	No-Build	
K	69	0.6%
A	419	3.5%
B	1,359	11.2%
C	2,503	20.7%
PDO	7,767	64.1%
Total Freeway Crashes	10,394	85.8%
Total Ramp Crashes	1,723	14.2%
Total Crashes	**12,117**	

Table 32: Predicted Crashes for the SR 60 No-Build Alternative by Severity

Crash Severity	No-Build	
K	10	0.5%
A	61	3.4%
B	199	11.1%
C	372	20.7%
PDO	1,153	64.2%
Total Freeway Crashes	1,228	68.4%
Total Ramp Crashes	567	31.6%
Total Crashes	**1,795**	

Table 33: Predicted Crashes for the I-275 No-Build Alternative by Crash Type

Crash Type	Crash Type Category	No-Build	
Multiple Vehicle	Head-on crashes:	45	0.4%
	Right-angle crashes:	194	1.6%
	Rear-end crashes:	6,800	56.1%
	Sideswipe crashes:	2,295	18.9%
	Other multiple-vehicle crashes:	356	2.9%
	Total multiple-vehicle crashes:	9,690	
Single Vehicle	Crashes with an animal:	31	0.3%
	Crashes with fixed object:	1,792	14.8%
	Crashes with other objects:	205	1.7%
	Crashes with a parked vehicle:	35	0.3%
	Other single-vehicle crashes	365	3.0%
	Total single-vehicle crashes:	2,427	

Table 34: Predicted Crashes for the SR 60 No-Build Alternative by Crash Type

Crash Type	Crash Type Category	No-Build	
Multiple Vehicle	Head-on crashes:	10	0.5%
	Right-angle crashes:	26	1.4%
	Rear-end crashes:	1,031	57.5%
	Sideswipe crashes:	356	19.8%
	Other multiple-vehicle crashes:	85	4.7%
	Total multiple-vehicle crashes:	1,507	
Single Vehicle	Crashes with an animal:	4	0.2%
	Crashes with fixed object:	213	11.8%
	Crashes with other objects:	23	1.3%
	Crashes with a parked vehicle:	4	0.2%
	Other single-vehicle crashes	44	2.5%
	Total single-vehicle crashes:	288	

8.3.2 Predicted Crashes for the Build Alternative

The ISATe worksheet was utilized to analyze the predicted crashes for the Build Alternative using the Opening Year (2025) and the Design Year (2045) traffic projections. The I-275 and SR 60 Build Alternatives' summary results by severity are shown in **Tables 35** and **36**, respectively, while the results by crash type are shown in **Tables 37** and **38**, respectively. The predictive analysis results of the Build Alternative consist of analyzing both the general use and express lanes. These facilities' results are presented in the following tables separately and as a total for the entire Build Alternative.

The predicted number of crashes on I-275 over the study period is 8,796, with 50 fatal (K) crashes, 303 incapacitating injury (A) crashes, 985 non-incapacitating (B) crashes, 1,818 possible injury (C) crashes, and 5,640 PDO crashes. 64 percent of crashes are PDO crashes. Of the 8,796 total crashes, 7,227 crashes occur on freeway segments, accounting for 82 percent of the total crashes. The top three collision types are rear-end crashes (48%), crashes with fixed objects (23%), and side-swipe crashes (17%). 69 percent of crashes involved multiple-vehicle crashes.

The predicted number of crashes on SR 60 over the study period is 920, with 5 fatal (K) crashes, 31 incapacitating injury (A) crashes, 101 non-incapacitating (B) crashes, 191 possible injury (C) crashes, and 592 PDO crashes. 64 percent of crashes are PDO crashes. Of the 920 total crashes, 498 crashes occur on freeway segments, accounting for 54 percent of the total crashes. The top three collision types are rear-end crashes (41%), crashes with fixed objects (27%), and side-swipe crashes (16%). 63 percent of crashes involved multiple-vehicle crashes.

