

June 2022

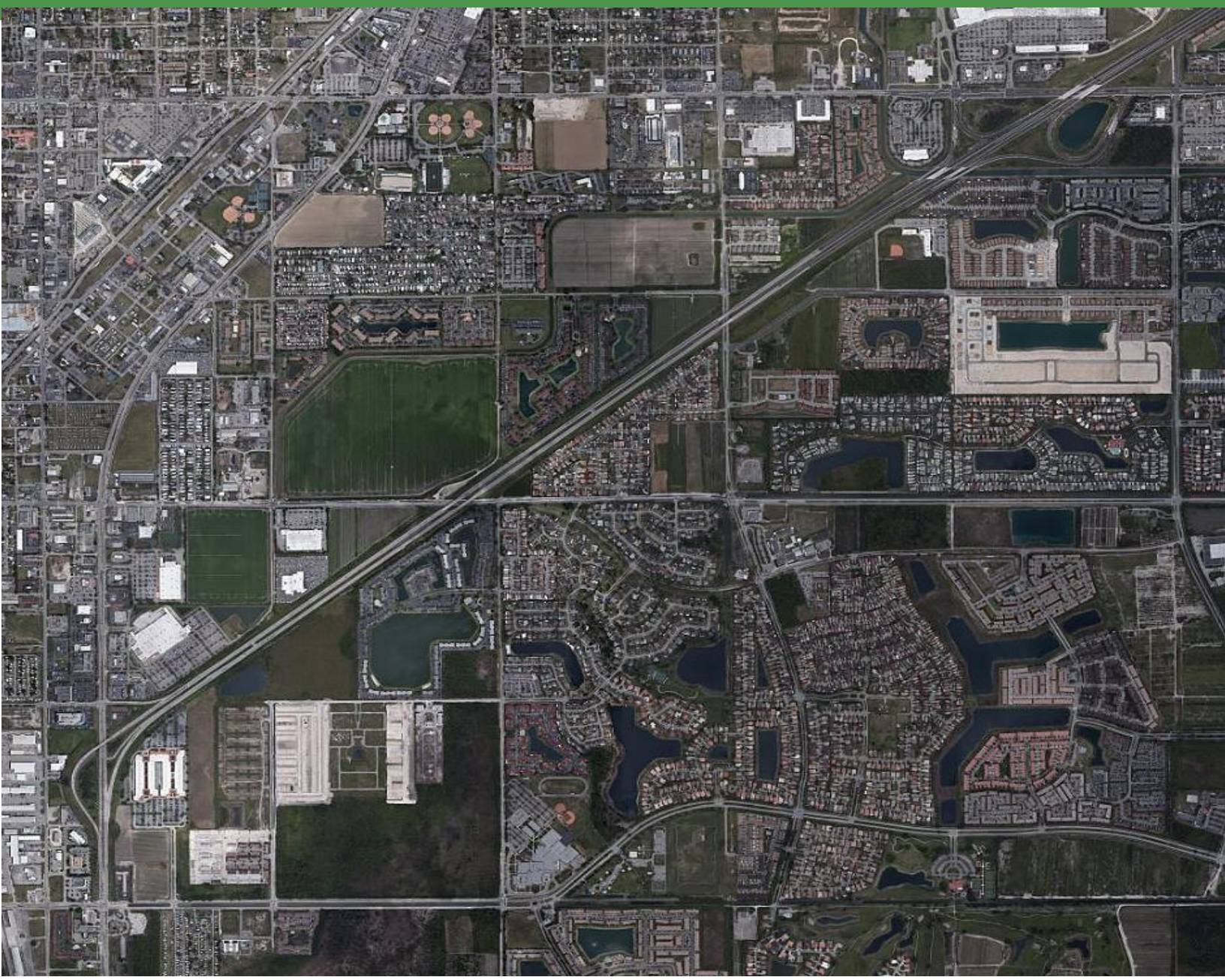


Florida's Turnpike Extension (SR 821) Widening South of Palm Drive to Campbell Drive

Financial Project ID: 439545-1

Systems Interchange Justification Report (SIJR)

Miami-Dade County, Florida



Determination of Engineering and Operational Acceptability

Florida's Turnpike Extension (SR 821) and from Palm Drive to Campbell Drive Systems Interchange Justification Report Financial Project No: 439545-1

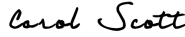
Florida Department of Transportation

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.

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Quality Control Certification

SYSTEMS IMPLEMENTATION OFFICE QUALITY CONTROL CERTIFICATION FOR INTERCHANGE ACCESS REQUEST SUBMITTAL

Submittal Date: 6/30/2022

FM Number: 439545-1

Project Title: Florida's Turnpike Extension (SR 821) and from South of Palm Drive to Campbell Drive – Systems Interchange Justification Report (SIJR)

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Document Type: MLOU IJR SIMR IOAR OTHER SIJR

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 Methodology Letter of Understanding [MLOU])

Draft Submittal

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.

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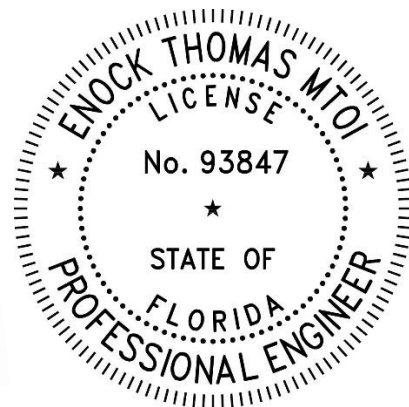
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Engineer's Certification

I, Enock Thomas Mtoi, PE # 93847, certify that I currently hold an active Professional Engineer's License in the State of Florida; and I am competent through education or experience to provide engineering services in the civil and traffic engineering disciplines contained in this report. I further certify that this report was prepared by me or under my responsible charge as defined in Chapter 61G15-18.001 F.A.C. and that all statements, conclusions, and recommendations made herein are true and correct to the best of my knowledge and ability.

Project Description: Florida's Turnpike Extension (SR 821) Widening from South of Palm Drive to Campbell Drive - Systems Interchange Justification Report (SIJR)

Financial Project ID: 439545-1



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Executive Summary

The Florida Turnpike Enterprise (FTE) is in the process of preparing a Project Development and Environment (PD&E) study [FPID 423374-1] for the widening of Florida's Turnpike (SR 821) at the southern end between US 1 Milepost 0 (MP 0) and Campbell Drive (MP 3), extending on US 1 south of Palm Drive and north of Davis Parkway, in Miami-Dade County. This document supports the PD&E effort and interchange access request process.

The southern portion of Florida's Turnpike is the only limited-access facility and one of two main roadways serving mobility in the southernmost portion of Miami-Dade County. This area, which includes the cities of Homestead and Florida City, has been experiencing explosive growth due to the lack of available developable land to the north of the project area.

Initially, this area primarily consisted of agricultural land uses and the Homestead Air Force Base (now Reserve Air Base). However, over the last few decades, significant growth and development have occurred, including building the Homestead Motor Speedway and a regional hospital. The development in this area is also reflected in the growth of Turnpike daily volumes, which average 3 percent per year from 2010 to 2020. Growth is anticipated to continue, as much of the planned development in Homestead and Florida City is constructed.

The corridor also connects the Florida mainland and the Florida Keys – a popular tourist destination with over 2 million annual visitors, and over 82,000 permanent and seasonal residents. The Turnpike serves as a critical evacuation route for these residents and tourists in preparation for significant hurricane events. The US 1/Palm Drive intersection, located just south of the Turnpike southbound off-ramp, currently experiences heavy congestion during commuter peak hours and has been noted as a constraining point during evacuation.

Given future traffic conditions will nearly double the anticipated traffic volumes to an intersection that cannot handle the current traffic levels, even with the maximum feasible at grade improvements to the intersection, the Turnpike is proposing one elevated tolled thru lane in each direction extending from the system to just south of the intersection. The proposed project will address existing operational deficiencies, correct identified safety issues, accommodate future demand, and facilitate local mobility for all modes. Elevating traffic not traveling to the US 1/Palm Drive area will improve local operation on these facilities and enhance area pedestrians/bicyclists and transit operations. A Miami-Dade transit route currently uses the southern segment of the Turnpike for connectivity to the Miami-Dade Park and Ride lot on Palm Drive, located west of the Turnpike, two additional Bus Rapid Transit routes are planned to be added which will travel this segment as part of the County's Strategic Miami Area Rapid Transit (SMART) Plan. This project will enhance the transit routes' efficiency and preserve the reliability of travel times.

The purpose of this Systems Interchange Justification Report (SIJR) is to satisfy the requirements of Florida Department of Transportation (FDOT) Procedure 525-030-160-I regarding new or modified interchanges, to document the operational acceptability and safety, and gain approval of access improvements identified in the US 1 to Campbell Drive PD&E. The proposed Lucy Street interchange and the modifications to the US 1 interchange will enhance capacity to accommodate both current and planned future traffic projections without deteriorating the safety and operation of the mainline Turnpike or the local street network in the study area.

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Although Florida's Turnpike is not part of the interstate system, the FDOT Interchange Access Request (IAR) approval process outlines addressing the Federal Highway Administration's (FHWA) two policy points in documentation related to requests for new or revised access points to the state's limited access facilities. The FHWA's two policy points are addressed below:

- 1. 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, and 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 (Title 23, Code of Federal Regulations (CFR), paragraphs 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 should 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 crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request should also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).*

The traffic analysis includes the evaluation of the proposed additional mainline capacity, safety, and operational and engineering (SO&E) acceptability for the proposed Lucy Street interchange and the modifications to the US 1 interchange.

Since the study area is classified as urban, the analysis area of influence (AOI) includes the Campbell Drive interchange on the north side of the two study interchanges at US 1 and Lucy Street. The local street network around the study area is extended to include several intersections for safety and operational analysis. The AOI along cross streets includes the US 1 intersections at Davis Parkway, Palm Drive, and Krome Avenue; Krome Avenue intersections at Davis Parkway and Palm Drive; and intersections along Lucy Street at US 1, SE 6th Avenue, SW 167th Avenue and SW 162nd Avenue. Along Campbell Drive, intersections at the southbound and northbound ramp terminals, SW 157th Avenue, Kingman Road, and SW 152nd Avenue are included.

The operational analysis conducted for the SIJR confirmed that the proposed interchange modifications and the addition of new interchange are not expected to have adverse impacts on safety and operations on Florida's Turnpike.

The proposed Build alternative includes modifications at US 1 interchange, a new interchange at Lucy Street, providing access to/from north. The modifications at US 1 provide a new southbound off and northbound on ramps over US 1 and Palm Drive intersection, with an additional diversion for the US 1 southbound right-turn traffic to the westbound Palm Drive. A single-lane westbound diversion is provided just south of US 1/West Davis Parkway intersection, looping around west of the existing southbound off-ramp. The provided diversion becomes a two-lane segment after the loop, to provide

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a connection for the southbound off-ramp traffic to westbound Palm Drive. This modification not only removes the concentration of ramp traffic at one intersection, but also eliminates the weaving movements from the US 1 and the off-ramp traffic. Consequently, it improves the safety and flow of traffic at the US 1 interchange, the benefits of which cannot be quantified by the available safety evaluation tools such as the Highway Safety Manual (HSM).

Ultimate improvement needs at the Campbell Drive Interchange were evaluated and determined during a PD&E study [FPN 423372-1] for the Turnpike Extension corridor from Campbell Drive (MP 2) north to the Government Center area (MP 12) which was completed in 2013. An Interchange Modification Report (IMR) to support the access modification proposed at the Turnpike Extension and Campbell Drive interchange was completed in 2014, followed by a Design Traffic Report (DTR), which was completed in 2015.

The Build alternative is projected to reduce the average vehicle delay at the US 1/Palm Drive intersection by more than 80 seconds/vehicle (approximately 70 percent reduction) during the 2045 AM design hour, and by more than 200 seconds/vehicle (approximately 83 percent reduction) during the 2045 PM design hour compared to the 2045 No-Build intersection delays. At US 1/Davis Parkway intersection, there are no changes in level of service despite a 36 percent increase in vehicle delays during the 2045 AM design hour compared to the No-Build 2045 AM design hour. For the 2045 PM design hour, the Build alternative is projected to reduce the average vehicle delay by 80 percent at US 1/Davis Parkway intersection.

At the Campbell Drive interchange, the Build alternative is projected to reduce the average vehicle delay at the southbound ramp terminal intersection by more than 135 seconds/vehicle (approximately 77 percent reduction) during the 2045 AM design hour, and by more than 215 seconds/vehicle (approximately 84 percent reduction) during the 2045 PM design hour compared with the 2045 No-Build intersection delays. At the new Lucy Street interchange, the ramp intersections are projected to operate at LOS D or better. Overall, under Build alternative, all mainline freeway segments and interchange ramp terminals are projected to operate at LOS D or better, with significant operational improvements to the local network compared to No-Build conditions.

Under the Build alternative, there are no anticipated adverse impacts to the traffic operations at other intersections along Campbell Drive, Lucy Street and around US 1 study area.

The projected failing conditions under the No-Build alternative are expected to increase future crash risk within the project corridor. This potential for increased crash risk is alleviated by the capacity improvements proposed in the Build alternatives. Due to the introduction of new Lucy Street interchange in the Build condition, the HSM safety analysis predicts an increased number of crashes for some intersections under the Build conditions. However, it is important to note that the HSM evaluation tool is limited in its ability to quantify the benefits of many operational improvements proposed under the Build conditions. Overall, the Build condition will not only divert traffic from the congested Campbell Drive and US 1 interchanges but will also enhance safety, add capacity, increase mobility, accommodate future traffic demands, and reduce evacuation travel times within the study region.

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- 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 or high occupancy vehicle and high occupancy toll lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (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.*

The new Lucy Street interchange, connecting to a public road was requested and is supported by the local stakeholders. The proposed Lucy Street access is provided as an ancillary interchange to both Campbell Drive and US 1 interchanges to serve the heaviest area movements to/from the north for typical commuter and emergency scenarios. Since this project is at the end section of the facility, lack of demand and design constraints did not warrant provision for the traffic movements to/from the south. The proximity of the access to the existing adjacent interchanges at US 1 and Campbell Drive is not anticipated to create operational or safety concerns and planned advancement will include enhanced way finding signage and turn restrictions to avoid wrong-way movements on ramps. A new Lucy Street access would not divert a sufficient level of traffic to negate the need for the proposed improvements at the US 1 terminal interchange. There are a few changes to business accesses along US 1 associated with the proposed interchange modifications. These access changes were assessed, and U-turns are being provided in both directions to accommodate the impacted traffic on the local street network.

The modifications of the US 1 interchange, and the new proposed access at Lucy Street will be designed to conform to the American Association of State Highway and Transportation Officials (AASHTO) design standards, Florida's Design Manual (FDM) and Turnpike Design Handbook (TDH). The mainline widening, modifications of the US 1 interchange and the new proposed Lucy Street interchange require design variations and exceptions due to the constrained right-of-way. Auxiliary lanes are needed along the Turnpike Mainline for acceleration and deceleration. The exceptions/variations identified are listed below:

- **Interchange Spacing** – the proposed Lucy Street interchange is a mile from both US 1 and Campbell Drive, which is shorter than a 2-mile interchange spacing standard.
- **Curve Length** – some of the proposed interchange ramp curve lengths are less than the FDOT standard minimum required length of 15 times the design speed (15V).

If other design exceptions or variations arise, they will be processed per FHWA and FDOT standards.

The Public Hearing for the project was held on July 20, 2021. The preferred Build Alternative included and presented at the Public Hearing was designed to: alleviate traffic congestion by giving motorists more options for travel; enhance safety; improve accessibility; and enhance emergency evacuation and response time in the study region. The analysis results show that the Build Alternative meets the

Executive Summary

future area needs. Due to local stakeholders concerns regarding the proposed Turnpike ramp over the US 1 and Palm Drive intersection, the Department has suspended advancing the inclusion of the grade separated Turnpike ramp over the US 1 and Palm Drive intersection to work further with the community to develop refinements that address these concerns. The locals were concerned that the ramp would reduce visibility and have a negative economic impact to the businesses along US 1. Several measures were taken within the project development to increase signage and more visual elements will be addressed in later design phases, if advanced. Surveys revealed that, 9 out of 10 travelers to the Keys are repeat visitors and familiar with the area. Patrons to the local businesses are provided with the same local interchange movements to access the businesses.

This SIJR is seeking an approval of all elements of the project. Only those project elements endorsed by local stakeholders will advance to Design.

1.1 INTRODUCTION

The Turnpike Extension/US 1 corridor connects the Florida mainland and the Florida Keys – a chain of small islands popular to tourists of the state and permanent home to over 82,000 residents (based on 2020 Census). During heavy tourist timeframes and weekends, the Keys inbound traffic alone, or in combination with local traffic, frequently result in queues into the mainline lanes of the southern Turnpike Extension segment. The recorded frequency of southbound exit ramps queue backups onto mainlines has been steadily increasing since 2015. There were 105 incidents of queuing observed in 2017, 80 in 2016, and 93 in 2015. Queue incidents typically occur during non-typical peak hours, the worst case occurs when the in-bound traffic to the Florida Keys mixes with heavy commuter/typical traffic. The US 1/Turnpike Extension connection also serves as a critical evacuation route during events such as a hurricane higher than Category 3. The intersection at US 1 and Palm Drive is currently operating at level of service (LOS) E during both AM and PM peak hours. Given the capacity constraints of the southern Turnpike Extension terminus, previous efforts concluded that additional mainline widening was not warranted until the US 1/Palm Drive intersection deficiencies were addressed. The US 1/Palm Drive intersection was identified as a constraining point on the evacuation route and several improvement options were studied in a 2012 Evacuation Planning Assessment. As traffic demand increases in the future, traffic operations are expected to deteriorate within the US 1/Palm Drive intersection and thus impact the freeway mainline.

To address existing and future capacity needs, the Florida's Turnpike Enterprise (FTE) is conducting a Project Development and Environment (PD&E) study [FPID 439545-1] to evaluate widening of the southern end of the Turnpike Extension between US 1 at Milepost 0 (MP 0) and Campbell Drive (MP 3) in Miami-Dade County. The PD&E study is evaluating a new partial interchange at Lucy Street (SW 328th Street) and interchange modifications and enhancement at the intersection of US 1 and Palm Drive. A proposed Lucy Street interchange was requested by a developer to provide direct access to the anticipated traffic that would result from the potential mixed land use development on the parcels in the vicinity of the Turnpike Extension. In 2005 FTE developed preliminary interchange concept alternatives to identify major issues including exception required for 2-mile interchange spacing standards, relocation of local accesses, right-of-way needs and project funding agreements. The ongoing PD&E is re-evaluating the interchange feasibility consistent with previous studies and the terms between the Department and the applicants. As in the previous feasibility study, a partial interchange providing access to/from north of Turnpike is being evaluated in this PD&E.

The primary purpose of this project is to accommodate travel demand by adding capacity, improve travel time reliability, improve operations and safety, and enhance evacuation and emergency response. The project location is along Florida's Turnpike Extension in Miami-Dade County between US 1 (MP 0) and Campbell Drive (MP 3). The Turnpike Extension southern point begins at US 1 and runs along a north/south alignment through Miami-Dade County to approximately the Miami-Dade/Broward County line, where the alignment shifts to east-west and connects to Florida's Turnpike. The Turnpike Extension has been converted to All-Electronic Tolling (AET). The mainline posted speed limit is 65 mph. The Campbell Drive interchange is a Partial Cloverleaf (Parclo) Interchange with tolls collected on to/from the south ramps. The southern connection with US 1 includes two southbound off-ramps: an off-ramp connecting to Davis Parkway and US 1 intersection, and another off-ramp to US 1 just north of the US 1/Palm Drive intersection. There are also two northbound on-ramps, serving the northbound and

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Project Overview

southbound traffic from US 1, respectively. **Figure 1.1** shows the project location map and **Figures 1.2** and **1.3** show the US 1 and Campbell Drive interchanges, respectively.

Figure 1.1
Project Location Map

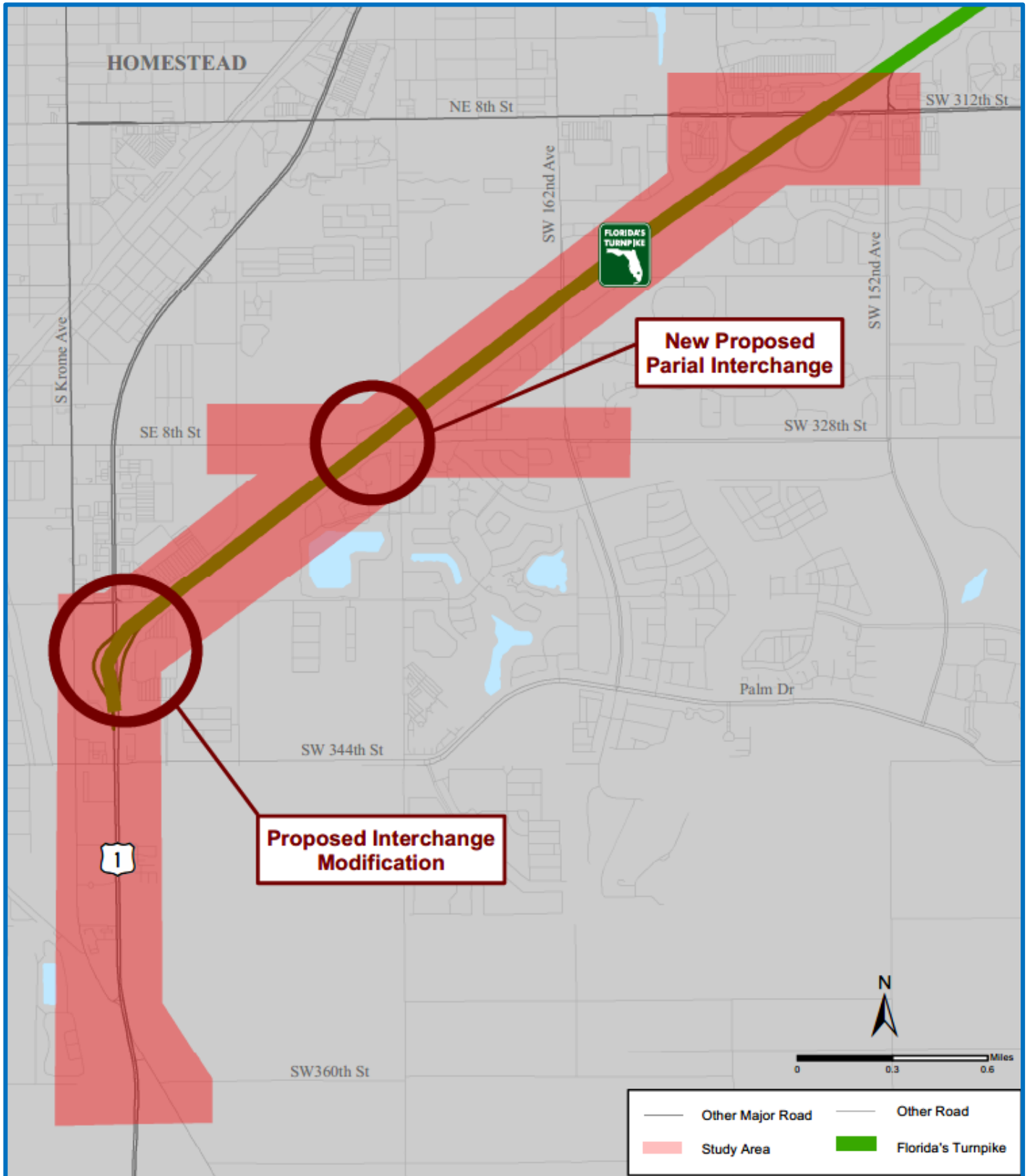


Figure 1.2
US 1 Interchange

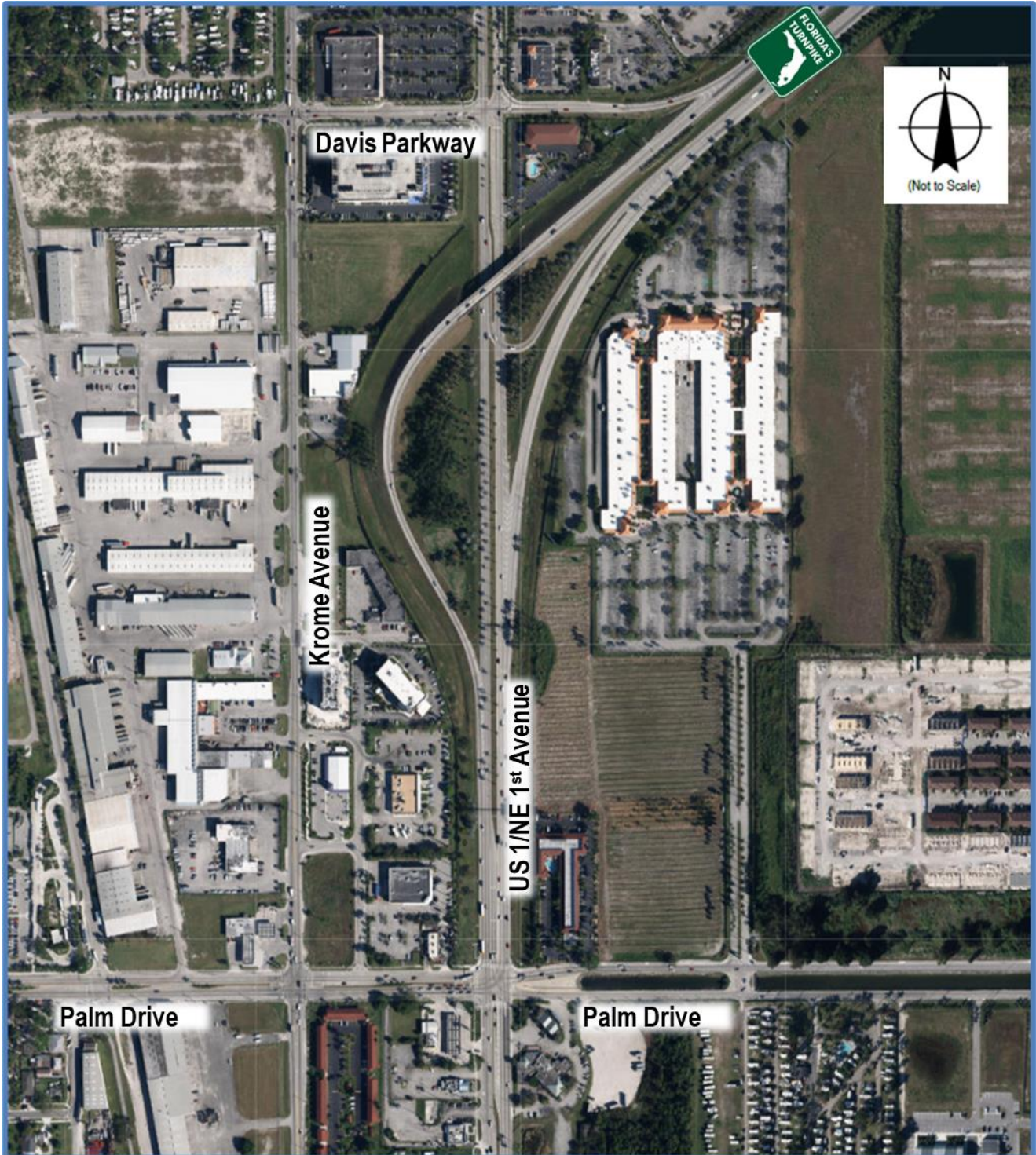
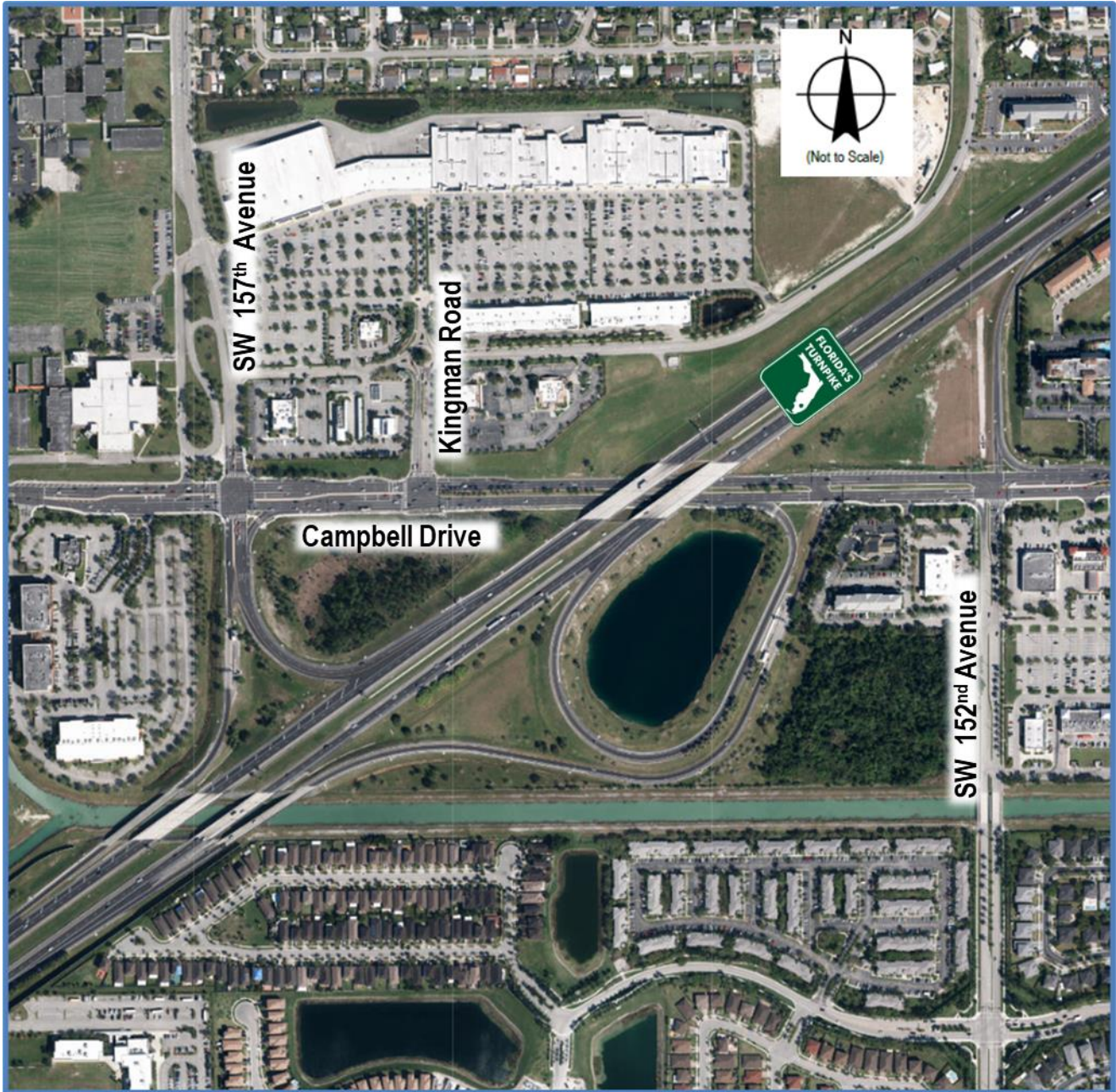


Figure 1.3
Campbell Drive Interchange



1.2 PURPOSE AND NEED

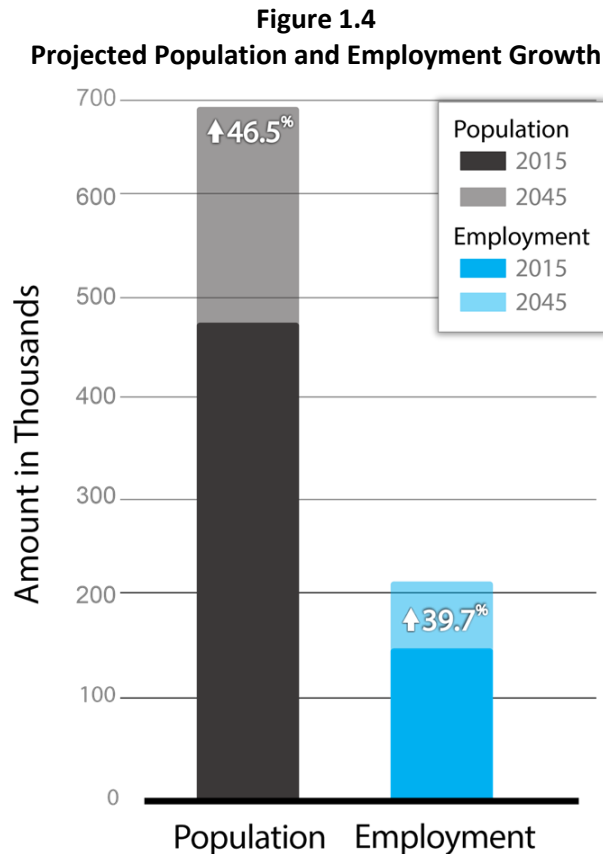
The purpose of this project is to accommodate travel demand by adding capacity, improve travel time reliability, improve operations and safety, and enhance evacuation and emergency response.

The Turnpike Extension/US 1 corridor connects the Florida mainland and the Florida Keys – a chain of small islands popular to tourists of the state and permanent home to over 82,000 residents (based on 2020 Census). During heavy tourist timeframes and weekends, the Keys inbound traffic alone or in combination with local traffic, results in queues into the mainline lanes of the southern Turnpike Extension segment. The recorded frequency of southbound exit ramps queue backups into the mainline lanes has been steadily increasing since 2015. There were 93 incidents of queueing observed in 2015, 80 in 2016, 105 in 2017, 72 incidents in 2018. Queue incidents typically occur during non-typical peak hours; the worst case occurs when the in-bound traffic from the Florida Keys mixes with heavy commuter/typical traffic. The US 1/Palm Drive ramp intersection currently operates at LOS E during both peak hours.

The Turnpike Extension in the study corridor is a significant part of the Strategic Intermodal System (SIS), important to the state's economy and mobility. The US 1/Turnpike Extension connection also serves as a critical evacuation route during events such as a hurricane higher than Category 3. The project area is in storm surge planning zones A, B, and C, which are at greatest risk for storm surges during hurricanes. Florida's Turnpike Extension is the nearest designated emergency evacuation route with access from US 1 and Campbell Drive in this area. The US 1/Palm Drive intersection was also identified as a constrained point on the evacuation route and several improvement options were studied in a 2012 evacuation planning assessment.

The study area falls within the South Transportation Planning Area as defined by the Miami-Dade Transportation Planning Organization (TPO). According to Miami-Dade TPO, between 2015 through 2045, the study area population and employment are projected to grow by 46.5 percent and 39.7 percent, respectively. The projected population and employment growth rates are depicted on **Figure 1.4**. The 2015-2045 micro analysis zone (MAZ) population changes are shown in **Figure 1.5**. Due to projected regional population and employment growth, the anticipated land development around the project area and the need to enhance emergency evacuation process, it is important to explore capacity improvements options including assessment of additional access and modifications of existing interchanges. The new interchange at Lucy Street and the modifications of the US 1/SR 5 interchange are being proposed to address existing and projected future traffic congestion, capacity deficiencies, related safety issues, improving direct access and provide efficient emergency evacuation options.

As part of Financial Project ID 439545-1, this study evaluated the ultimate improvements under the Florida's Turnpike Mainline Widening Project from US 1 (MP 0) and Campbell Drive (MP 3) in Miami-Dade County. The traffic analysis includes the evaluation of the proposed additional mainline capacity, safety, and operational and engineering (SO&E) acceptability for the proposed Lucy Street interchange and the modifications to the US 1 interchange.



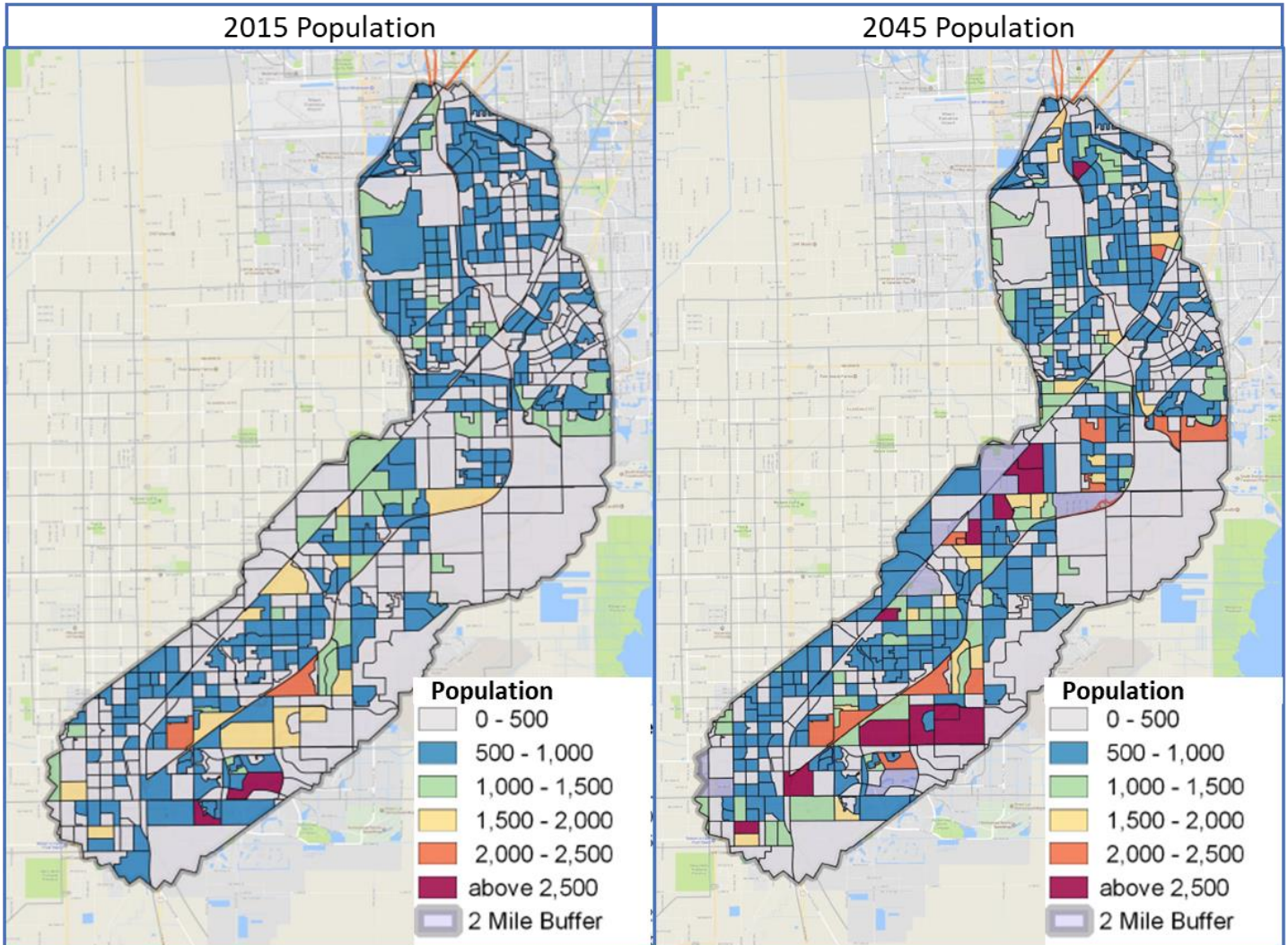
Source: Miami-Dade TPO LRTP Figure 1-3: Population and Employment Growth by Transportation Planning Area

1.3 PLANNED AND PROGRAMMED TRANSPORTATION PROJECTS

Planned and programmed improvements within the study area have been considered in developing the traffic and interchange concepts and are included in the analysis. The key planned improvements include:

- Turnpike Extension Widening from North of Campbell Drive to North of Tallahassee Road [FPID: 444111-1] and FTE Work Program (2018/2019 – 2022/2023) and Master Plan (2017 – 2045)
- Florida Department of Transportation (FDOT) District 6 Five-Year Work Program and FDOT Florida Intrastate Highway System (FIHS)/SIS Plan
- Southeast Florida’s 2045 Regional Long-Range Transportation Plan (RLRTP) within the study area. This includes Miami-Dade TPO, Broward Metropolitan Planning Organization (MPO), Palm Beach Transportation Planning Agency (TPA)
- SR 997/Krome Avenue Truck By-Pass PD&E Study [FPID: 405575-2] and City and County Access Management Plans. This project was recently completed and is now open for traffic
- SW 344th Street (Palm Drive) Improvements from US 1 to SW 172nd Avenue. Also, this project was recently completed and is now open for traffic

Figure 1.5
Base 2015 and 2045 Projected Population



The methodology applied for the proposed Lucy Street and the US 1 Systems Interchange Justification Report (SIJR) is documented in the Methodology Letter of Understanding (MLOU) dated September 2020. The MLOU was approved by FDOT District 6 and the Systems Implementation Office (SIO) of FDOT Central Office on September 25, 2020. The MLOU outlines the criteria, assumptions, processes, analyses, and documentation requirements for the project. For reference, the approved MLOU is included in **Appendix A**. The following summarizes some of the more prominent topics covered under the MLOU.

2.1 AREA OF INFLUENCE

Based on FDOT's 2020 Interchange Access Request User's Guide (IARUG), the Interchange Access Request should include an area of influence (AOI) based on safety and operations concerns. The US 1 interchange (MP 0) is 2 miles south of Campbell Drive, while Lucy Street, the proposed location for a new partial interchange (MP 1) is approximately midway between US 1 and Campbell Drive interchanges (i.e., approximately a mile north of US 1 and south of Campbell Drive). The proposed modifications at the US 1 interchange and the proposed interchange at Lucy Street are not expected to change demand or operation for the interchanges north of Campbell Drive. Therefore, the anticipated AOI for the access request document is depicted on **Figure 2.1**, which includes:

- **Mainline** – the mainline basic segments; merging, diverging, and weaving segments from US 1 interchange to north of Campbell Drive interchange.
- **Ramps and Cross Streets** – the AOI along cross streets includes the US 1 intersections at Davis Parkway, Palm Drive, and Krome Avenue; and Krome Avenue intersections at Davis Parkway and Palm Drive; intersections along Lucy Street at US 1, SE 6th Avenue, SW 167th Avenue and SW 162nd Avenue. Along Campbell Drive, intersections at the southbound and northbound ramp terminals, SW 157th Avenue, Kingman Road, and SW 152nd Avenue are included.