Table 35: Predicted Crashes for the I-275 Build Alternative by Severity

Crash Severity	Build General Use Lanes	Build Managed Lanes	Total Build	
K	39	10	50	0.6%
A	238	65	303	3.4%
B	772	212	985	11.2%
C	1,422	396	1,818	20.7%
PDO	4,413	1,227	5,640	64.1%
Total Freeway Crashes	5,915	1,312	7,227	82.2%
Total Ramp Crashes	970	599	1,569	17.8%
Total Crashes	**6,885**	**1,910**	**8,796**	

Table 36: Predicted Crashes for the SR 60 Build Alternative by Severity

Crash Severity	Build General Use Lanes	Build Managed Lanes	Total Build	
K	2	2	5	0.5%
A	17	14	31	3.4%
B	57	45	101	11.0%
C	109	82	191	20.8%
PDO	337	255	592	64.3%
Total Freeway Crashes	146	352	498	54.2%
Total Ramp Crashes	375	46	421	45.8%
Total Crashes	**522**	**398**	**920**	

Table 37: Predicted Crashes for the I-275 Build Alternative by Crash Type

Crash Type	Crash Type Category	Build General Use Lanes	Build Managed Lanes	Total Build	
Multiple Vehicle	Head-on crashes:	22	7	29	0.3%
	Right-angle crashes:	102	18	119	1.4%
	Rear-end crashes:	3,466	742	4,208	47.8%
	Sideswipe crashes:	1,200	277	1,477	16.8%
	Other multiple-vehicle crashes:	165	65	230	2.6%
	Total multiple-vehicle crashes:	4,954	1,109	6,063	
Single Vehicle	Crashes with animal:	25	11	36	0.4%
	Crashes with fixed object:	1,425	588	2,012	22.9%
	Crashes with other object:	166	73	239	2.7%
	Crashes with parked vehicle:	28	12	39	0.4%
	Other single-vehicle crashes	289	118	407	4.6%
	Total single-vehicle crashes:	1,931	802	2,733	

Table 38: Predicted Crashes for the SR 60 Build Alternative by Crash Type

Crash Type	Crash Type Category	Build General Use Lanes	Build Managed Lanes	Total Build	
Multiple Vehicle	Head-on crashes:	4	1	5	0.5%
	Right-angle crashes:	4	4	8	0.8%
	Rear-end crashes:	237	142	379	41.2%
	Sideswipe crashes:	98	50	147	16.0%
	Other multiple-vehicle crashes:	37	7	44	4.8%
	Total multiple-vehicle crashes:	378	204	583	
Single Vehicle	Crashes with animal:	2	3	5	0.5%
	Crashes with fixed object:	108	141	249	27.0%
	Crashes with other object:	10	20	30	3.2%
	Crashes with parked vehicle:	2	3	5	0.5%
	Other single-vehicle crashes	22	28	49	5.4%
	Total single-vehicle crashes:	143	194	338	

8.3.3 Summary of Results and Conclusions

The results of the predictive analysis show that there is an anticipated reduction in crashes over the length of the study period by implementing the Build Alternative. The summary of predicted crashes based on KABCO levels for the freeway and ramps and for the entire facility in the study limit is given in **Tables 39** and **40** below, respectively. Even though there is an increase in the AADT, as well as the number of lanes, I-275 is expected to see a reduction in crashes of 27 percent, and SR 60 is expected to see a reduction of 49 percent, as seen in **Figure 36**. This reduction is likely due to volumes now being split between the general use lanes and express lanes. With the volumes split, crashes are decreased on the general use lanes.

Table 39: Summary of Predicted Crashes by Facility

Alternative	Facility	Total	K	A	B	C	PDO
I-275 No-Build	Freeway	10,394	62	364	1,175	2,141	6,652
	Ramp	1,723	7	55	184	362	1,115
I-275 Build	Freeway	7,227	43	253	817	1,489	4,625
	Ramp	1,569	6	50	168	330	1,015
SR 60 No-Build	Freeway	1,228	7	43	139	253	786
	Ramp	567	2	18	61	119	367
SR 60 Build	Freeway	499	3	17	56	103	319
	Ramp	421	2	14	45	89	273

Table 40: Summary of Predicted Crashes

KABCO Level	I-275 No-Build	I-275 Build	SR 60 No-Build	SR 60 Build
K	69	50	10	5
A	419	303	61	31
B	1359	985	199	101
C	2503	1818	372	191
O	7767	5640	1153	592
Total	**12,117**	**8,796**	**1,795**	**920**