2.2 ANALYSIS YEARS

The analysis years for the project were determined as follows:

For Traffic Forecasting:

- Base year 2010 (re-validated to 2015)
- Opening year 2025
- Horizon year 2045

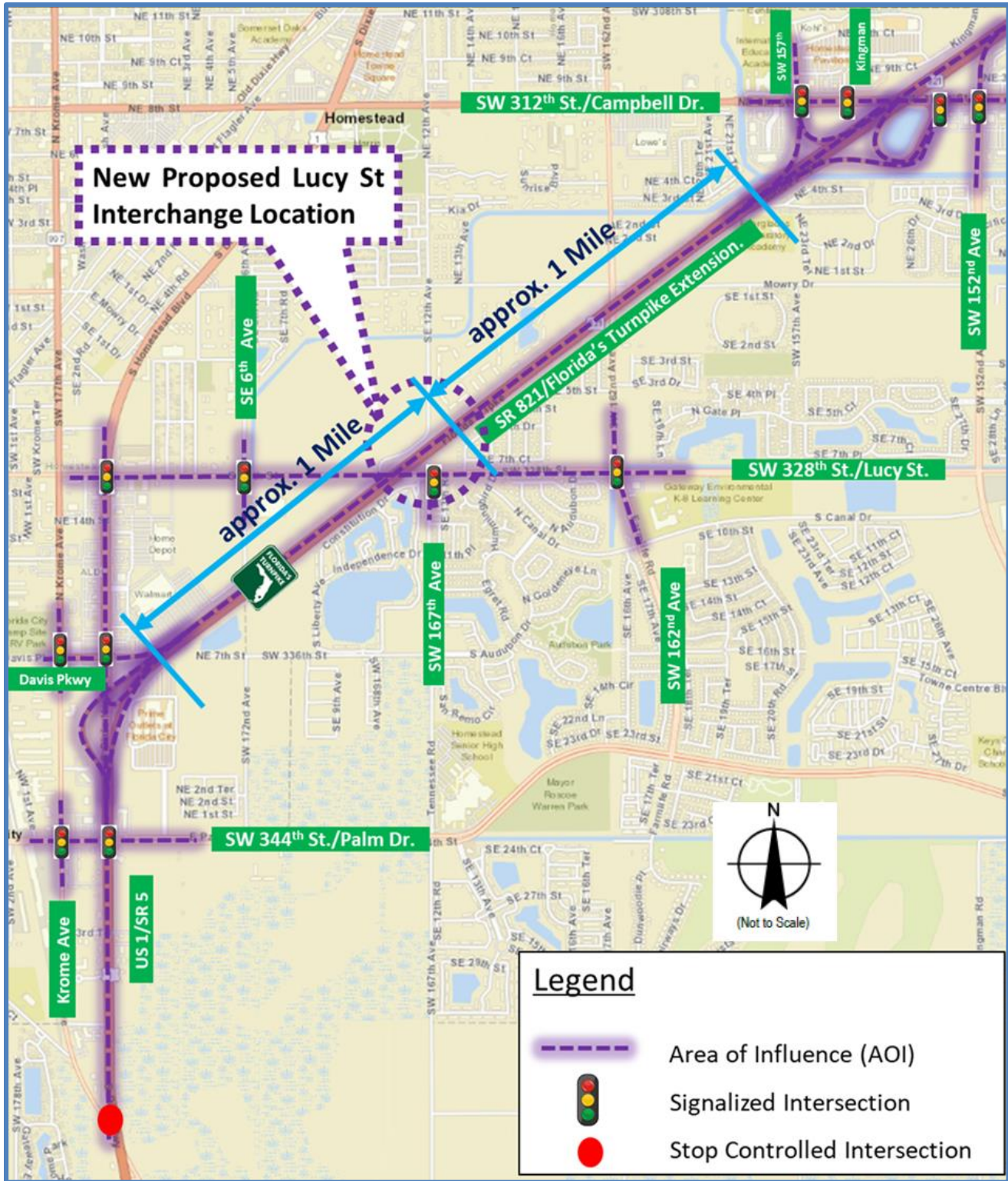
For Traffic Operational Analysis:

- Existing year 2016
- Opening year 2025
- Design year 2045

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Figure 2.1
Area of Influence



2.3 TRAVEL DEMAND FORECASTING

2.3.1 Travel Demand Model

The Southeast Florida Regional Planning Model version 7.071, referred to as SERPM 7, from FDOT District 4, was used to develop the traffic forecasts for this project. The SERPM 7 covers a three-county region in Southeast Florida: Palm Beach, Broward, and Miami-Dade. The SERPM 7 network coverage is shown on **Figure 2.2**. The SERPM produces traffic volumes at a daily level, as well as for five periods: AM Peak (6:00 – 9:00 AM), PM Peak (3:00 – 7:00 PM), Mid-Day (MD, 9:00 AM– 3:00 PM), Evening (EV, 7:00 – 10:00 PM), and Nighttime (NT, remainder of the day). The SERPM version 7 (SERPM 7) was used as a base model for this project since this Activity Based version has an enhanced modeling process for truck traffic. Seed skims from model years 2010 and 2040 and the add-on PopSyn-III module were the main components used with the model. Numerous updates were made to the SERPM 7, which include socioeconomic data and networks, to produce the current FTE version of the model, which is called SERPM 7 FTE. The model was updated specifically for evaluating toll road and managed lane projects in southeast Florida.

2.3.2 Project Traffic Forecast Development Methodology

The development of the project traffic forecast was a multi-step effort involving a combination of internal modeling procedures and post-model evaluation. The models were developed for No-Build and Build scenarios. The Build scenario includes the mainline widening from four to six lanes, interchange reconfiguration at US 1, and a to/from north partial interchange at Lucy Street. The historical growth rates from counts and the model forecasts were used to develop cross street Annual Average Daily Traffic (AADT). For the Turnpike Extension and ramps, the growth rates from SERPM 7 FTE model were used. The traffic forecasting methodology used for each approach for each intersection was based on the 2015 AADT (from the field), and 2015 and 2045 SERPM model volumes. The recommended 2045 AADTs were calculated by applying the model growth rate to the 2015 AADT. The growth rates were calculated by applying the 2045 AADTs from model outputs and the five-year (2011-2015) historical field AADTs. The model assignment growth was checked for reasonableness by comparing to the regional historical trend data. Additionally, the NCHRP 765 forecasting procedure was employed to further refine the future No-Build estimates. Once the No-Build forecast was established for 2045, the Build project forecast was developed by applying the model differences to the No-Build project forecast. For example, when computing the forecast using the difference, 2045 Build project traffic forecasts = 2045 No-Build project traffic + (2045 Build Model – 2045 No-Build Model). The final forecasted AADTs from the subarea model, along with K-factors and D-factors, were used to develop corridor-level directional design hour volumes (DDHVs), consistent with the guidelines set forth in the FDOT Project Traffic Forecasting Handbook. The Turnpike Extension interchange at US 1 serves both tourist and regular commute traffic. Therefore, future DDHVs were developed for two scenarios: the typical peak commuter design hour and the design hour for a heavy-inbound-keys scenario. The heavy-inbound-keys scenario considers a combination of peak season southbound tourists traveling to the Keys and a non-peak-hour commuter traffic for other movements. For the typical peak hour scenario, DDHVs were calculated based on the standard K factor and the D factor based on existing counts. For the heavy-inbound-keys scenario, the K and D factors were developed for the heaviest inflow to the keys for the southbound off-ramp. The future No-Build intersection turning

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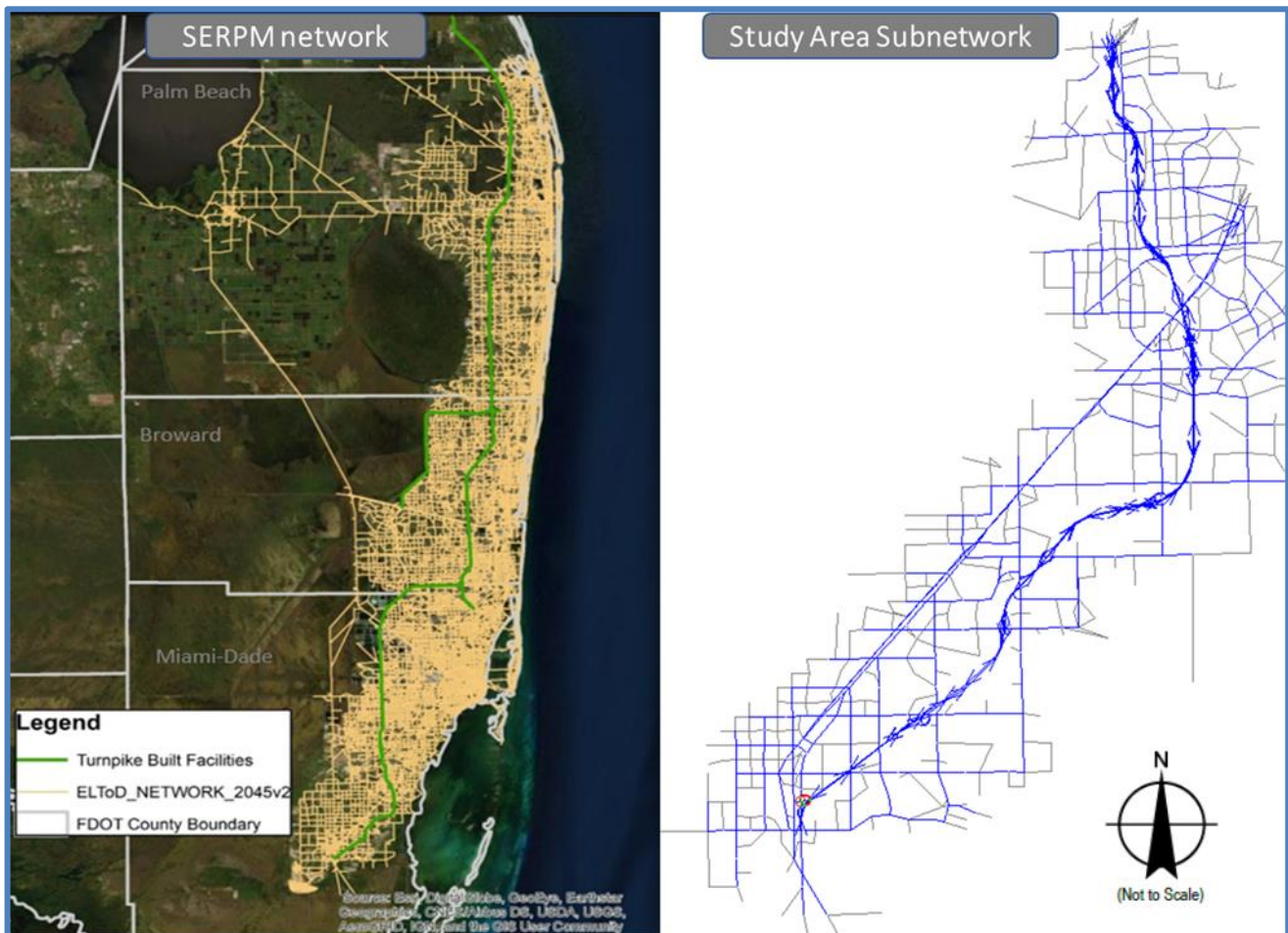
Methodology

movement volumes were developed by using existing and model intersection splits, and link DDHVs. The Build scenario turning movement volumes were developed by adding the Build impact layer to the No-Build volumes. Model intersections turn volumes were used to develop future year turning movement volumes along Lucy Street where existing data were not collected due to the ongoing construction.

2.3.3 Model Validation Methodology

The subarea covered an area extending from SR 874 to the south end of the model and included an area extending 2 miles both east and west of the Turnpike Extension. The study subnetwork coverage is shown on **Figure 2.2**. The model development for this project consisted of enhancing the SERPM regional model by correcting roadway configurations and adding local streets important to local circulation around the study corridor. The SERPM model was re-validated to reflect 2015 traffic conditions in an iterative fashion, following standard model validation procedures and principles by adjusting link attributes at the regional level. Land use and socioeconomic data were reviewed to verify that existing and proposed land uses within the study area are properly accounted for within the model. The results of the travel demand model validation are included in the **Appendix B**. The information used to check and validate land use are also included in the **Appendix B**.

Figure 2.2
Regional and Study Area Subnetwork Model Coverage



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2.3.4 Adjustment Procedures

Procedures outlined in the 2019 Project Traffic Forecasting Handbook and Procedure (525-030-120) are typically used for post-model adjustments. FTE maintains historical and trends data for all the facilities. An annual effort evaluates historic growth, area traffic trends and all available forecast model information (project developed, statewide and local) to develop Turnpike system forecasts which are documented within a Turnpike Traffic Trends Report. The FY 2015 Annual Traffic Trends project area forecasts were used as the base for the No-Build traffic forecasts. The model run outputs were used only to determine the impact layers for different alternatives and develop Build scenario forecasts. No-Build and Build AADTs were checked and adjusted to reflect adequate growth between 2015 and 2045.

2.4 TRAFFIC FACTORS

The proposed Traffic factors for this SIJR are summarized in **Table 2.1**.

Table 2.1
Proposed Traffic Factors

Roadway Segment		K _{STD}	D	T ₂₄	DHT	PHF
Turnpike Mainline						
North of US 1 (MP 0) to Campbell (MP 3)		8.50	58.10	5.6	3.0	0.95
Interchange Ramps						
Campbell Drive (MP 3)	South Ramps	9.50	51.61	5.6	3.0	0.95
	North Ramps	8.50	56.35	5.6	3.0	0.95
US 1 (MP 0) [Typical Scenario]	South Ramps	8.50	58.10	5.6	3.0	0.95
	North Ramps	8.50	58.10	5.6	3.0	0.95
US 1 (MP 0) [Heavy-Inbound-Keys Scenario] *	South Ramps	9.50	60.00	5.6	3.0	0.95
	North Ramps	9.50	60.00	5.6	3.0	0.95
Cross Streets						
Campbell Drive		9.00	57.40	9.5	5.0	0.95
Lucy Street		9.00	54.40	3.8	2.0	0.95
Davis Parkway		9.00	58.50	10.7	5.0	0.95
Palm Drive		9.00	55.00	10.7	5.0	0.95
Krome Avenue		9.00	58.50	10.7	5.0	0.95
US 1		9.50	60.00	9.5	5.0	0.95

Source: Turnpike's Standard K factor is based on FTE's annual factor development. Arterials Standard K and D factors are from Florida Traffic Online (FTO). 24-hour truck factors (T24) and design hour truck factors (DHT) are based on FTE's annual factor, FTO and the PD&E data collection effort. Existing conditions Synchro analysis shall utilize peak hour factors (PHF) and truck percentages obtained from traffic count data.

* The heavy-inbound-keys scenario will be analyzed in addition to the typical scenario. The heavy-inbound-keys scenario considers a combination of peak season southbound tourists traveling to the Keys and a non-peak-hour commuter traffic for other movements. For the heavy-inbound-keys scenario, the K and D factors were adjusted for the southbound off-ramp to make sure the design will be able to operate acceptably in the tourist traffic peaks.

2.5 TRAFFIC OPERATIONAL ANALYSIS

2.5.1 Highway Capacity Software and Synchro

Traffic operational analyses were performed for the Existing Conditions and future No-Build and Build Alternatives. Analyses were performed using the Highway Capacity Software (HCS) Version 7.8.5, Synchro Version 11 and VISSIM (version 2020.00 -13) microsimulation.

The HCS is based on Highway Capacity Manual (HCM) Sixth Edition methodologies. The HCM estimates level of service based on density – a function of flow rate (volumes) and travel speed – for uninterrupted flow facilities such as basic freeway/Collector-Distributor (C-D) roadway segments, merge and diverge segments, and freeway/C-D roadway weaving segments. Density is measured in passenger cars per mile per lane (pcpmpl). The HCM Sixth Edition LOS and density targets for freeway segments are listed in **Table 2.2**.

Table 2.2
Freeway Segments HCM Sixth Edition LOS Criteria

LOS	Basic Density (HCM Exhibit 12-15)	Merge and Diverge Density (HCM Exhibit 14-3)	Weaving Density (HCM Exhibit 13-6)
A	≤ 11	≤ 10	0 – 10
B	> 11 – 18	> 10 – 20	> 10 – 20
C	> 18 – 26	> 20 – 28	> 20 – 28
D	> 26 – 35	> 28 – 35	> 28 – 35
E	> 35 – 45	> 35	> 35 – 43
F	> 45	Demand Exceeds Capacity	Demand Exceeds Capacity

Note: Density measured in passenger cars/mile/lane (pcpmpl)

The HCS software was calibrated based on the adjusted FDOT capacities. Tests were conducted using the following parameters and assumptions for the Florida's Turnpike to identify a factor for calibrating capacity:

- Florida's Turnpike Free-Flow Speed (FFS) – 70 mph
- Florida's Turnpike peak hour truck percentage – 3 percent
- Lane width – 12 feet
- Right shoulder clearance – 6 feet
- Driver Population – Mostly Familiar
- Weather Type – Non-Severe Weather
- Incident Type – No Incident
- Demand Adjustment Factor – 1.000

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Intersections were evaluated using Synchro Version 11, with level of service identified based on the HCM Sixth Edition LOS and delay targets presented in **Table 2.3**. Unlike the HCM, Synchro software has additional procedures for estimating control delay, such as estimation of right turn on red and queue delay associated with starvation and spillback. Thus, Synchro delay estimation yields more accurate results than HCM because of these additional refinements.

Table 2.3
Signalized Intersection HCM Sixth Edition LOS Criteria

Control Delay (sec/veh)	LOS by Volume-to-Capacity Ratio*	
	≤1.0	>1.0
(HCM Exhibit 19-8)		
≤10	A	F
>10 – 20	B	F
>20 – 35	C	F
>35 – 55	D	F
>55 – 80	E	F
>80	F	F

*For approach-based and intersection-wide assessments, level of service is defined solely by control delay. Delay is measured in seconds per vehicle. Control delay and volume-to-capacity ratio are used to characterize level of service for a lane group.

The HCS and Synchro operations analyses were performed for the following conditions:

- Existing year 2016 conditions – AM and PM peak hours.
- Year 2025 conditions for No-Build and Build Alternatives – AM and PM design hours and Heavy-Inbound-Keys Scenario.
- Year 2045 conditions for No-Build and Build Alternatives – AM and PM design hours and Heavy-Inbound-Keys Scenario.
- Existing year Synchro analysis was conducted using the existing signal timing data.
- All future year Synchro analysis for both the No-Build and Build conditions included signal optimization.

For consistency, detailed result discussions are provided for VISSIM microsimulation analysis. The summarized HCS and Synchro operations analysis results are included in **Appendix C**.

2.5.2 VISSIM Microsimulation Analysis

Existing year VISSIM (version 2020.00-13) models were developed, and the calibration criteria was adopted from the 2021 Traffic Analysis Handbook. Model calibration is achieved by iteratively changing model parameters to replicate the traffic patterns, congestion, bottlenecks, and driver behavior observed within the study area. In the calibration stage, the model measures of effectiveness (MOEs) were summarized and compared to the 2016 collected data, and field observations. The calibration parameters

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were adjusted iteratively, to make sure that the model reasonably reflects existing field conditions. The model outputs were compared to the vehicle volumes processed through the system, vehicle speeds, bottlenecks, and observed queues. The model calibration targets are shown in **Table 2.4**.

Due to the stochastic nature of VISSIM simulation models, multiple model runs were required to check the reasonableness of the calibrated model and establish a certain confidence level for the model results. The computation of the minimum number of required runs was based on the guidelines provided in the 2021 Traffic Analysis Handbook. The required number of repetitions was estimated in an iterative process. The network-wide average speed output of the ten (10) runs was used to establish the standard deviation of the results.

Table 2.4
Model Calibration Targets

Calibration Item	Calibration Target
Capacity	Simulated capacity to be within 10% of the field measurements.
Traffic Volume	Simulated and measured link volumes for more than 85% of links to be: <ul style="list-style-type: none"> ▪ Within 100 vehicles per hour (vph) for volumes less than 700 vph ▪ Within 15% for volumes between 700 vph and 2,700 vph ▪ Within 400 vph, for volumes greater than 2,700 vph
	Simulated and measured link volumes for more than 85% of links to have a Geoffrey E. Havers (GEH)* statistic value of five (5) or lower.
	Sum of link volumes within calibration area to be within 5%.
	Sum of link volumes to have a GEH* statistic value of 5 or lower.
Travel Time	Simulated travel time within ± 1 minute for routes with observed travel times less than seven (7) minutes for all routes identified in the data collection plan.
	Simulated travel time within $\pm 15\%$ for routes with observed travel times greater than seven (7) minutes for all routes identified in the data collection plan.
Speed	Modeled average link speeds to be within the ± 10 mph of field-measured speeds on at least 85% of all network links.
Visualization	Check consistency with field conditions for the following: on-ramp and off-ramp queuing, weaving maneuvers, patterns, and extent of queue at intersection and congested links, lane utilization/choice, location of bottlenecks, etc.
	Verify no unrealistic U-turns or vehicles exiting and reentering the network.

*The GEH is computed as follows: $GEH = \sqrt{2 \times \frac{(Model\ Volume - Field\ Count)^2}{(Model\ Volume + Field\ Count)}}$

2.5.3 Measures of Effectiveness

Analyses of the interchange ramp terminals and adjacent intersections were conducted using Synchro 11 and VISSIM 2020.00-13 software. The FDOT's intent is to plan, design, and operate state roads at an acceptable level of services for the traveling public. The automobile mode Level of Service Targets for State Highway System (SHS) during peak travel hours is LOS D in urbanized areas and C outside urbanized areas, per the State Highway System Policy No. 000-525-006-c, effective April 19, 2017.

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According to FDOT's 2020 IARUG, interchange modifications or introduction of new interchange(s) should result in improved traffic operations. Therefore, Build Alternative should show operating conditions equal or better than the No-Build (i.e., operational and safety acceptability of the proposed Build Alternative).

In addition to the signalized intersection level of service criteria stated above, operational analysis criteria also include the following:

HCS Analysis

- Level of services and density (passenger cars/mile/lane)

Synchro Analysis

- Level of service and delay (seconds per vehicle)
- 95th Percentile Queue Lengths
- Interchange off-ramp queue lengths: The 95th percentile queue was utilized to determine the required storage length for all interchange off-ramp queue lengths. The 95th percentile queue was calculated utilizing Synchro queue results which are reported in feet by lane.

VISSIM Intersection

- Processed demand (comparison between processed and demand volumes)
- Delay and estimated level of service
- Maximum queue length

VISSIM Link/Segment

- Speed
- Processed demand (comparison between processed and demand volumes)
- Density and estimated level of service

VISSIM Network-wide

- Total travel time and Total delay time
- Vehicle-miles traveled (VMT)
- Latent demand and latent delay

The level of services from VISSIM is estimated using density and delays from the outputs, and HCM thresholds. The estimated level of service is easily understood by non-technical public and stakeholders compared to MOEs such as density and delays.

2.6 SAFETY STUDY METHODOLOGY

Crash data for existing facilities within the area of influence (AOI) were obtained from the state's Crash Analysis Reporting System (CARS) for years 2013 through 2017. The data reports were analyzed for each mainline roadway, interchange ramp, and intersection within the study area. Detailed crash reports (CARS long forms) were reviewed to verify the accuracy of the information obtained from the database. Signal Four Analytics, an FDOT funded database developed in coordination with the state's CARS, was used to obtain crash data for side streets that are not included in the FDOT crash database. Intersection crashes were extracted by providing a 250-foot influence area.

A quantitative safety analysis was performed based on the Highway Safety Manual (HSM) and *Interchange Access Request User's Guide Safety Analysis Guidance (IARUG) 2020*. The analysis was conducted using the predictive methods found in Chapters 12 and 19 of the HSM, where available, and the Enhanced Interchange Safety Analysis Tool (ISATe), which apply a combination of Safety Performance Functions (SPFs), crash modification factors (CMFs) and calibration factors to estimate frequency and cost of crashes for each segment and intersection. The cost of crashes was based on the KABCO distribution and crash values from the Florida Design Manual 2022.

3.1 EXISTING ROAD CHARACTERISTICS

The general characteristics of the roadway facilities located within the project limits are described in the sections below. The data below is based on information gathered from the FDOT's Roadway Characteristics Inventory (RCI), Straight Line Diagrams (SLDs), Miami-Dade TPO, Miami-Dade County Traffic and Engineering Division and field reviews. The existing roadway and intersection lane configurations are depicted in **Figure 3.1**.

3.1.1 Florida's Turnpike Extension (SR 821) from US 1 Interchange to north of Campbell Drive Interchange

Florida's Turnpike Extension (SR 821) from US 1 Interchange (MP 0) to north of Campbell Drive Interchange (MP 3) is a four-lane toll facility. Based on Facility Functional Classification, this toll facility has been designated as Urban Principal Arterial. Based on FDOT's Access Management Classification, SR 821 has been assigned Class 1. The posted speed on Florida's Turnpike is 65 mph within the study area.

3.1.2 US 1 (SR 5)

US 1 within the study area is a divided urban principal arterial with a posted speed limit of 45 mph. The southern connection with US 1 includes two southbound off-ramps: an off-ramp connecting to Davis Parkway and US 1 intersection, and another off-ramp to US 1 just north of the US 1/Palm Drive intersection. There are also two northbound on-ramps, serving the northbound and southbound traffic from US 1, respectively.

3.1.3 Palm Drive (SW 344th Street/SR 9336)

West of US 1, Palm Drive is a divided urban minor arterial and urban major collector east of US 1, with a posted speed limit of 30 mph. Palm Drive provides east – west access for the southern Florida City.

3.1.4 NE 7th Street (SW 336th Street/West Davis Parkway)

Davis Parkway is a divided urban major collector with a posted speed limit of 30 mph.

3.1.5 Krome Avenue (SW 177th Avenue/SR 997)

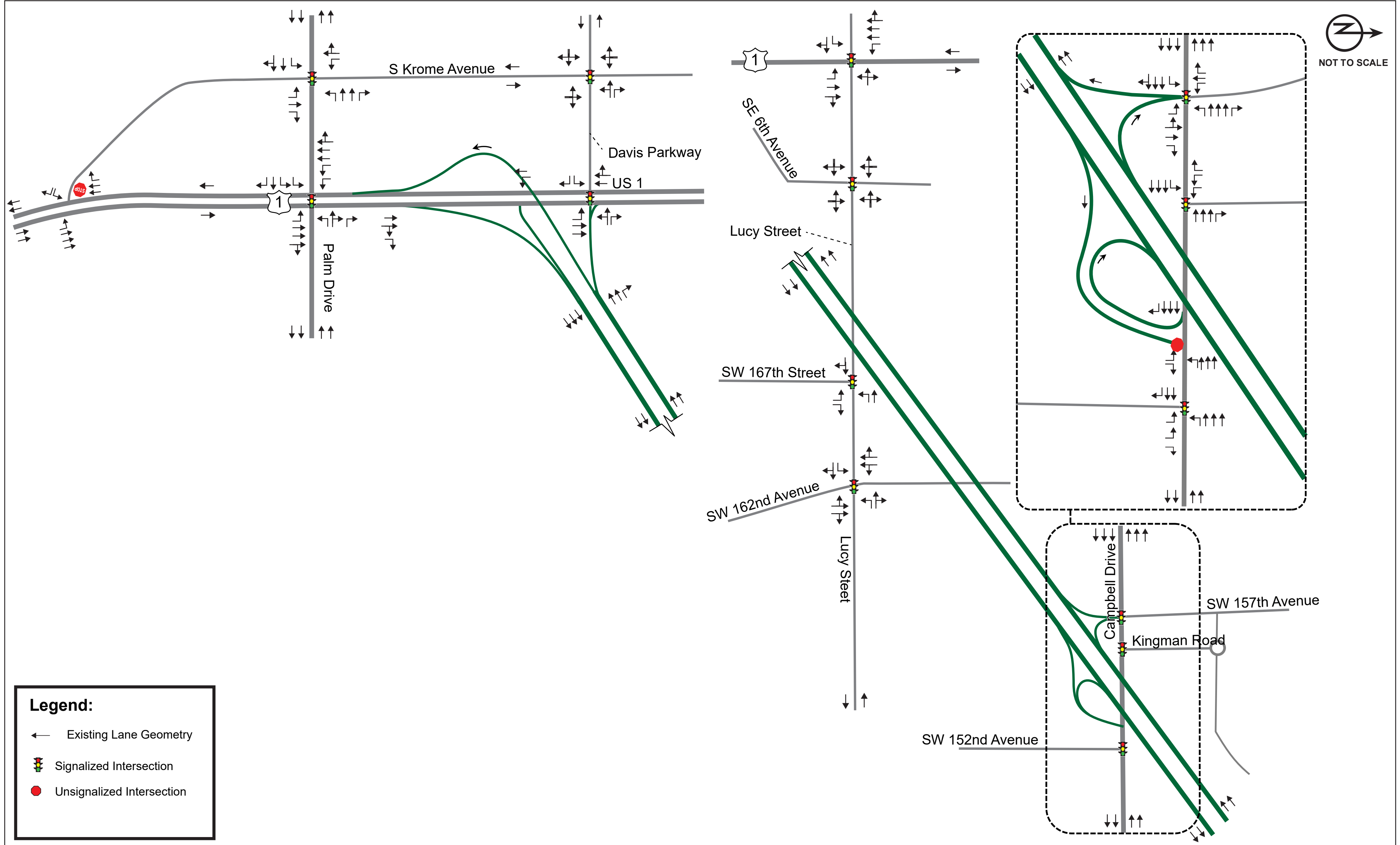
Krome Avenue is a north-south rural/suburban/urban principal arterial that intersects and provides access to SR 5/US 1, Palm Drive and Davis Parkway. The facility is a two-lane undivided arterial with a posted speed limit of 30 mph.

3.1.6 Lucy Street (SW 328th Street)

Lucy Street is a four-lane divided urban major collector with a posted speed limit of 40 mph.

3.1.7 Campbell Drive (SW 312th Street)

Campbell Drive is a divided urban minor arterial with a posted speed limit of 40 mph.



Legend:

- ← Existing Lane Geometry
- 🚦 Signalized Intersection
- Unsignalized Intersection

3.2 EXISTING TRAFFIC DATA

Existing traffic data were obtained from various sources, including FTE and through traffic data collection efforts undertaken as part of this project. Field visits were conducted to collect information on existing lane geometry, storage lengths, and traffic signal phasing. The signal timing plans for signalized intersections were obtained from Miami-Dade County.

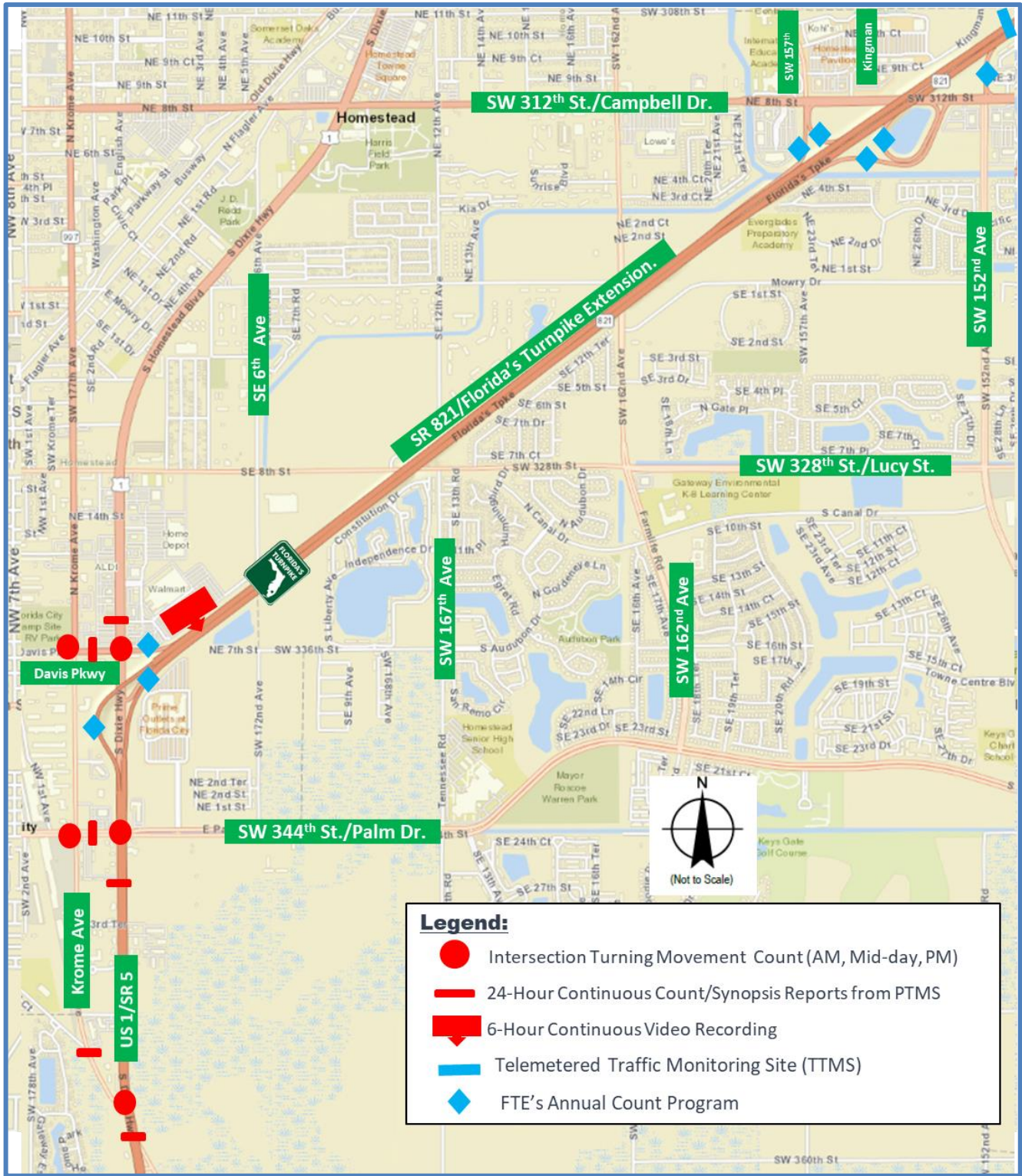
Figure 3.2 shows key data collection locations for this project. The traffic data collected include:

- Directional link traffic volume counts:
 - Hourly Continuous Counts from Telemetered Traffic Monitoring Site (TTMS) 97-0430 on Mainline Turnpike, north of Campbell Drive and TTMS 90-0164 at Keys entrance in Key Largo.
 - Synopsis Reports from Portable Traffic Monitoring Site (PTMS) 87-0543 along US 1 south of Palm Drive.
 - Synopsis Reports from PTMS 87-2548 along Palm Drive east of Krome Avenue.
 - Continuous Toll Data for tolled ramps (south ramps) and traffic counts for non-tolled at Campbell Drive interchange ramps (north ramps) and US 1 (all ramps). There were supplemental counts performed in the first week of March 2020 after the improvements and the new westbound to northbound on ramp at Campbell Drive were opened.
 - The 24-hour directional counts were collected on the ramps for a week from Tuesday, March 8, 2016, through Monday, March 14, 2016, and on arterials of US 1, Palm Drive, and Krome Avenue for a week from Monday, March 7, 2016 to Sunday, March 13, 2016.
- Intersection turning movement counts (TMCs) were collected for AM peak, mid-day, and PM peak periods at AOI signalized and unsignalized intersections as shown on **Figure 3.2**. The TMC data were collected on March 10, 2016. The counts included separate truck traffic which were used to derive truck factors.
- Traffic Signal data for the signalized intersections.
- Traffic Design and Conversion Factors from Florida Traffic Online (FTO).
- Field video data were collected on the 2016 Labor Day weekend (periods from 11:00 AM to 5:00 PM on September 2, 2016, to September 5, 2016). The videos were recorded using cameras operated by the FTE's Traffic Managements Center.
- Travel time/speed data from HERE/INRIX accessible through RITIS were used for VISSIM models calibration. Video and queue detection data from FTE's Traffic Managements Center were compared to microsimulation queue outputs during the calibration process.
- Origin-Destination (O-D) data from StreetLight InSight®

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Existing Conditions

Figure 3.2
2016 Existing Data Collection Locations



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Existing Conditions

The data for the PD&E were collected in 2016 and there was a follow up data collection effort in the first week of February 2019 at strategic locations along US 1 and Card Sound Road. The source of all information contained in this document is from the PD&E efforts. Due to the impact of COVID-19, the Turnpike did not collect additional data, nor was the previous effort replicated. The collected counts were supplemented with available toll data, FDOT and Florida's Turnpike count database. **Table 3.1** shows AADT for 2003, 2016, and 2019. Compound annual growth rates (CAGR) are shown from 2003 to 2019 and from 2016 to 2019. The purpose of showing 2003 traffic is to illustrate the historical growth along the project mainline segments and ramps, compared to recent growth between 2016 and 2019. Comparing the two growth rate columns in **Table 3.1** illustrates that the 2016 to 2019 growth compares well with the historical trend between 2003 and 2019. This comparison illustrates that 2016 traffic volumes fall within historical norms and that an updated 2019 base year is not necessary for this SIJR.

Table 3.1
2003 through 2019 Annual Average Daily Traffic (AADT) Volumes

Milepost – Description	Two-Way AADT			CAGR*	
	2003	2016	2019	2003-2019	2016-2019
2 – Campbell Drive	35,800	61,000	63,400	4%	1%
	10,700	24,500	23,200	5%	-2%
	900	3,300	3,800	9%	5%
	26,000	39,800	44,000	3%	3%
0 – US 1 (To/From North)	7,700	11,800	13,000	3%	3%
0 – US 1 (To/From South)	18,300	28,000	31,000	3%	3%

Note: * Compound Annual Growth Rate (CAGR)

At the initiation of this project, Lucy Street from US 1 to SW 162nd Avenue was under construction to be widened from 2 to 4 lanes. To establish base traffic conditions, the existing 2016 turns along Lucy Street were estimated using 2015 model volumes and available information from FTO. Additional data collection at this location was not possible. The existing model effort and previous Turnpike evaluations provided insight to ramp terminal and intersection splits. Model growth on Lucy Street, east and west of the proposed interchange was used to develop a control point on Lucy Street. The Campbell Drive ultimate interchange improvements, previously under construction, have been completed. The non-tolled ramps and the new ramp were counted in the February 2019 effort. These updated counts and the Campbell Drive Interchange SIJR information were used as the basis to develop Campbell Drive volumes.

3.2.1 Existing Traffic Volumes

The 2016 AADT volumes are shown in **Tables 3.2** and **3.3** for the mainline and cross-streets, respectively. The bold text represents the Turnpike Mainline volumes, and the non-bold text represents the ramp volumes. **Figure 3.3** presents a summary of the balanced 2016 existing peak season peak hour traffic volumes. The raw traffic counts and the existing signal timing is provided in **Appendix D**.

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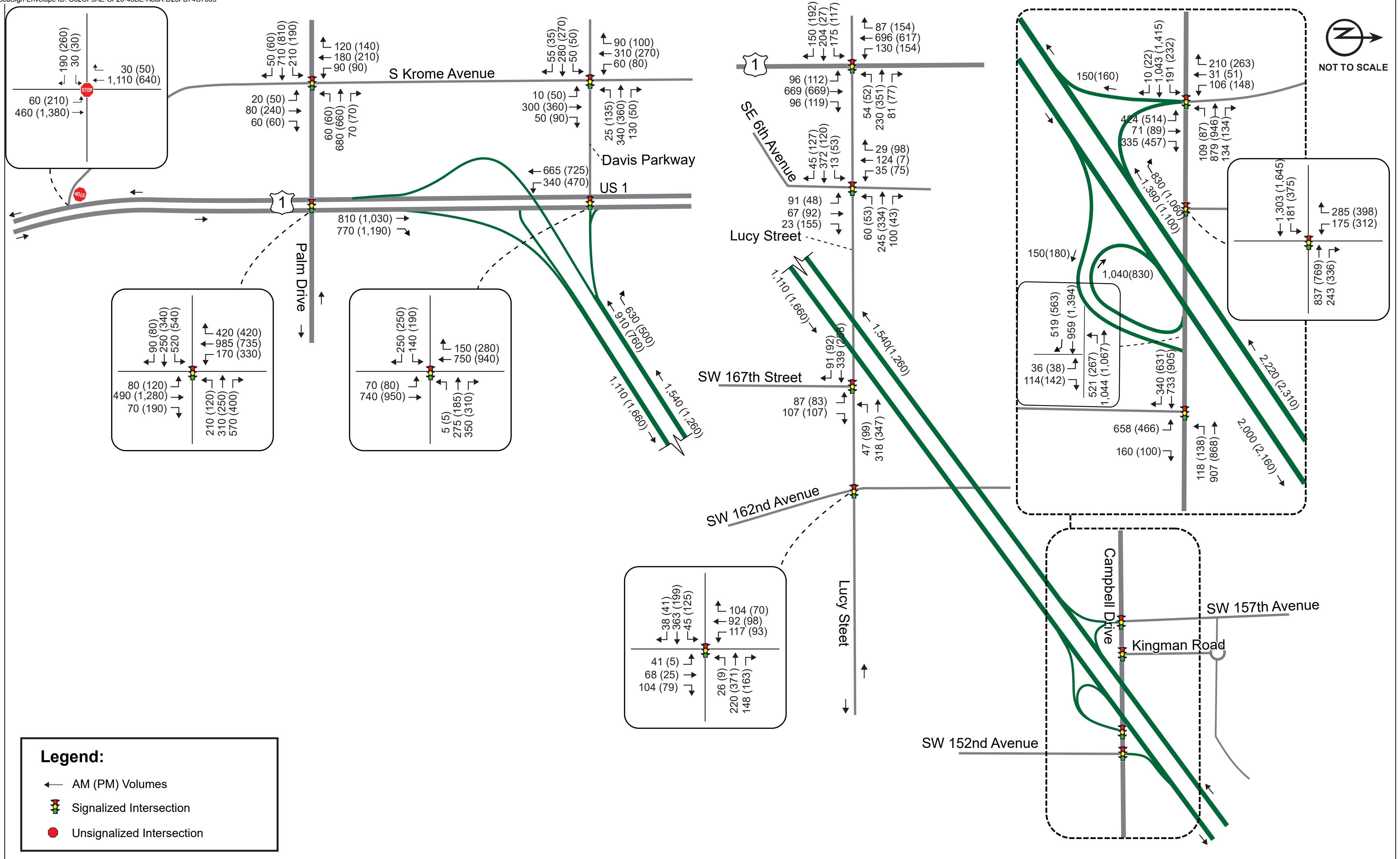
Existing Conditions

Table 3.2
2016 Mainline and Ramp AADTs Volumes

Mile Post-Interchange		2016 AADT
		61,000
2 – Campbell Drive		24,500
		3,300
		39,800
0 – US 1 (To/From North)		11,800
0 – US 1 (To/From South)		28,000

Table 3.3
2016 Cross-Street AADTs Volumes

Arterial Segment	2016
Campbell Drive/SW 312th Street	
Campbell Drive – East of 152 nd Avenue	20,300
Campbell Drive – West of 152 nd Avenue to Northbound Ramps	27,900
Campbell Drive – Between Northbound Ramps and Kingman Road	27,200
Campbell Drive – Kingman Road to SW 157 th /Southbound Ramps	27,800
Campbell Drive – West of SW 157 th Avenue/Southbound Ramps	29,400
SW 152 nd Avenue – South of Campbell Drive	13,500
Kingman Road – North of Campbell Drive	9,400
SW 157 th Avenue – North of Campbell Drive	7,900
Lucy Street	
Lucy Street – West of US 1	9,800
Lucy Street – West of SE 6 th Avenue	9,800
Lucy Street – East of SE 6 th Avenue – West of Turnpike	4,200
Lucy Street – East of Turnpike – West of SW 162 nd Avenue	4,200
Lucy Street – East of SW 162 nd Avenue	4,000
SE 6 th Avenue – South of Lucy Street	3,100
SE 6 th Avenue – North of Lucy Street	4,000
SW 162 nd Avenue – South of Lucy Street	4,000
SW 162 nd Avenue – North of Lucy Street	5,100
US 1	
US 1 – North of Lucy Street	29,000
US 1 – South of Lucy Street	26,100
US 1 – North of Davis Parkway	23,700
US 1 – South of Davis to SB US 1 – Northbound Turnpike on-ramp	20,100
US 1 – South of Southbound US 1 – Northbound Turnpike on-ramp to southbound off-ramp to Palm Drive	15,500
US 1 – Turnpike Southbound off-ramp to Palm Drive	33,200
US 1 – South of Palm Drive	20,200
Davis Parkway – West of US 1	9,900
Palm Drive – East of US 1	17,600
Palm Drive – West of US 1	18,600



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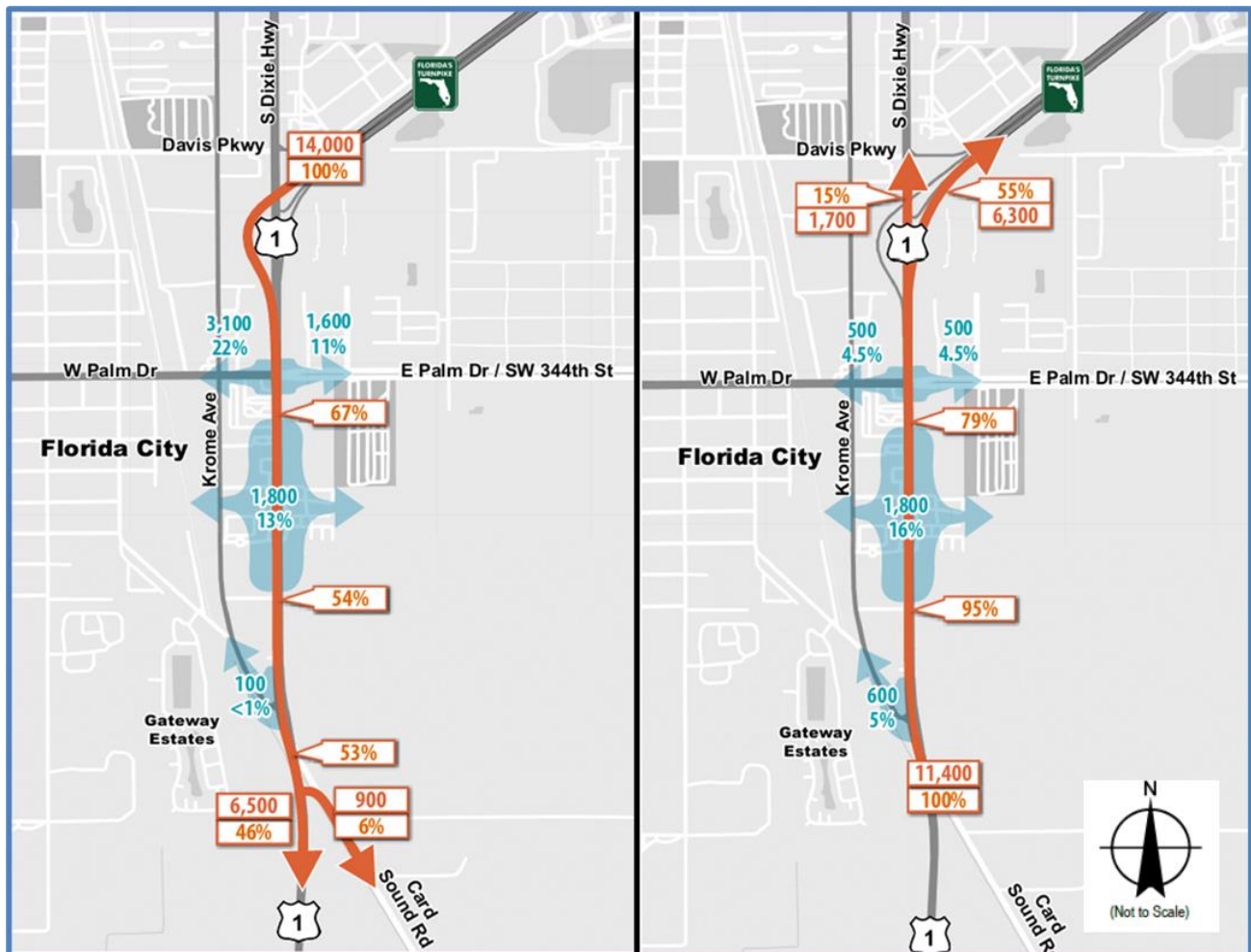
Existing Conditions

3.2.2 Existing Origin Destination Data

To quantify traffic movement patterns around the study area in Florida City, 2016 O-D data were collected using StreetLight InSight®. StreetLight InSight® a self-serve platform for mobility analysis provided by StreetLight Data, Inc. StreetLight uses location data to provide insights on transportation behavior. StreetLight data are collected from two types of devices: Navigation-GPS and Location Based Services (LBS) and categorizes mobility metrics into two modes: personal and commercial. The navigation-GPS Data comes tagged as from a personal vehicle, a commercial vehicle fleet of heavy-duty vehicles, or a commercial vehicle fleet of medium duty vehicles. Thus, the analytics can differentiate the types of travel. The LBS data comes from smartphones and covers all modes. The LBS data is more representative of the total population and data has a larger sample size.