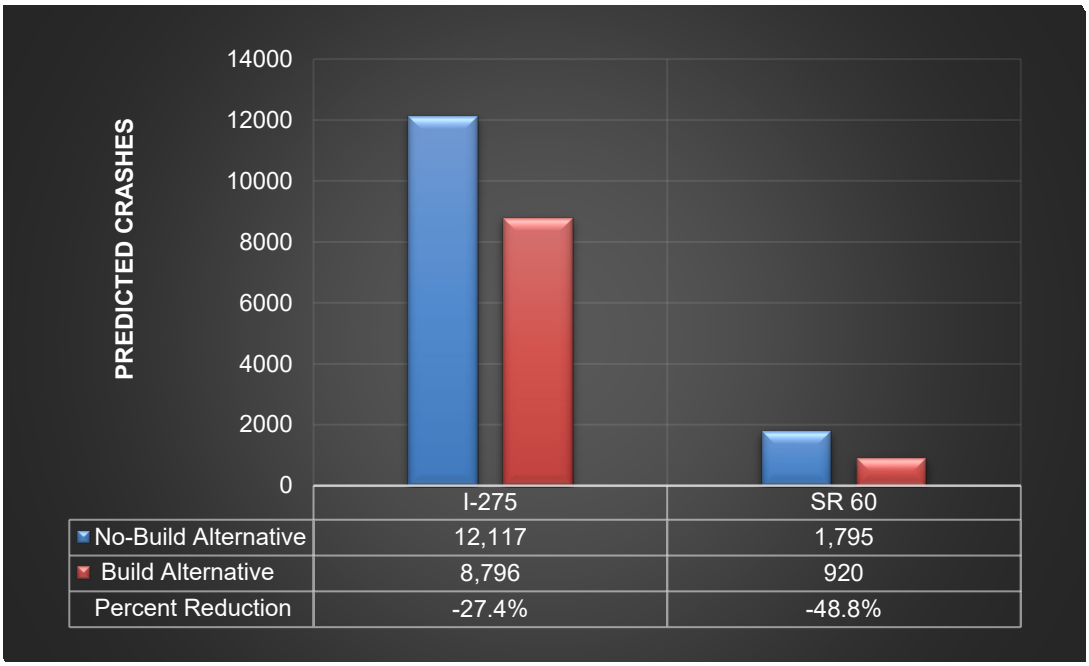


Figure 36: Predicted Crash Summary – No-Build Alternative & Build Alternative

The I-275 corridor is expected to experience a reduction in individual severity types, with the largest decrease in PDO crashes at 27 percent. SR 60 is expected to experience significant reductions in possible injury and PDO crashes, both at 49 percent. The Build Alternative is also expected to reduce the number of total multiple vehicles crashes along the I-275 and SR 60 corridors by 37 percent and 61 percent, respectively. This is likely due to a reduction in rear-end and side-swipe crashes due to splitting the volumes between general use lanes and express lanes. However, the I-275 and SR 60 corridors are expected to experience an increase in total single-vehicle crashes by 13 percent and 17 percent, respectively. This is likely due to an increased amount of barrier walls and delineators throughout the study limits due to separating the general use lanes from the express lanes.

9 PROJECT FUNDING

Funding for Sections 4 and 5 Build improvements is summarized in **Table 41**. A graphic showing the various construction segments within the study limits is included in **Appendix L**.

Table 41: Funding for I-275 Sections 4 and 5

Component	447107-2 "Core 1"	447107-3 "Core 2"	447107-4 "Core 3"	447534-1 "Causeway"	434045-2 "I-275 Mainline"	434045-3 "Downtown Connection"	Overall Cost for Sections 4 and 5
Design Support/ Preliminary Engineering	$1,939,287	$0	$0	$3,915	$100,000	$100,000	$2,143,202
Stipends	$2,986,615	$1,509,778	$2,296,028	$0	$0	$0	$6,792,421
Post-Design PE	$5,367,947	$2,437,083	$3,929,226	$356,142	$1,473,185	$1,676,102	$15,239,684
Construction Contract	$411,542,596	$186,843,053	$301,240,637	$27,304,200	$112,944,174	$128,501,144	$1,168,375,804
Toll Collection Equipment	$0	$0	$4,190,000	$0	$3,620,000	$0	$7,810,000
Construction Support	$0	$0	$0	$0	$0	$0	$0
Construction Engineering Inspection	$33,080,620	$15,028,680	$24,230,225	$2,196,207	$9,084,640	$10,335,962	$93,956,335
Contract Bonus	$7,157,263	$3,249,444	$5,238,968	$474,856	$1,964,247	$2,234,802	$20,319,579
Utility Costs	$4,479,250	$0	$0	$11,500	$477,118	$707,250	$5,675,118
Railroad Costs	$0	$0	$0	$0	$0	$0	$0
Right of Way Costs (total)	$223,091,834	$0	$0	$0	$0	$800,000	$223,891,834
Contamination Remediation	$2,441,016	$0	0	$1,000,000	$1,750,000	$270,000	$5,461,016
Environmental Mitigation (total)	$963,974	$0	$0	$1,200,000	$0	$500,000	$2,663,974
Project Total	**$693,050,401**	**$209,068,038**	**$341,125,084**	**$32,546,820**	**$131,413,363**	**$145,125,260**	**$1,552,328,966**

10 DESIGN EXCEPTIONS AND VARIATIONS

Most of the proposed operational improvements are designed to meet the current standards for federal-aid projects on the interstate and conform to American Association of State Highway and Transportation Officials (AASHTO) design standards, but some design variations and exceptions are required for the study area. Potential design variations and exceptions include design speed, deflection and curve length, curve radius, curve superelevation, median width, lane width, shoulder width, border width, vertical geometry, stopping sight distance, ramp spacing, and terminal.

The potential design variations and exceptions for Sections 4 and 5 limits are provided in **Appendix M**.

11 ACCESS MANAGEMENT PLAN

This project will provide additional opportunities for access into the Westshore Area. Reo Street, Occident Street, and Trask Street will provide access north and south of I-275. I-275 will have access to Reo Street to and from the south and Trask Street to and from the north. Himes Avenue will have a direct express lane connection to and from the south.

These modifications have been coordinated with the City of Tampa and local residential and business groups. Access Management on the cross streets will not be affected beyond the limits of this project. The Access Management Evaluation Memorandum developed for Sections 4 and 5 is provided in **Appendix N.**

12 FEDERAL HIGHWAY ADMINISTRATION (FHWA) POLICY POINTS

The following FHWA policy points serve as primary decision criteria used to approve SIMR for Sections 4 and 5.

1. The proposal does not adversely impact the operational safety of the existing freeway

An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis should, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, should be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with a crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 USC 109(d), and 23 CFR 655.603(d)).

I-275 currently experiences recurring congestion within the study limits of Sections 4 and 5 during the AM and PM peak periods. Peak hour demands exceed the available capacity of the I-275 system causing longer travel times, poor travel reliability, and underperforming traffic operations. As growth in the region continues, congestion, travel times, and crashes within the study area will increase. Therefore, there is an immediate need for capacity improvements along the I-275 corridor to meet the existing and future peak hour traffic demand. This project proposes general use lane improvements and two express lanes in each travel direction to improve the traffic operations and safety within the Sections 4 and 5 study limits.

Existing field reviews were conducted to observe traffic conditions along the corridor. The following provides a summary of the traffic conditions during the AM and PM peak periods.

- Overall, the traffic delays for PM peak hour are higher compared to AM peak hour. Congestion resulting in more delays was observed along I-275 northbound than I-275 southbound during AM and PM peak hours.
- I-275 northbound, south of SR 60, was observed to be a critical bottleneck segment for both AM and PM peak hours, leading to higher delays due to high exiting traffic volumes to the SR 60 Off-Ramp and due to vehicle slowdowns on the SR 60 northbound flyover ramp.
- Heavy congestion is experienced during the PM peak hour along I-275 northbound, north of SR 60, primarily due to the downstream congestion. The traffic queues from the I-275/I-4 interchange extend beyond the Westshore Boulevard interchange.
- The I-275 southbound segment between Ashley Drive and SR 60 Off-Ramp is experiencing severe traffic delays during the PM peak hours. This is a critical segment for this facility due to high traffic volumes all merging from I-4 westbound, I-275 southbound, and the downtown Tampa area. The majority of the traffic exits to SR 60 westbound via the Off-Ramp.