The O-D data obtained from StreetLight InSight® provided information about daily, AM and PM peak period traffic patterns in the study area. It also provided insight into the proportion of vehicles that would use the proposed additional US 1 ramps. The O-D analysis showed that approximately 53 percent of the southbound traffic from the Turnpike continues south on US 1 past Florida City and about 47 percent of trips have their destinations within Florida City. For the northbound traffic from the Keys, 55 percent continues north on Turnpike while 45 percent of the trips have their destinations within Florida City or use local streets to their final destinations. **Figure 3.4** provides a graphical representation of this analysis.

Figure 3.4
2016 O-D Analysis



3.3 EXISTING TRAFFIC OPERATIONAL ANALYSIS

A traffic operational analysis was conducted to evaluate the existing conditions in the study area. The main analysis input parameters include volume, design hour truck percentage, peak hour factor (PHF) and roadway geometry. For Synchro analysis, the existing intersection PHFs were used for the analysis. Design Hour Truck (DHT) values were calculated based on historical data from the FDOT count sites within the study area, machine classification counts and turning movement counts conducted as part of this study. Peak hour values from machine counts were calculated as half the daily value in accordance with the 2019 FDOT Project Traffic Forecasting Handbook. The calculated DHT used for the Florida's Turnpike mainline and ramps was 3.0 percent. The DHT of 5.0 percent was used for US 1, Palm Drive, Davis Parkway, Krome Avenue and Campbell Drive, and for Lucy Street 2.0 percent was used.

3.3.1 Existing Traffic – Freeway Operational Analysis

The measure of effectiveness used to estimate the level of service was density and volume to capacity ratio. The level of service for each basic freeway segment and ramp junction was determined using the Freeway Facility module of the most current HCS Version 7.8.5.

The mainline/basic, weaving, and ramp merge/diverge analysis result tables are included in **Appendix C**. Documentation of the existing traffic freeway operational analysis is provided in **Appendix E**.

3.3.2 Existing Traffic – Intersection Operational Analysis

Intersection analyses for ramp-terminals and adjacent intersections were performed using existing turning movement volumes, existing lane geometry, and signal timing observations and information obtained from Miami-Dade County. Analyses of the interchange ramp terminals and adjacent intersections were conducted using Synchro 11 software. The summarized analysis result tables are included in **Appendix C**, and analysis files are in **Appendix E**.

3.3.3 Microsimulation Evaluation

The VISSIM model development and calibration documentation is provided in **Appendix F**. The model network includes the Turnpike Extension, US 1, Palm Drive, Krome Avenue, Davis Parkway, Lucy Street, and Campbell Drive. More details on the AOI are provided in **Section 2.1**. The model was calibrated for 2016 AM and PM peak period conditions: four hours of simulation with 30 minutes seeding time. Calibration of the model was based on traffic volumes (freeway mainline, ramps, and intersections), speed, and observed queues at selected crucial locations to accurately represent field conditions. The calibration documentation includes model development inputs, existing peak hour traffic, hourly distributions used in generating volumes for each of the four analysis hours, and calibration output for both 2016 AM and PM. Analysis was based on the average of 10 random seed runs to account for the stochasticity of the microsimulation model.

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Existing Conditions

As shown in **Figures 3.5** and **3.6**, the freeway segments analysis results indicate that, all the mainline segments operate at LOS C or better during AM and PM peak hours, except the off-ramp segment leading to US 1/Palm Drive which operates at LOS E in the AM peak hour. The low speed on the US 1/Palm Drive off-ramp segment is indicative of the queue backups originating from the US 1/Palm Drive intersection. From **Table 3.4**, the arterial segments analysis results indicate that, all segments around Florida City study area operate at LOS E or better, except the US 1 segments north of Davis Parkway, between southbound off-ramp and Palm Drive, and south of Palm Drive operating at LOS F.

The intersection analysis results in **Tables 3.5** and **3.6** indicate the following:

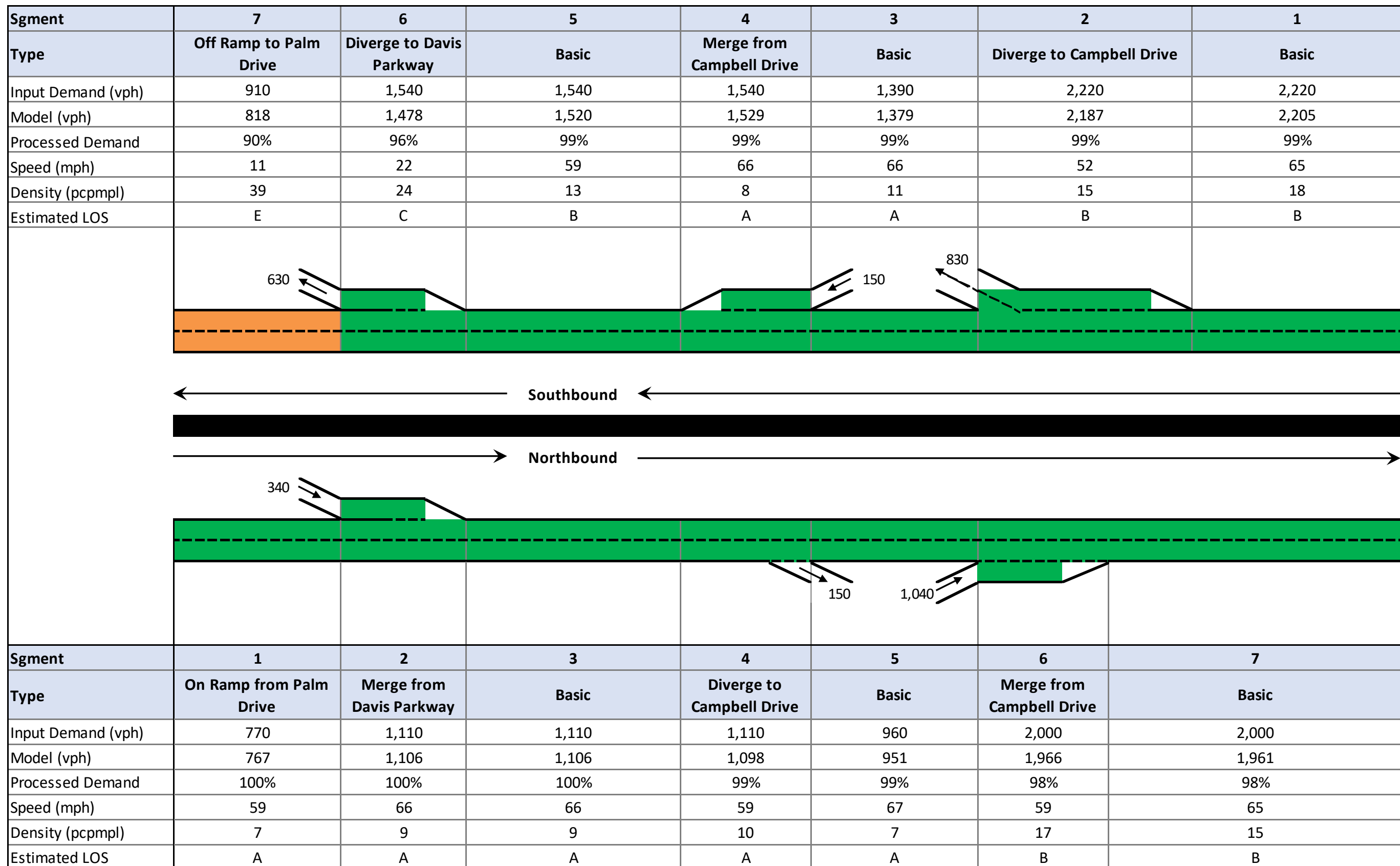
- The Turnpike ramp terminal intersection at Davis Parkway is operating at LOS C during both AM and PM peak hours. The off-ramp approach (westbound left and through) is showing failing operating condition during the PM peak.
- The intersection at US 1 and Palm Drive is operating at LOS E during both AM and PM peak hours. However, the southbound and westbound approach movements are showing higher delays and are all operating at LOS F during both AM and PM peak hours.
- The southbound ramp terminal at Campbell Drive is operating at LOS D in both AM and PM peak hours, while northbound ramp terminal is operating at LOS A during both AM and PM peak hours.

It is important to note the 2016 conditions in the study area are different from current existing conditions. The Campbell Drive interchange improvements were completed and opened to traffic in 2019, and Lucy Street was widened to 4 lanes. Also, around the study area in Florida City the Truck By-Pass project [FPID: 405575-2] implemented improvements at US 1/Davis Parkway, Krome Avenue/Davis Parkway, and Krome Avenue/Palm Drive intersections. The 6-lane widening of Palm Drive from US 1 to SW 172nd Avenue and improvements of US 1/Palm Drive intersection were recently completed and is now open for traffic. Therefore, the current operating conditions in the study area are better than in 2016.

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Existing Conditions

Figure 3.5
2016 Existing AM VISSIM Freeway Performance Results

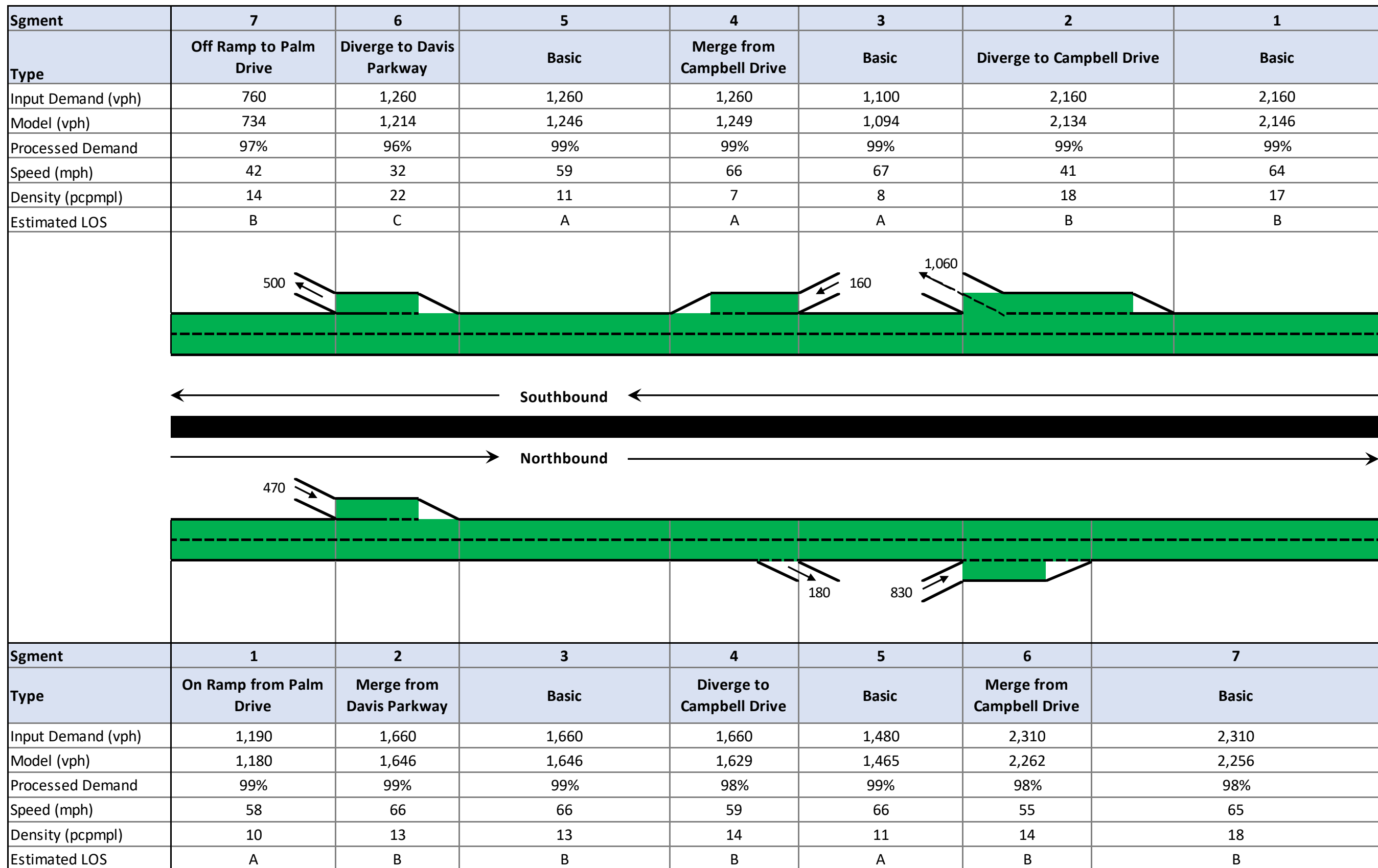


■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

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Figure 3.6
2016 Existing PM VISSIM Freeway Performance Results



■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

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Existing Conditions

**Table 3.4
2016 Existing VISSIM Arterial Segment Performance Results**

Direction	Segment	AM Peak Hour					PM Peak Hour			
		Volume			Speed (mph)		Volume			Speed (mph)
		Demand	Model	Processed Demand	Posted	Model	Demand	Model	Processed Demand	Model
Southbound/Westbound	US 1 north of Davis Parkway	900	894	99%	45	15	1,220	1,210	99%	12
	US 1 between Davis Parkway and Turnpike northbound on-ramp from southbound US 1	1,005	984	98%	45	34	1,195	1,184	99%	32
	US 1 between Turnpike northbound on-ramp from southbound US 1 and southbound off-ramp to US 1/Palm Drive	665	643	97%	45	41	725	721	99%	40
	US 1 between southbound off-ramp and US 1/Palm Drive Intersection	1,575	1,385	88%	45	4	1,485	1,403	95%	4
	US 1 South of US 1/Palm Drive Intersection	1,140	1,013	89%	45	50	690	655	95%	51
	Palm Drive east of US 1	1,090	1,082	99%	30	29	770	763	99%	28
	Palm Drive between US 1 and Krome Avenue	810	739	91%	30	29	790	737	93%	28
	Palm Drive west of Krome Avenue	820	767	94%	30	34	850	786	92%	34
Northbound/Eastbound	US 1 south of US 1/Palm Drive Intersection	640	635	99%	45	5	1,590	1,561	98%	5
	US 1 between US 1/Palm Drive Intersection and Turnpike on-ramp from northbound US 1	1,580	1,546	98%	45	34	2,220	2,174	98%	37
	US 1 between Turnpike on-ramp from northbound US 1 and Turnpike northbound on-ramp from southbound US 1	810	770	95%	45	40	1,030	1,001	97%	44
	US 1 between Turnpike northbound on-ramp from southbound US 1 and Davis Parkway/US 1 Intersection	810	766	95%	45	44	1,030	1,006	98%	12
	US 1 north of Davis Parkway	1,230	1,168	95%	45	45	1,450	1,399	96%	42
	Palm Drive west of Krome Avenue	970	954	98%	30	16	1,060	1,051	99%	10
	Palm Drive between Krome Avenue and US 1	860	824	96%	30	36	960	926	96%	25
	Palm Drive east of US 1	490	470	96%	30	20	860	845	98%	34

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

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Table 3.5
2016 Existing VISSIM Intersection Performance Results at US 1 Study Area

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
US 1/Davis Parkway	NBL	70	67	96%	20.3	C	254	335	80	82	100%	72.6	E	469
	NBT	740	700	95%	12.9	B	254	680	950	926	97%	21.0	C	469
	SBT	750	739	99%	13.3	B	258	NA	940	930	99%	21.1	C	484
	SBR	150	153	100%	5.0	A	114	350	280	291	100%	14.4	B	341
	EBL	140	132	94%	87.2	F	571	170	190	192	100%	57.9	E	441
	EBR	250	243	97%	31.3	C	597	550	250	238	95%	20.7	C	467
	WBL	5	5	100%	25.7	C	552	830	5	5	100%	79.7	E	414
	WBT	275	276	100%	41.4	D	552	830	185	149	81%	126.2	F	414
	WBR	350	338	97%	5.9	A	565	385	310	317	100%	7.1	A	427
	Overall	2,730	2,653	97%	20.2	C	NA	NA	3,190	3,130	98%	27.7	C	NA
US 1/Palm Drive	NBL	80	73	91%	49.0	D	245	345	120	122	100%	43.1	D	689
	NBT	490	497	100%	47.9	D	245	3,935	1,280	1,280	100%	56.9	E	689
	NBR	70	69	99%	41.6	D	278	3,935	190	176	93%	60.2	E	723
	SBL	170	153	90%	111.4	F	3,404	450	330	309	94%	126.6	F	2,300
	SBT	985	856	87%	109.7	F	3,404	5,595	735	717	98%	98.7	F	2,300
	SBR	420	369	88%	127.4	F	3,337	300	420	384	91%	109.2	F	2,232
	EBL	520	506	97%	41.1	D	448	380	540	519	96%	34.0	C	625
	EBT	250	254	100%	46.1	D	448	545	340	322	95%	42.6	D	625
	EBR	90	84	93%	5.6	A	479	545	80	82	100%	6.0	A	656
	WBL	210	199	95%	92.3	F	1,229	310	120	103	86%	143.9	F	830
	WBT	310	298	96%	95.9	F	1,229	NA	250	250	100%	140.2	F	830
	WBR	570	545	96%	24.6	C	1,229	NA	400	397	99%	25.2	C	830
	Overall	4,165	3,903	94%	72.0	E	NA	NA	4,805	4,661	97%	71.3	E	NA
US 1/Krome Avenue	NBL	60	54	90%	7.6	A	76	350	210	194	92%	8.9	A	115
	NBT	460	472	100%	0.2	A	0	NA	1,380	1,394	100%	0.9	A	0
	SBT	1,110	983	89%	1.7	A	0	NA	640	652	100%	1.2	A	0
	SBR	30	25	83%	2.7	A	9	255	50	39	78%	3.2	A	26
	EBL	30	24	80%	13.0	B	62	NA	30	28	93%	12.2	B	77
	EBR	190	166	87%	1.3	A	0	NA	260	228	88%	1.7	A	0
	Overall	1,880	1,723	92%	1.6	A	NA	NA	2,570	2,535	99%	1.8	A	NA

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Table 3.5 (continued)
2016 Existing VISSIM Intersection Performance Results at US 1 Study Area