- Higher traffic delays observed along the SR 60 eastbound segment for both AM and PM peak hours were caused primarily due to heavy SR 60 eastbound to I-275 northbound On-Ramp demand and existing capacity deficiencies for the SR 60 eastbound to I-275 northbound loop ramp.

A crash analysis was completed for the five-year period from 2013 to 2017. During the study period, a total of 7,900 crashes, 13 (0.2 percent) fatal crashes, 2,446 (31 percent) injury crashes, and 5,441 (69 percent) property damage only crashes were reported within the Sections 4 and 5 limits. Most of the fatal crashes occurred on I-275 mainline (9 fatal crashes). The predominant crash type was found to be rear-end crashes (59 percent). Rear-end crashes occurring within the peak periods of traffic flow are associated with heavy congestion and high vehicular densities. The high frequency of rear-end crashes can be attributed to the reduced spacing between vehicles and driver behavior, such as distracted driving during peak period congestion. Sideswipe crashes (15 percent) were the second most common crash type, followed closely by other crashes.

Microsimulation models were completed for the No-Build and Build conditions for the Opening Year (2025) and Design Year (2045) for both peak periods. The Build conditions' overall operations improved significantly compared to No-Build conditions within the Sections 4 and 5 study limits. **Table 42** compares demand volumes processed in the No-Build and Build conditions during AM and PM peak hours. The results indicate that more demand vehicles will be processed in the Build conditions with the proposed improvements compared to the No-Build conditions.

Table 42: Processed Demand

Roadway	Scenario	Opening Year (2025)		Design Year (2045)	
		AM	PM	AM	PM
I-275 NB	No-Build	79%	59%	58%	52%
	Build	91%	79%	71%	86%
I-275 SB	No-Build	74%	60%	65%	53%
	Build	82%	65%	74%	70%

In the Opening Year (2025) and Design Year (2045), a 17 to 70 percent increase in throughput was observed along I-275 northbound during peak hours. Similarly, an 8 to 32 percent increase in throughput was observed along I-275 southbound during peak hours. The comparison of throughput in the No-Build and Build conditions are presented in **Table 43**.

Table 43: Throughput – No-Build Vs. Build

Roadway	Scenario	Average Throughput[1] (Veh/hour)					
		AM Peak Hour			PM Peak Hour		
		No-Build	Build	Difference (%)	No-Build	Build	Difference (%)
I-275 NB	Opening Year	8,117	9,514	17%	5,399	6,911	28%
	Design Year	6,974	8,397	20%	5,488	9,350	70%
I-275 SB	Opening Year	6,645	7,148	8%	6,069	6,778	12%
	Design Year	6,862	7,954	16%	6,200	8,196	32%

[1] Average vehicle throughput is the total throughput on all study segments divided by the number of segments

Since the proposed Build improvements are mainly focused on freeway facilities, the peak hour traffic operations are similar on arterial corridors for No-Build and Build conditions within the study limits of Sections 4 and 5. However, with additional capacity available through proposed build improvements, more capacity will be available to satisfy demand on

the interstate in the Build conditions compared to No-Build conditions. Due to an increase in traffic near ramp terminal intersections, the traffic delays will be slightly more for some study intersections in Build conditions than the No-Build conditions.

In the Opening Year (2025), the percentage increase in total vehicle miles traveled in Build conditions ranges between 15 percent and 26 percent during peak hours compared to No-Build conditions. The percentage increase in average speed in Build conditions ranges between 46 percent and 62 percent during peak hours compared to No-Build conditions. Simultaneously, the percentage reduction in delay per vehicle-mile ranges between 54 percent and 71 percent during peak hours compared to No-Build conditions. The percentage reduction in travel time per vehicle-mile ranges between 31 percent and 38 percent during peak hours compared to No-Build conditions.

In the Design Year (2045), the percentage increase in total vehicle miles traveled in Build conditions ranges between 31 percent and 54 percent during peak hours compared to No-Build conditions. The percentage increase in average speed in Build conditions ranges between 54 percent and 59 percent during peak hours compared to No-Build conditions. Simultaneously, the percentage reduction in delay per vehicle-mile ranges between 57 percent and 60 percent during peak hours compared to No-Build conditions. The percentage reduction in travel time per vehicle-mile ranges between 35 percent and 37 percent during peak hours compared to No-Build conditions.