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Krome Avenue/Davis Parkway	NBL	10	8	80%	14.3	B	245	415	50	55	100%	26.4	C	507
	NBT	300	289	96%	13.8	B	245	2,560	360	357	99%	26.6	C	507
	NBR	50	49	98%	15.0	B	282	415	90	88	98%	22.3	C	544
	SBL	60	63	100%	26.1	C	450	350	80	73	91%	31.5	C	474
	SBT	310	300	97%	20.9	C	450	NA	270	266	99%	27.0	C	474
	SBR	90	94	100%	18.8	B	494	350	100	102	100%	26.9	C	518
	EBL	50	49	98%	58.6	E	612	335	50	48	96%	25.3	C	254
	EBT	280	270	96%	59.2	E	612	NA	270	270	100%	25.8	C	254
	EBR	55	56	100%	52.5	D	613	410	35	34	97%	19.3	B	255
	WBL	25	28	100%	33.8	C	558	200	135	107	79%	139.6	F	765
	WBT	340	332	98%	28.8	C	558	560	360	342	95%	145.7	F	765
	WBR	130	132	100%	8.0	A	594	560	50	59	100%	98.0	F	800
	Overall		1,700	1,671	98%	28.7	C	NA	NA	1,850	1,801	97%	58.0	E
Krome Avenue/Palm Drive	NBL	20	19	95%	63.6	E	141	300	50	48	96%	50.3	D	327
	NBT	80	70	88%	51.7	D	141	NA	240	227	95%	55.0	E	327
	NBR	60	56	93%	6.3	A	106	300	60	48	80%	6.4	A	293
	SBL	90	85	94%	78.9	E	742	300	90	87	97%	72.2	E	568
	SBT	180	164	91%	92.6	F	742	2,560	210	185	88%	61.9	E	568
	SBR	120	123	100%	79.2	E	780	2,560	140	139	99%	52.6	D	605
	EBL	210	213	100%	15.6	B	410	275	190	208	100%	16.0	B	503
	EBT	710	698	98%	13.0	B	410	NA	810	775	96%	15.6	B	503
	EBR	50	46	92%	8.7	A	437	NA	60	50	83%	9.6	A	530
	WBL	60	52	87%	16.4	B	220	245	60	57	95%	25.1	C	253
	WBT	680	625	92%	15.0	B	220	545	660	616	93%	18.1	B	253
	WBR	70	65	93%	8.4	A	248	545	70	74	100%	14.8	B	281
	Overall		2,330	2,217	95%	27.2	C	NA	NA	2,640	2,514	95%	27.8	C

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

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Existing Conditions

Table 3.6
2016 Existing VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Southbound Ramps/Campbell Drive	NBL	424	412	97%	74.2	E	724	285	514	506	98%	80.8	F	1,399
	NBT	71	71	100%	70.8	E	724	1,300	89	105	100%	74.1	E	1,399
	NBR	335	320	96%	13.2	B	527	310	457	440	96%	16.3	B	1,203
	SBL	106	104	98%	69.0	E	232	355	148	128	86%	88.7	F	273
	SBT	31	31	100%	57.8	E	232	NA	51	45	88%	70.1	E	273
	SBR	210	209	100%	7.9	A	268	NA	263	269	100%	6.7	A	309
	EBL	191	171	90%	86.2	F	689	200	232	231	100%	83.8	F	831
	EBT	1,043	1,023	98%	44.3	D	689	NA	1,415	1,402	99%	33.4	C	831
	EBR	10	12	100%	44.8	D	494	NA	22	28	100%	22.6	C	636
	WBL	109	110	100%	96.3	F	444	230	87	90	100%	55.0	D	232
	WBT	879	848	96%	65.9	E	444	520	946	897	95%	16.8	B	232
	WBR	134	134	100%	12.9	B	469	230	134	132	99%	5.4	A	253
	Overall		3,543	3,446	97%	52.0	D	NA	NA	4,358	4,273	98%	37.4	D
Kingman Road/Campbell Drive	SBL	175	175	100%	65.2	E	389	225	312	308	99%	54.0	D	359
	SBR	285	278	98%	16.1	B	418	225	398	389	98%	10.6	B	387
	EBL	181	175	97%	16.4	B	144	290	375	362	97%	35.8	D	337
	EBT	1,303	1,270	97%	3.0	A	144	520	1,645	1,597	97%	7.5	A	337
	WBT	837	808	97%	35.0	D	280	1,300	769	736	96%	36.3	D	254
	WBR	243	231	95%	6.3	A	24	270	336	336	100%	7.2	A	0
	Overall		3,024	2,937	97%	17.8	B	NA	NA	3,835	3,728	97%	20.1	C
Northbound Ramps/Campbell Drive	NBL	36	35	97%	17.8	B	61	300	38	37	97%	19.0	B	65
	NBR	114	112	98%	12.6	B	109	320	142	119	84%	10.8	B	108
	EBT	959	931	97%	7.5	A	68	400	1,394	1,371	98%	3.3	A	120
	EBR	519	514	99%	21.3	C	329	250	563	531	94%	13.2	B	382
	WBL	521	511	98%	19.4	B	517	485	267	264	99%	18.8	B	257
	WBT	1,044	1,007	96%	0.6	A	110	485	1,067	1,044	98%	0.6	A	0
	Overall		3,193	3,110	97%	9.8	A	NA	NA	3,471	3,366	97%	5.7	A
SW 152 nd Avenue Intersection / Campbell Drive	NBL	658	632	96%	102.6	F	1,436	195	466	472	100%	58.6	E	533
	NBR	160	162	100%	9.3	A	1,464	195	100	98	98%	7.1	A	561
	EBT	733	712	97%	19.0	B	419	430	905	903	100%	8.1	A	267
	EBR	340	331	97%	6.2	A	388	365	631	577	91%	0.4	A	236
	WBL	118	119	100%	20.5	C	352	360	138	138	100%	34.1	C	262
	WBT	907	890	98%	14.3	B	352	NA	868	837	96%	12.2	B	262
	Overall		2,916	2,844	98%	34.2	C	NA	NA	3,108	3,025	97%	16.8	B

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Existing Conditions

Table 3.6 (continued)
2016 Existing VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
US 1/SW 328 th Street (Lucy Street)	NBL	96	96	100%	113.9	F	899	325	112	97	87%	110.3	F	868
	NBT	669	647	97%	113.6	F	899	NA	669	651	97%	104.8	F	868
	NBR	96	97	100%	108.5	F	937	NA	119	120	100%	95.9	F	906
	SBL	130	130	100%	80.2	F	328	355	154	155	100%	67.0	E	330
	SBT	696	698	100%	48.0	D	328	NA	617	615	100%	36.9	D	330
	SBR	87	85	98%	38.5	D	84	NA	154	136	88%	28.5	C	82
	EBL	175	167	95%	36.5	D	467	380	117	121	100%	35.2	D	235
	EBT	204	199	97%	47.4	D	467	NA	27	19	71%	34.4	C	235
	EBR	150	150	100%	31.8	C	466	NA	192	191	100%	6.0	A	234
	WBL	54	54	100%	64.3	E	599	460	52	51	98%	42.7	D	435
	WBT	230	211	92%	67.8	E	599	1,925	351	268	76%	52.5	D	435
	WBR	81	78	96%	55.5	E	599	1,925	77	59	77%	44.0	D	435
	Overall		2,668	2,614	98%	70.6	E	NA	NA	2,641	2,483	94%	61.3	E
SW 6 th Avenue/Lucy Street	NBL	91	90	99%	59.7	E	302	NA	48	35	73%	43.2	D	374
	NBT	67	64	96%	64.2	E	302	NA	92	89	97%	52.1	D	374
	NBR	23	24	100%	49.3	D	325	NA	155	162	100%	40.9	D	397
	SBL	35	35	100%	59.2	E	305	NA	75	77	100%	57.4	E	283
	SBT	124	118	95%	56.6	E	305	NA	7	4	57%	62.7	E	283
	SBR	29	27	93%	38.7	D	319	NA	98	94	96%	38.9	D	297
	EBL	13	12	92%	41.6	D	568	1,925	53	47	89%	43.7	D	469
	EBT	372	362	97%	32.2	C	568	1,925	120	115	96%	62.8	E	469
	EBR	45	47	100%	26.9	C	591	1,925	127	136	100%	43.7	D	492
	WBL	60	63	100%	90.6	F	913	2,580	53	50	94%	56.8	E	546
	WBT	245	236	96%	91.1	F	913	2,580	334	256	77%	62.3	E	546
	WBR	100	99	99%	81.6	F	973	2,580	43	36	84%	43.2	D	606
	Overall		1,204	1,178	98%	58.8	E	NA	NA	1,205	1,101	91%	51.5	D

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

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Existing Conditions

Table 3.6 (continued)
2016 Existing VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
SW 167 th Avenue/Lucy Street	NBL	87	83	95%	38.1	D	128	230	83	79	95%	17.9	B	116
	NBR	107	107	100%	7.0	A	163	NA	107	113	100%	7.3	A	151
	EBT	339	334	99%	6.7	A	94	2,590	258	255	99%	25.8	C	251
	EBR	91	93	100%	4.5	A	94	2,590	92	92	100%	23.7	C	251
	WBL	47	42	89%	64.6	E	184	365	99	76	77%	44.6	D	239
	WBT	318	321	100%	4.8	A	184	2,635	347	266	77%	15.5	B	239
	Overall	989	981	99%	11.1	B	NA	NA	986	881	89%	21.0	C	NA
SW 162 nd Avenue/Lucy Street	NBL	41	43	100%	47.8	D	208	NA	5	8	100%	37.9	D	69
	NBT	68	71	100%	50.6	D	208	NA	25	25	100%	32.8	C	69
	NBR	104	102	98%	22.5	C	41	NA	79	74	94%	5.1	A	0
	SBL	117	114	97%	61.0	E	225	355	93	88	95%	32.3	C	144
	SBT	92	96	100%	58.9	E	225	NA	98	101	100%	33.9	C	144
	SBR	104	102	98%	22.5	C	225	NA	70	71	100%	10.7	B	144
	EBL	45	50	100%	72.6	E	1,013	395	125	126	100%	34.6	C	315
	EBT	363	352	97%	88.2	F	1,013	2,675	199	210	100%	42.4	D	315
	EBR	38	38	100%	80.7	F	1,045	2,675	41	30	73%	31.2	C	348
	WBL	26	28	100%	40.1	D	704	NA	9	7	78%	>250	F	2,411
	WBT	220	215	98%	76.8	E	704	NA	371	260	70%	>250	F	2,411
	WBR	148	141	95%	68.7	E	736	NA	163	131	80%	>250	F	2,443
	Overall	1,366	1,353	99%	65.1	E	NA	NA	1,278	1,131	88%	243.7	F	NA

LOS = A-C / Uncongested
 LOS = D / Light Congestion
 LOS = E / Moderate Congestion
 LOS = F / Heavily Congested

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Table 3.7 summarizes the AM and PM peak hours queue results for the off-ramp ramp terminals. VISSIM queue results are only presented for each approach rather than by lane group movement. The available storage length was calculated from the stop bar at the ramp terminal intersection to the gore with Turnpike mainline minus the 570 feet required for stopping distance for a design speed of 65 mph per FDOT’s 2018 Green book (Table 3-22), and accounting for the changes in number of lanes.

The results show that the AM queues from US 1/Palm Drive intersection extends along US 1 and into the southbound off-ramp past the gore point. The results also show that the queues on the southbound off-ramps to US 1 North/Davis Parkway exceed the available storage lengths during the AM peak hour.

Table 3.7
2016 Existing – Off-Ramp Terminal VISSIM Queuing Analysis Results

Intersection	Approach	Movement	Available Storage (feet)	Maximum Approach Queue (feet)	
				AM	PM
Campbell Drive at southbound off-ramp	Northbound	L (WB)	1,180	724	1,399
		TH (NB)			
		R (EB)			
Campbell Drive at northbound off-ramp	Northbound	L (WB)	3,120	109	108
		R (EB)			
Davis Parkway at southbound off-ramp	Westbound	L (SB)	790	565	427
		TH (WB)			
		R (NB)			
Southbound off-ramp to US 1/Palm Drive	Southbound	L (EB)	2,940	3,404	2,300
		TH (SB)			
		R (WB)			

3.4 EXISTING CRASH DATA

Crash data for existing facilities within the area of influence (AOI) were obtained from the state’s Crash Analysis Reporting System (CARS), for years 2013 through 2017. The data reports were analyzed for each mainline roadway, interchange ramp, and intersection within the study area. Detailed crash reports (CARS long forms) were reviewed to verify the accuracy of the information obtained from the database. Detailed crash reports and analysis tables are provided in **Appendix G**.

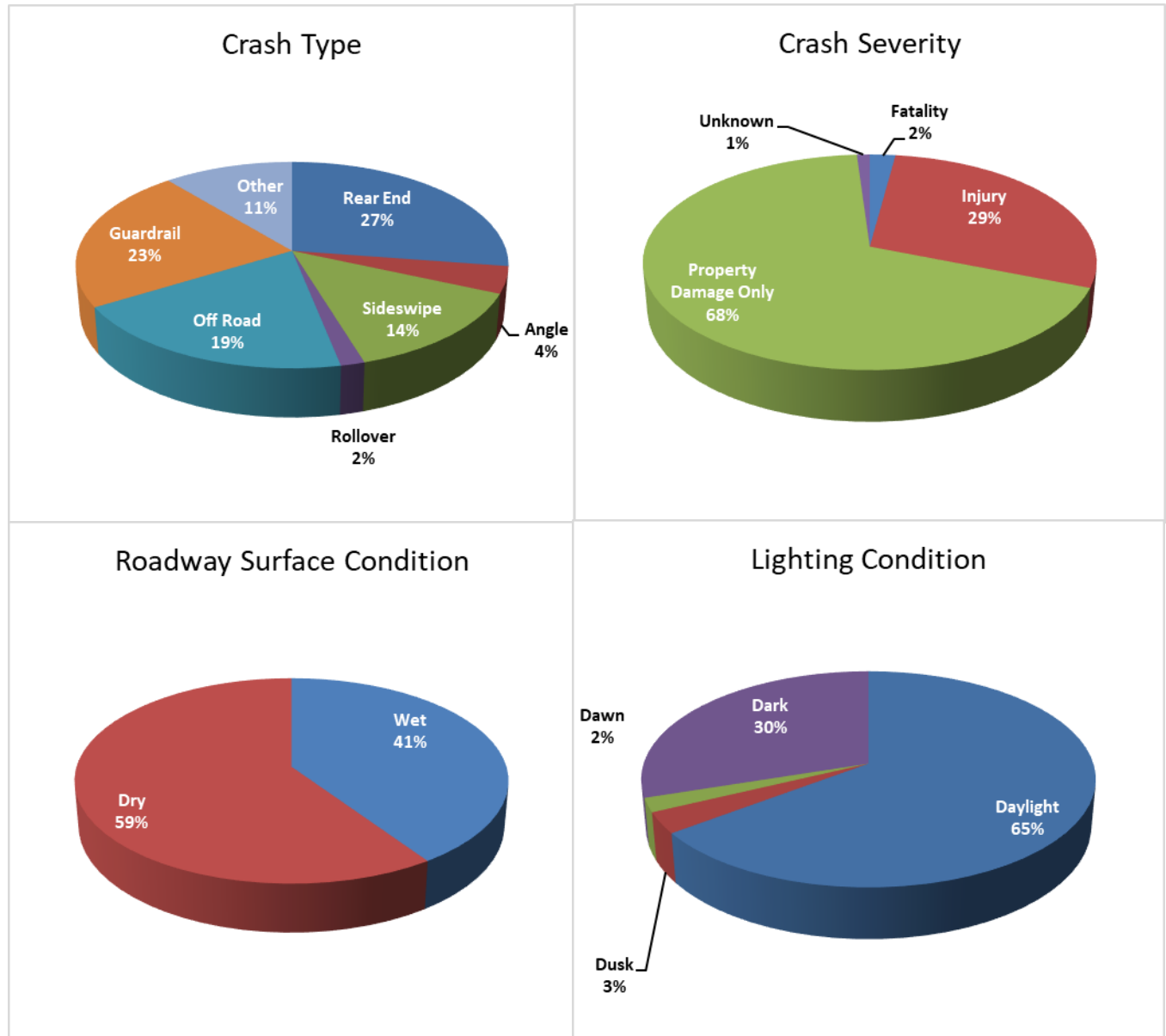
3.4.1 Florida’s Turnpike Extension Mainline MP 0.54 to MP 3.60

A total of 190 crashes were reported along Florida’s Turnpike Extension mainline during the five-year analysis period from 2013 through 2017 with an average of 38 crashes per year. Rear-end (27 percent) and guardrail (23 percent) crashes constituted majority of the crashes. Based on the crash data, highest number of crashes (60) occurred between milepost 1.97 and milepost 2.17 (overpass on SW 162nd Avenue). A total of four (4) fatal crashes were reported, one of which was a single vehicle crash. Two of the four fatal crashes occurred between milepost 2 and milepost 2.1, and the other two (2) fatal crashes

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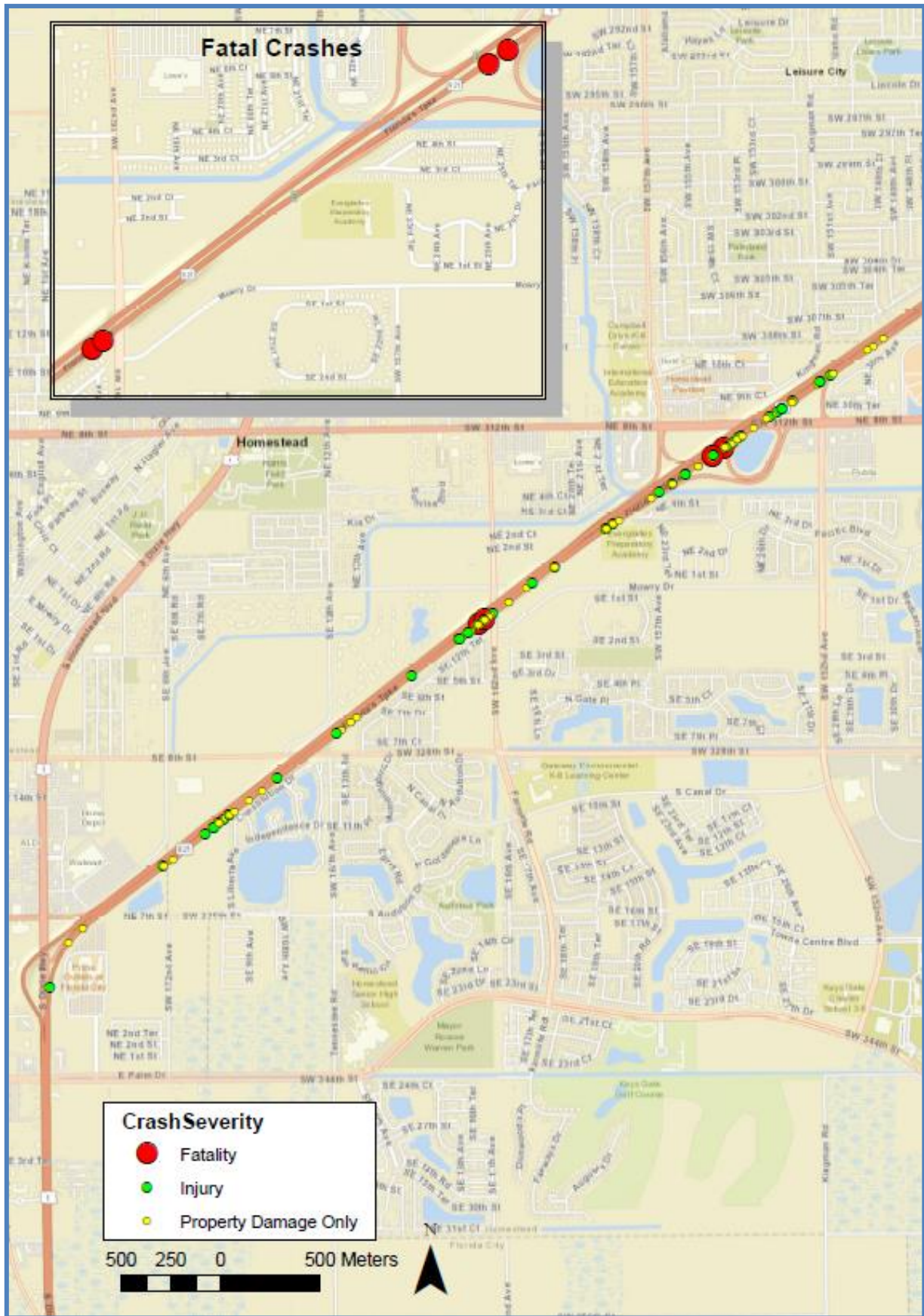
occurred between milepost 2.9 and milepost 3.0 (within the interchange with Campbell Drive). At least 68 percent of the total crashes resulted in property damage only. As shown in **Figure 3.7**, 59 percent of the crashes occurred on dry roadway conditions and 65 percent of the crashes occurred during daylight condition. **Figure 3.8** graphically depicts the location of crashes by severity within the study area. Following is the crash frequency:

Figure 3.7
Crash Data Summary (2013 – 2017) – Florida’s Turnpike Extension Mainline



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Figure 3.8
Severity of Crashes (2013 – 2017) – Florida’s Turnpike Mainline

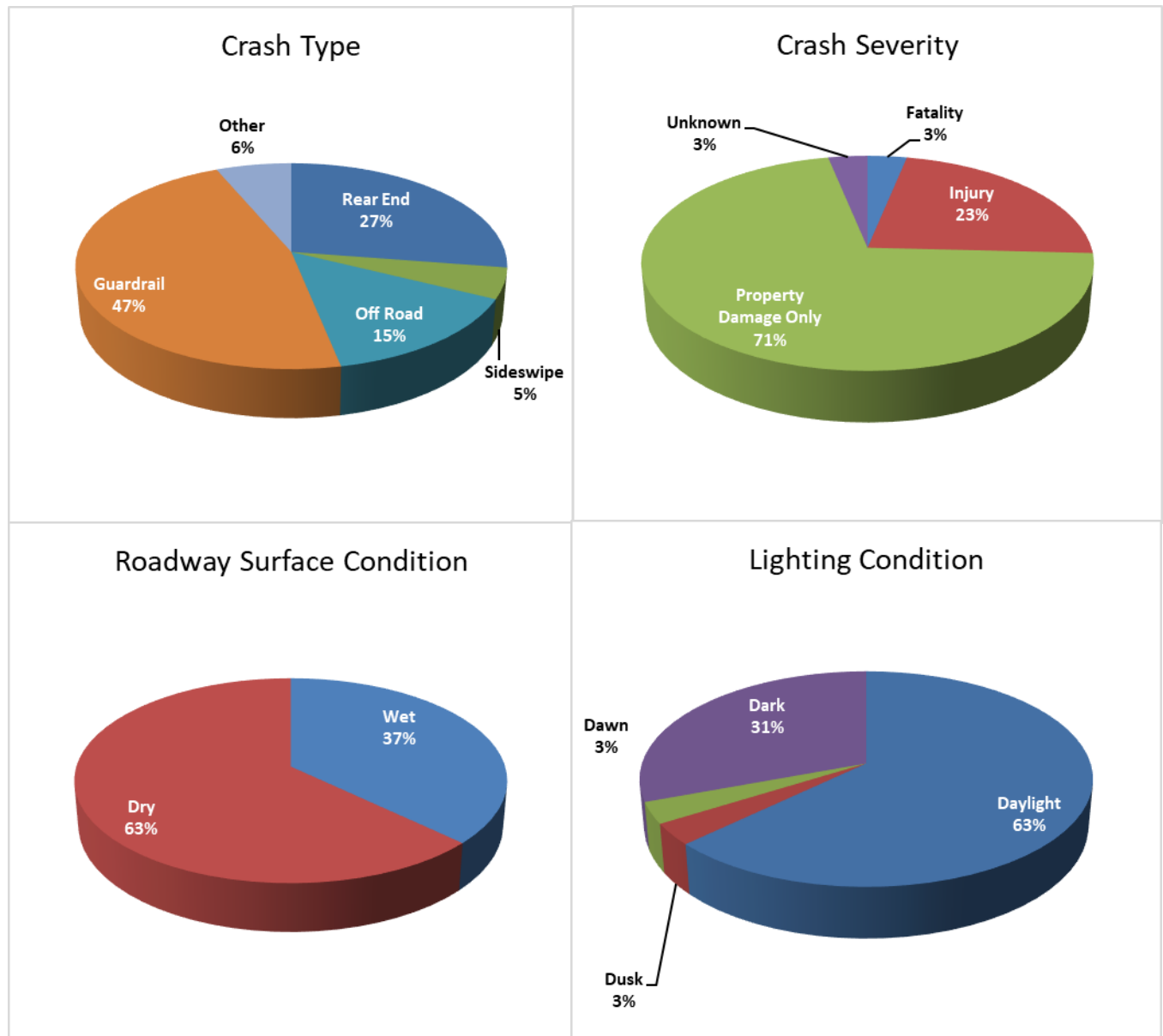


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3.4.2 Florida's Turnpike Extension at US 1 Interchange Ramp Roadways

The Florida's Turnpike Extension at US 1 interchange ramps experienced a total of 62 crashes during the five-year analysis period. There were two (2) fatal crashes reported during the study period. At least 23 percent of the total crashes resulted in injuries. As shown on **Figure 3.9**, guardrail crashes (approximately 47 percent) and rear-end crashes (approximately 27 percent) were the prominent crash types along the interchange ramps. Two (2) crashes were reported with unknown crash severity as the vehicles were abandoned by the driver. Reports indicated that 37 percent of the crashes occurred during wet roadway conditions and 31 percent crashes occurred during night-time hours.

Figure 3.9
Crash Data Summary (2013 – 2017) – Florida's Turnpike Extension at US 1 Interchange Ramps

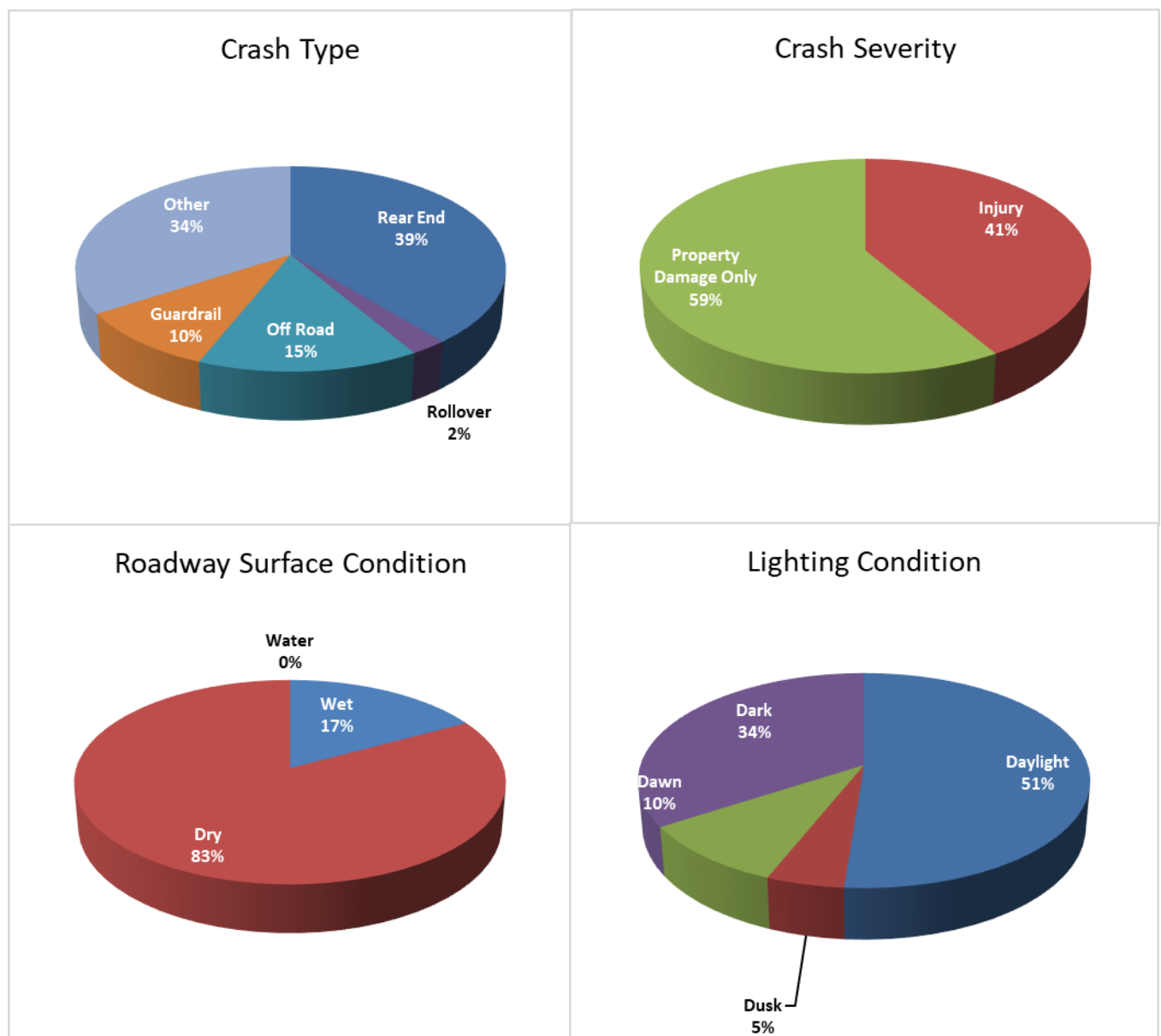


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3.4.3 Florida's Turnpike Extension at SW 312th Street / Campbell Drive Interchange Ramp Roadways

The Florida's Turnpike Extension at SW 312th Street / Campbell Drive interchange ramps experienced a total of 41 crashes during the five-year analysis period. There were no fatal crashes reported during the study period. At least 41 percent of the total crashes resulted in injuries. As shown on **Figure 3.10**, rear-end crashes (approximately 39 percent) and other crashes (approximately 34 percent) were the prominent crash types along the interchange ramps. Reports indicated that 17 percent of the crashes occurred during wet roadway conditions and 34 percent crashes occurred during night-time hours.

Figure 3.10
Crash Data Summary (2013 – 2017) – Florida's Turnpike Extension at SW 312th Street / Campbell Drive Interchange Ramps



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Actual crash rates for the freeway mainline and ramp segments were computed and compared with average crash rates for similar facilities across the state utilizing the statewide five-year average crash rate (2013 – 2017). The existing Florida’s Turnpike Extension segments of the mainline within the study area are under urbanized area. Critical crash rates and safety ratios were also estimated. Crash rates for the roadways were estimated as crashes per Million Vehicles Miles Travelled (MVMT). The critical crash rate is based on the average crash rate for a similar facility adjusted by vehicle exposure and a probability constant. The safety ratio represents the actual crash rate divided by the critical crash rate. If a segment has an actual crash rate higher than the critical crash rate (i.e., safety ratio > 1.0), it may have a safety deficiency. Turnpike mainline segments from MP 0.984 to 1.084 and MP 1.884 to 2.284 safety ratios greater than 1.0 as shown in **Table 3.8**. Rear-end and guardrail crashes constituted majority of the crashes along mainline.

Table 3.8
Mainline and Ramps Crash Rates and Safety Ratios (2013 – 2017)

Description	Total Crashes	Actual Crash Rate	Average Crash Rate*	Critical Crash Rate	Safety Ratio
Florida's Turnpike Extension Mainline					
From MP 0.538 to MP 0.984	4	0.13	0.766	1.66	0.08
From MP 0.984 to MP 1.084	24	3.40	0.766	2.84	1.20
From MP1.084 to MP 1.884	11	0.19	0.766	1.42	0.14
From MP 1.884 to MP 2.284	62	2.20	0.766	1.71	1.28
From MP 2.284 to MP 3.60	89	0.79	0.766	1.22	0.65
Florida's Turnpike Interchange					
US 1 Interchange Ramps	62	0.79	0.766	1.31	0.60
Campbell Drive Interchange Ramps	41	0.60	0.766	1.35	0.44

*Florida Statewide five-year Average Crash Rate for District Six (2013 - 2017)
Freeway and Interchanges Crash Rate used for “Toll Road Urban”
Freeways: Crashes per Million Vehicle Miles Travelled (MVMT)
Highlighted Safety Ratio >1.0

3.4.4 Intersections Along Cross-Streets

Signal Four Analytics, a FDOT funded database developed in coordination with the state’s CARS, was used to obtain crash data for side streets that are not included in the FDOT crash database. Intersection crashes were extracted by providing a 250-foot influence area. A brief discussion of the crash analysis for the intersections are provided below.

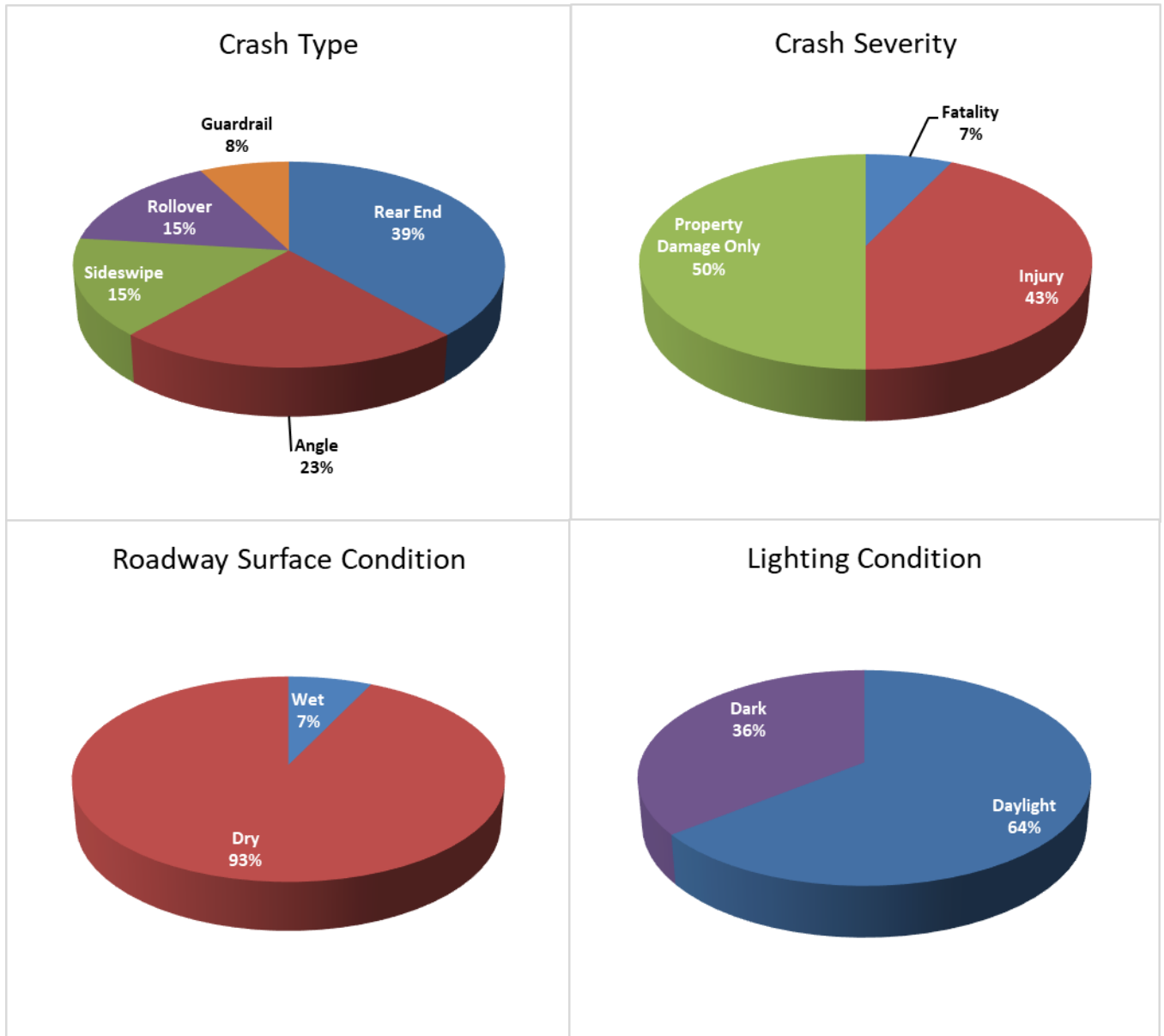
US 1 and Krome Avenue Intersection

The US 1 and Krome Avenue intersection experienced a total of 14 crashes during the five-year analysis period. There was one fatal crash reported during the study period which was an angle crash. At least 43 percent of the total crashes resulted in injuries. As shown in **Figure 3.11**, rear-end crashes (approximately 39 percent) was the prominent crash type at the intersection. Reports indicated that 7 percent of the

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crashes occurred during wet roadway conditions and 36 percent crashes occurred during night-time hours.

Figure 3.11
Crash Data Summary (2013 – 2017) – US 1 and Krome Avenue Intersection

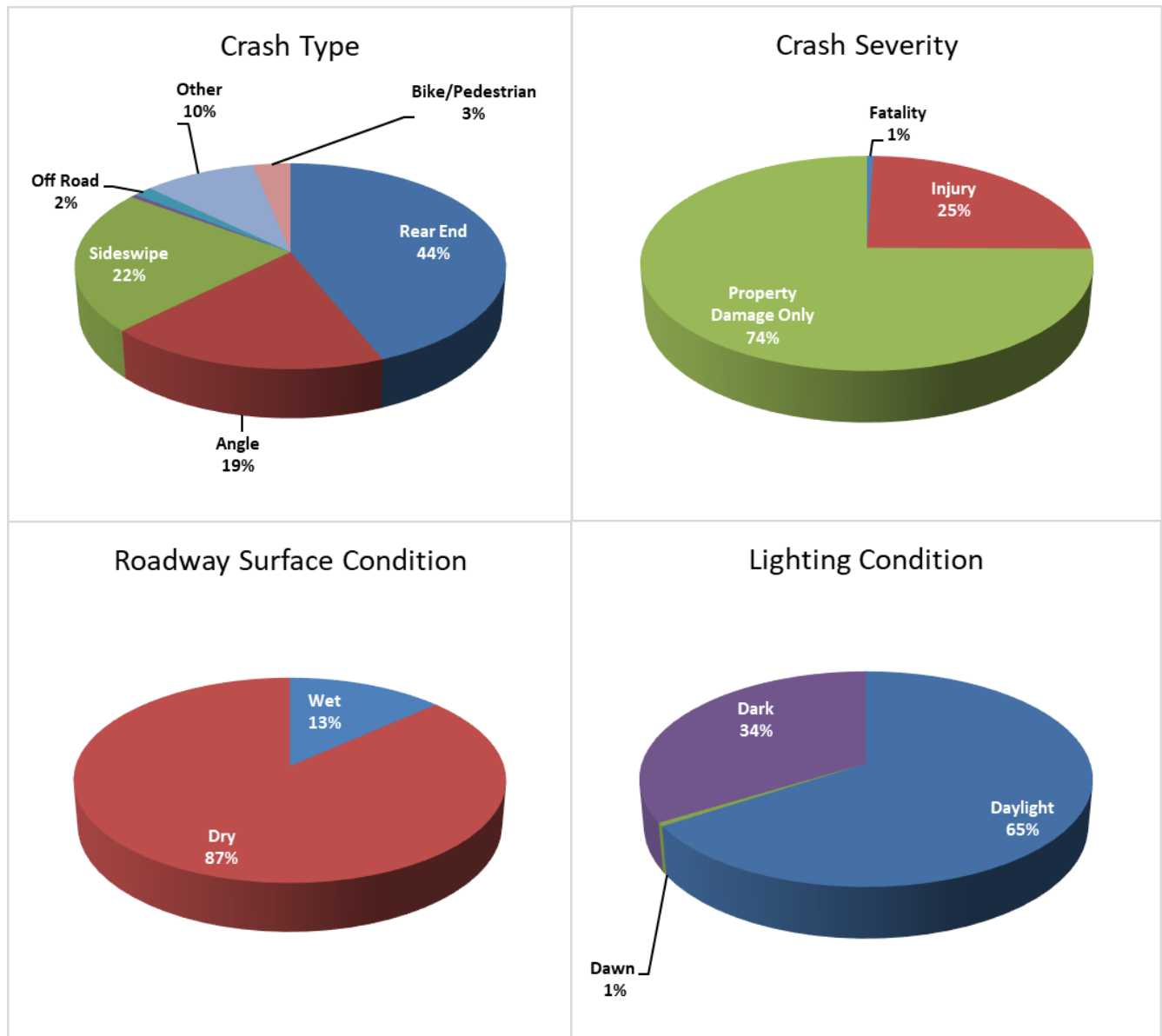


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US 1 and SW 344th Street / Palm Drive Intersection

The US 1 and SW 344th Street / Palm Drive intersection experienced a total of 187 crashes during the five-year analysis period. There was one fatal crash reported during the study period which was a sideswipe collision between vehicles traveling southbound on US 1. At least 25 percent of the total crashes resulted in injuries. As shown in **Figure 3.12**, rear-end crashes (approximately 44 percent) was the prominent crash type at the intersection. Reports indicated that 13 percent of the crashes occurred during wet roadway conditions and 34 percent crashes occurred during night-time hours.

Figure 3.12
Crash Data Summary (2013 – 2017) – US 1 and SW 344th Street / Palm Drive Intersection

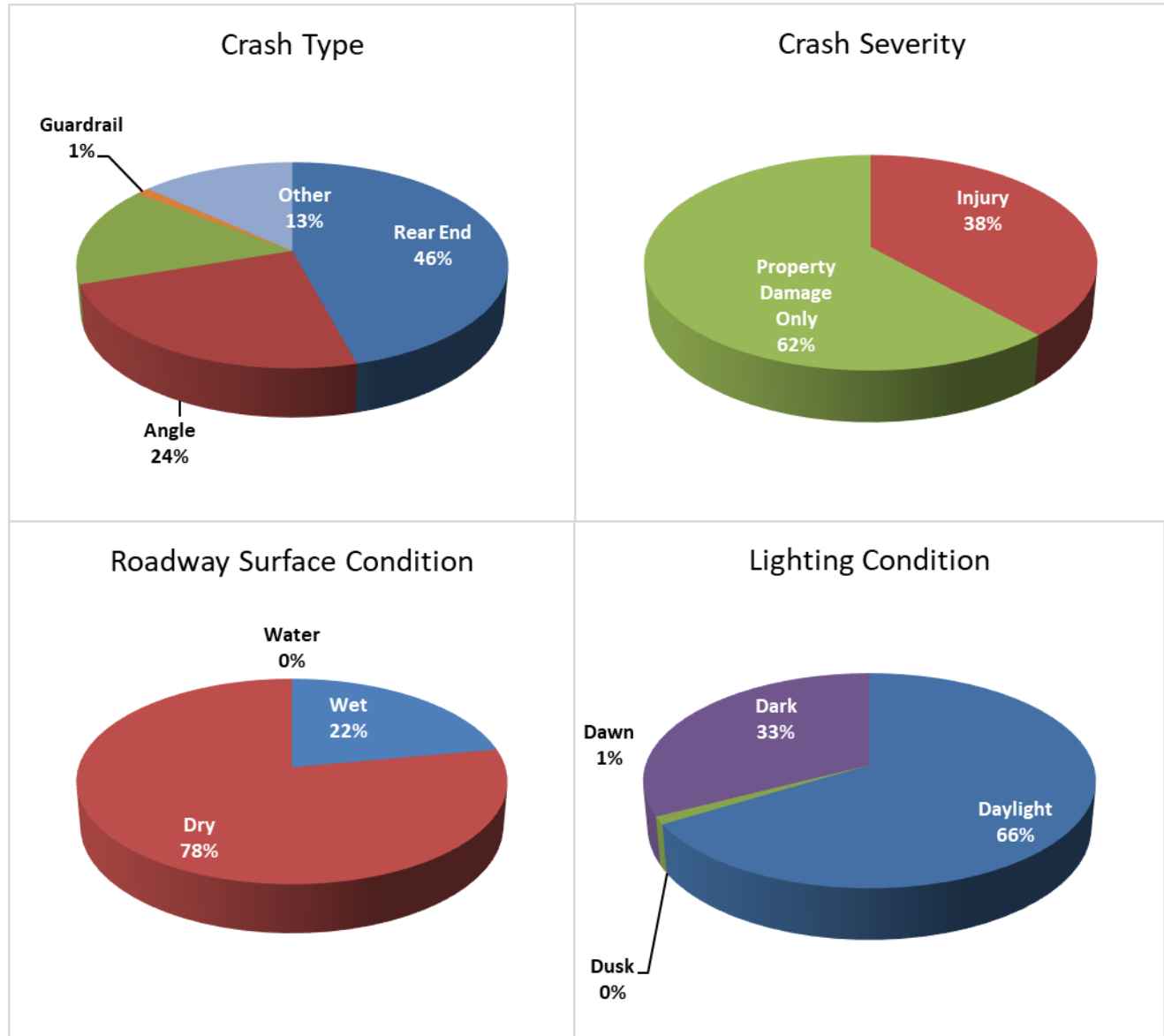


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US 1 and Davis Parkway Intersection

The US 1 and Davis Parkway intersection experienced a total of 86 crashes during the five-year analysis period. There were no fatal crashes reported during the study period. At least 38 percent of the total crashes resulted in injuries. As shown in **Figure 3.13**, rear-end crashes (approximately 46 percent) was the prominent crash type at the intersection. Reports indicated that 22 percent of the crashes occurred during wet roadway conditions and 33 percent crashes occurred during night-time hours.