In addition to the processed demand, the latent demand at the end of the peak period simulation along the freeway facility entering the study area from I-275 northbound, I-275 southbound, Veterans Expressway southbound, SR 60 eastbound, George Bean Parkway southbound, I-4 westbound and Selmon Expressway ramp was also analyzed for evaluating the performance of the Build Alternative compared to No-Build Alternative. The results show a decrease in latent demand for the Build Alternative compared to No-Build Alternative as shown in **Table 44**. The reduction in latent demand ranged from 1 percent to 100 percent in the Opening Year (2025) and 14 percent to 99 percent in the Design Year (2045).

Table 44: Latent Demand – No-Build Vs. Build

Location	Peak Period	Opening Year (2025)			Design Year (2045)		
		No-Build	Build	Percent Change	No-Build	Build	Percent Change
I-275 Northbound	AM	6257	14	-100%	14160	7284	-49%
	PM	7072	7	-100%	15248	243	-98%
I-275 Southbound	AM	5123	5061	-1%	9118	7805	-14%
	PM	1996	1157	-42%	920	41	-96%
Veterans Expressway Southbound	AM	50	49	-3%	9831	75	-99%
	PM	6754	0	-100%	12052	74	-99%
SR 60 Eastbound	AM	15	8	-48%	5	4	-20%
	PM	15	2	-88%	9	6	-33%
George J. Bean Parkway Southbound	AM	26	6	-78%	1350	8	-99%
	PM	4345	8	-100%	9902	3298	-67%
I-4 Westbound	AM	2525	19	-99%	5423	132	-98%
	PM	22556	11655	-48%	28753	10709	-63%
NB Selmon Expressway Ramp to WB I-4	AM	1171	0	-100%	2789	2080	-25%
	PM	4388	2753	-37%	8983	6688	-26%

The predictive analysis results indicate that with the proposed Build improvements, the study corridor (I-275) will experience fewer crashes in Build conditions than No-Build conditions. Even though there is an increase in the Annual Average Daily Traffic (AADT) and the number of lanes, I-275 is expected to experience a reduction in crashes of 27 percent, and SR 60 is expected to experience a decrease of 49 percent. This reduction is likely due to volumes now being split between the general use lanes and express lanes. With the volumes split, crashes are decreased on the general use lanes.

The I-275 corridor is expected to experience a reduction in individual severity types, with the largest decrease in property damage only (PDO) crashes at 27 percent. SR 60 is expected to experience significant reductions in possible injury and PDO crashes, both at 49 percent. The Build Alternative is also expected to reduce the number of total multiple vehicles crashes along the I-275 and SR 60 corridors by 37 percent and 61 percent, respectively. This is likely due to a reduction in rear-end and side-swipe crashes due to splitting the volumes between general use lanes and express lanes. However, the I-275 and SR 60 corridors are expected to experience an increase in total single-vehicle crashes by 13 percent and 17 percent, respectively. This is likely due to an increased amount of barrier walls and delineators throughout the study limits due to separating the general use lanes from the express lanes.

With the proposed improvements along the study corridor (I-275), the Build Alternative will observe increased travel speeds and throughput, reduced delays, and decreased crashes compared to No-Build Alternative. Therefore, the proposed improvements will improve the traffic operations and safety along the I-275 within the study area.

2. A full interchange with all traffic movements at a public road is provided

The proposed access connects to *a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access such as managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards for federal-aid projects on the interstate system (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). In rare instances where all basic movements are not provided by the proposed design, the report should include a full-interchange option with a comparison of the operational and safety analyses to the partial interchange option. The report should also include the mitigation proposed to compensate for the missing movements, including wayfinding signage, impacts on local intersections, mitigation of driver expectation leading to wrong-way movements on ramps, etc. The report should describe whether future provision of a full interchange is precluded by the proposed design.*

This project retains all traffic movements currently available for commuters within the study area. Also, the proposed Build improvements will provide additional opportunities for access into the Westshore Area. Reo Street, Occident Street, and Trask Street will provide access north and south of I-275. I-275 will have access to Reo Street to and from the south and Trask Street to and from the north. Himes Avenue will have a direct express lane connection to and from the south.

These modifications have been coordinated with the City of Tampa and local residential and business groups. Access Management on the cross streets will not be affected beyond the limits of this project. The Access Management Evaluation Memorandum developed for Sections 4 and 5 is provided in **Appendix N.**

Overall, comparing operational and safety performance of No-Build and Build Alternatives, the Build Alternative provides improved performance. Therefore, the Safety, Operational, and Engineering (SO&E) approval is requested for the Build Alternative.

13 SUMMARY/CONCLUSION

Due to operational deficiencies and high peak hours demand, the study corridor (I-275) currently experiences severe recurring congestion within the study limits of Sections 4 and 5. Peak hours demand exceeds the available capacity of the I-275 system causing longer travel times, poor travel reliability, and underperforming traffic operations.

As growth in the region continues, travel times and congestion within the study area will increase. Therefore, there is an immediate need for capacity improvements along the I-275 corridor to meet the existing and future peak hour traffic demand. This project proposes general use lane improvements and two express lanes in each travel direction to improve the traffic operations and safety within the Sections 4 and 5 study limits.

Microsimulation models were completed for the No-Build and Build conditions for the Opening Year (2025) and Design Year (2045) for both peak periods. The Build conditions' overall operations improved significantly compared to No-Build conditions within the Sections 4 and 5 study limits. The results indicate that more demand vehicles will be processed in the Build conditions with the proposed improvements compared to the No-Build conditions. In the Opening Year (2025) and Design Year (2045), a 17 to 70 percent increase in throughput was observed along I-275 northbound during peak hours. Similarly, an 8 to 32 percent increase in throughput was observed along I-275 southbound during peak hours.

In the Opening Year (2025), the percentage increase in total vehicle miles traveled in Build conditions ranges between 15 percent and 26 percent during peak hours compared to No-Build conditions. The percentage increase in average speed in Build conditions ranges between 46 percent and 62 percent during peak hours compared to No-Build conditions. Simultaneously, the percentage reduction in delay per vehicle-mile ranges between 54 percent and 71 percent during peak hours compared to No-Build conditions. The percentage reduction in travel time per vehicle-mile ranges between 31 percent and 38 percent during peak hours compared to No-Build conditions. Also, the reduction in latent demand by the Build Alternative at major entry locations ranges from 1 percent to 100 percent, showing an improved operation compared to No-Build conditions.

In the Design Year (2045), the percentage increase in total vehicle miles traveled in Build conditions ranges between 31 percent and 54 percent during peak hours compared to No-Build conditions. The percentage increase in average speed in Build conditions ranges between 54 percent and 59 percent during peak hours compared to No-Build conditions. Simultaneously, the percentage reduction in delay per vehicle-mile ranges between 57 percent and 60 percent during peak hours compared to No-Build conditions. The percentage reduction in travel time per vehicle-mile ranges between 35 percent and 37 percent during peak hours compared to No-Build conditions. Also, the reduction in latent demand by the Build Alternative at major entry locations ranges from 14 percent to 99 percent, showing an improved operation compared to No-Build conditions.

Over five years from 2013 to 2017, a total of 7,900 crashes, 13 (0.2 percent) fatal crashes, 2,446 (31 percent) injury crashes, and 5,441 (69 percent) property damage only crashes were reported within the Sections 4 and 5 limits. Most of the fatal crashes occurred on I-275 mainline (9 fatal crashes). The predominant crash type was found to be rear-end crashes (59 percent). Rear-end crashes occurring within the peak periods of traffic flow are associated with heavy congestion and high vehicular densities. The high frequency of rear-end crashes can be attributed to the reduced spacing between vehicles and driver behavior, such as distracted driving during peak period congestion. Sideswipe crashes (15 percent) were the second most common crash type, followed closely by other crashes.

The predictive analysis results indicate that with the proposed Build improvements, the study corridor (I-275) will experience fewer crashes in Build conditions than No-Build conditions. Even though there is an increase in the AADT and number of lanes, I-275 is expected to experience a reduction in crashes of 27 percent, and SR 60 is expected to experience a decrease of 49 percent. This reduction is likely due to volumes now being split between the general use lanes and express lanes. With the volumes split, crashes are decreased on the general use lanes.