Figure 3.13
Crash Data Summary (2013 – 2017) – US 1 and Davis Parkway Intersection



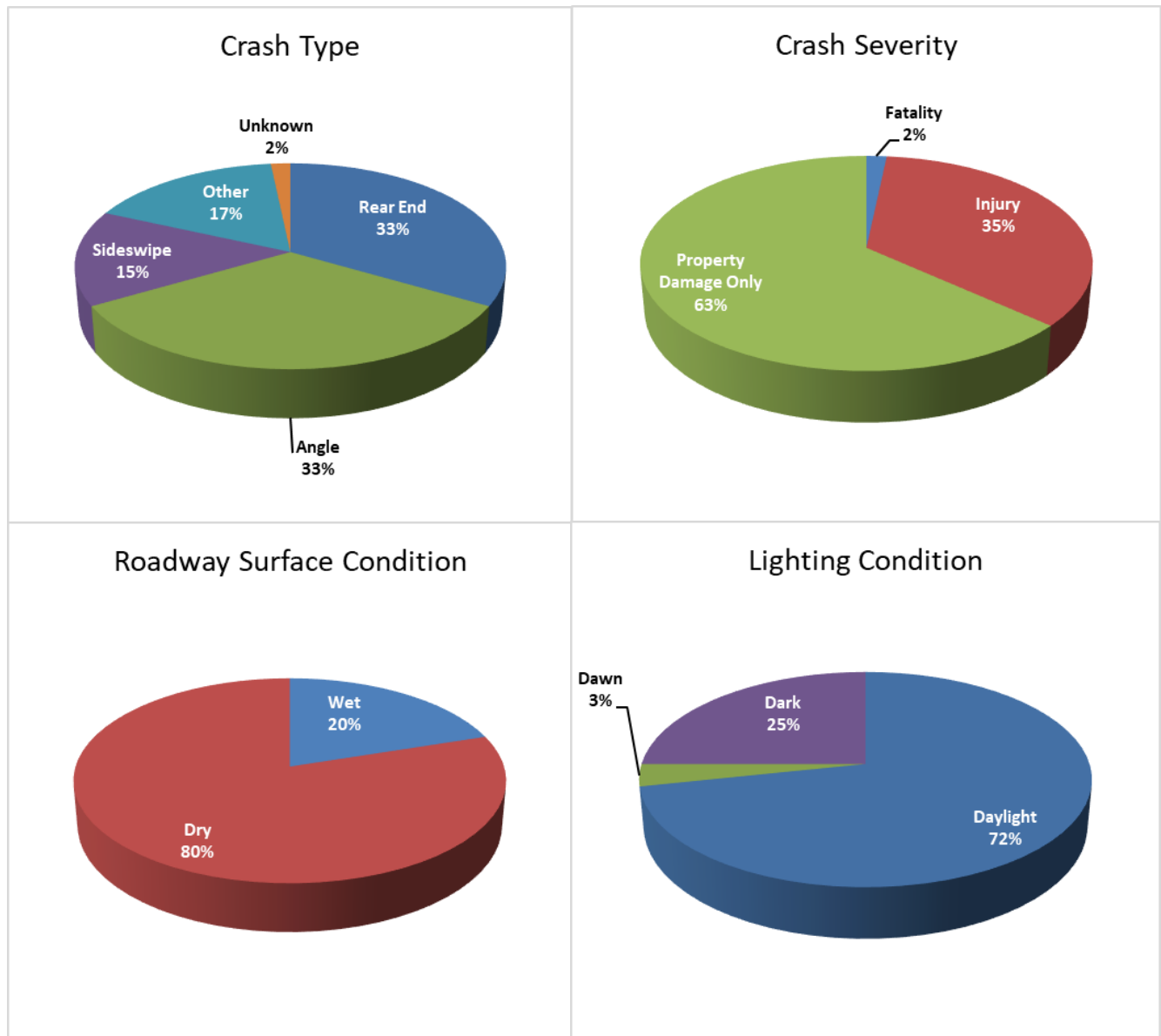
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Krome Avenue and SW 344th Street / Palm Drive Intersection

The Krome Avenue and SW 344th Street / Palm Drive intersection experienced a total of 60 crashes during the five-year analysis period. One fatal crash was reported at this intersection. At least 35 percent of the total crashes resulted in injuries. As shown in **Figure 3.14**, rear-end crashes and angle crashes (approximately 33 percent) were the prominent type of crashes type at the intersection. Reports indicated that 20 percent of the crashes occurred during wet roadway conditions and 25 percent crashes occurred during night-time hours.

Figure 3.14

Crash Data Summary (2013 – 2017) – Krome Avenue and SW 344th Street / Palm Drive Intersection

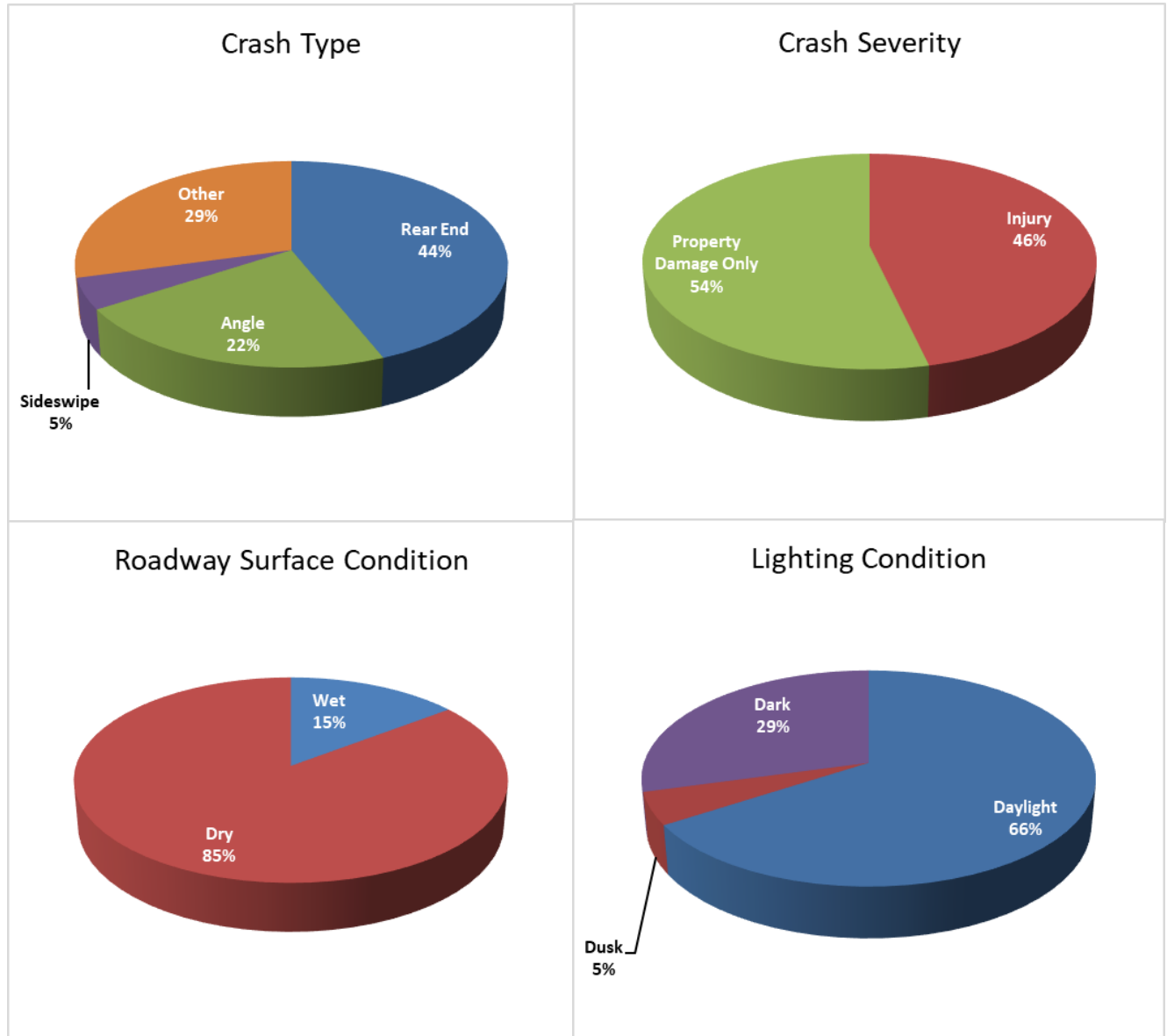


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Krome Avenue and Davis Parkway Intersection

The Krome Avenue and Davis Parkway intersection experienced a total of 41 crashes during the five-year analysis period. There were no fatal crashes reported during the study period. At least 46 percent of the total crashes resulted in injuries. As shown in **Figure 3.15**, rear-end crashes (approximately 44 percent) was the prominent crash type at the intersection. Reports indicated that 15 percent of the crashes occurred during wet roadway conditions and 29 percent crashes occurred during night-time hours.

Figure 3.15
Crash Data Summary (2013 – 2017) – Krome Avenue and Davis Parkway Intersection

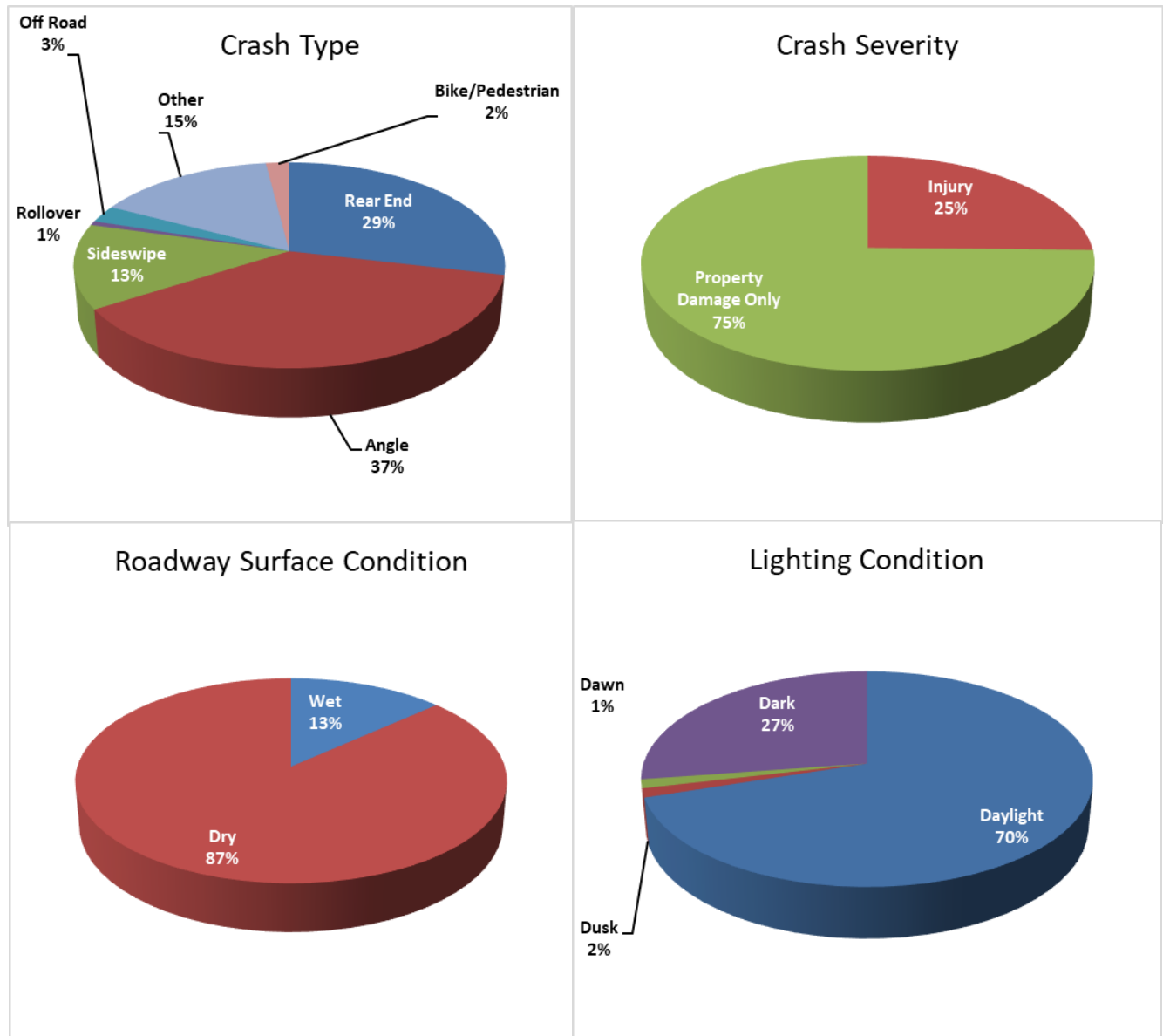


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US 1 and SW 328th Street / Lucy Street Intersection

The US 1 and SW 328th Street / Lucy Street intersection experienced a total of 150 crashes during the five-year analysis period. There were no fatal crashes reported during the study period. At least 25 percent of the total crashes resulted in injuries. As shown in **Figure 3.16**, angle crashes (approximately 37 percent) were the prominent crash type at the intersection. Reports indicated that 13 percent of the crashes occurred during wet roadway conditions and 27 percent crashes occurred during night-time hours.

Figure 3.16
Crash Data Summary (2013 – 2017) – US 1 and SW 328th Street / Lucy Street Intersection



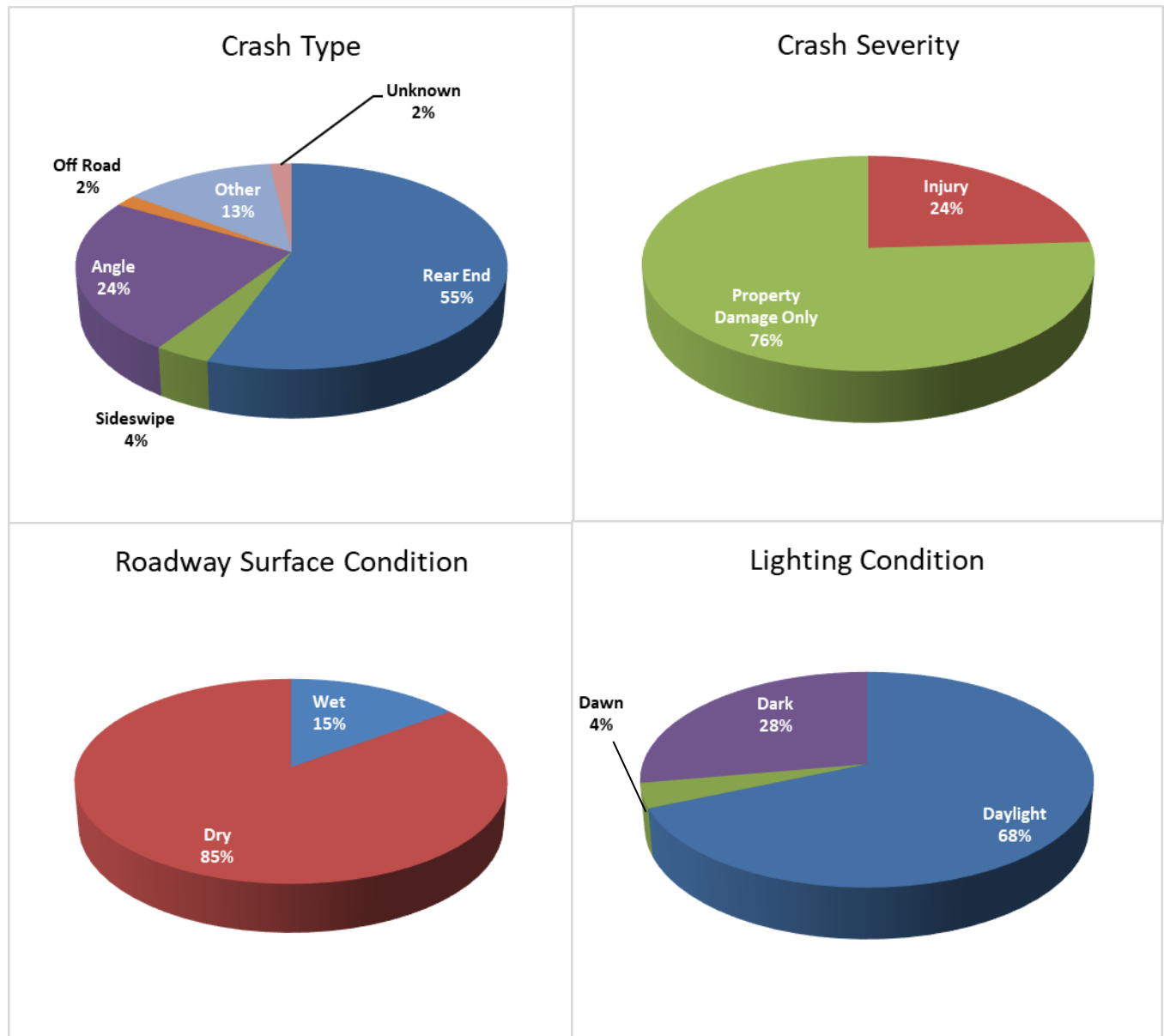
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SW 328th Street / Lucy Street and 6th Avenue Intersection

The SW 328th Street / Lucy Street and 6th Avenue Intersection experienced a total of 54 crashes during the five-year analysis period. There were no fatal crashes reported during the study period. At least 24 percent of the total crashes resulted in injuries. As shown in **Figure 3.17**, rear-end crashes (approximately 55 percent) was the prominent crash type at the intersection. Reports indicated that 15 percent of the crashes occurred during wet roadway conditions and 28 percent crashes occurred during night-time hours.

Figure 3.17

Crash Data Summary (2013 – 2017) – SW 328th Street / Lucy Street and SW 6th Avenue Intersection



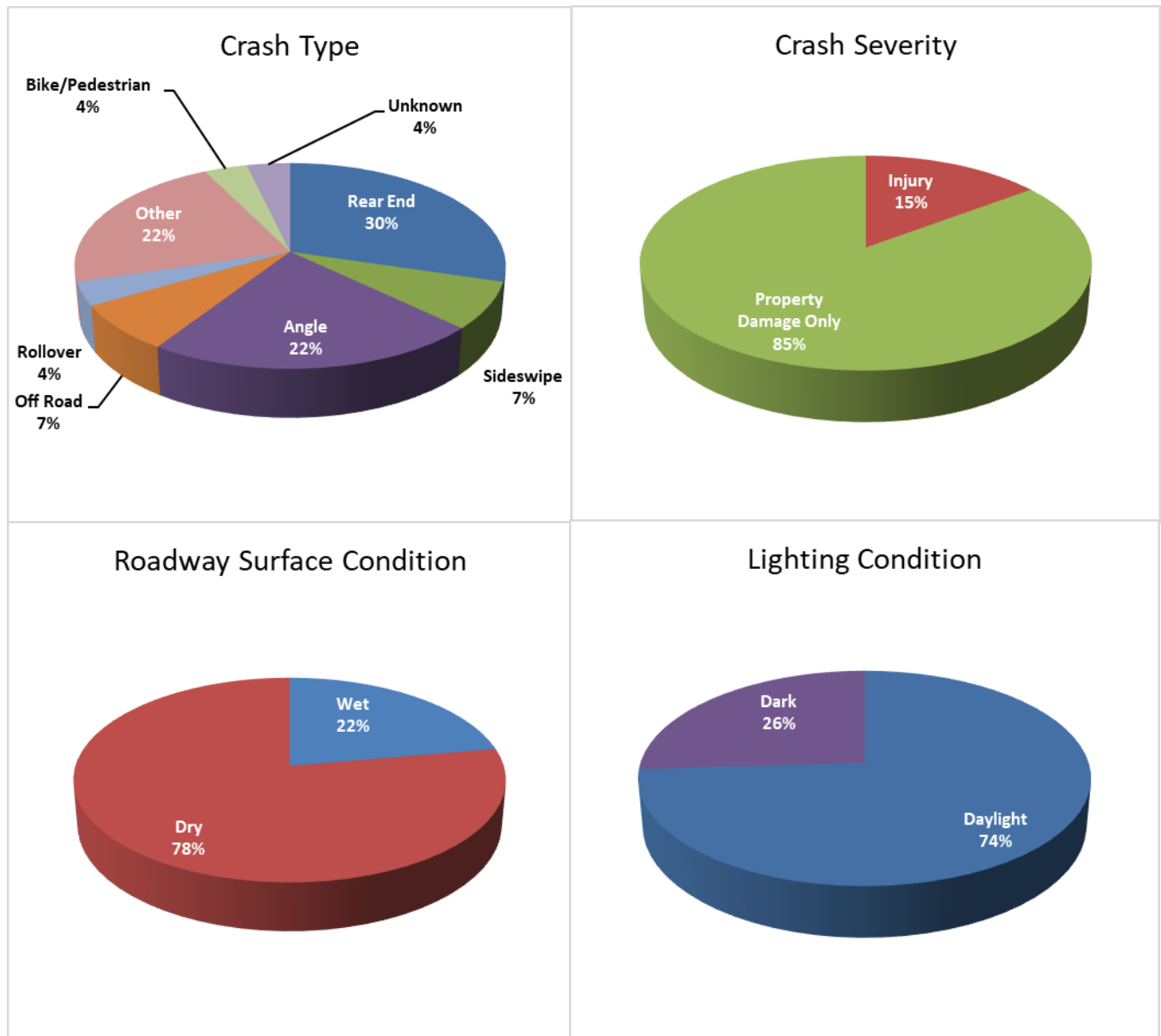
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SW 328th Street / Lucy Street and 167th Avenue Intersection

The SW 328th Street / Lucy Street and 167th Avenue Intersection experienced a total of 27 crashes during the five-year analysis period. There were no fatal crashes reported during the study period. At least 15 percent of the total crashes resulted in injuries. As shown in **Figure 3.18**, rear-end crashes (approximately 30 percent) was the prominent crash type at the intersection. Reports indicated that 22 percent of the crashes occurred during wet roadway conditions and 26 percent crashes occurred during night-time hours.

Figure 3.18

Crash Data Summary (2013 – 2017) – SW 328th Street / Lucy Street and SW 167th Avenue Intersection

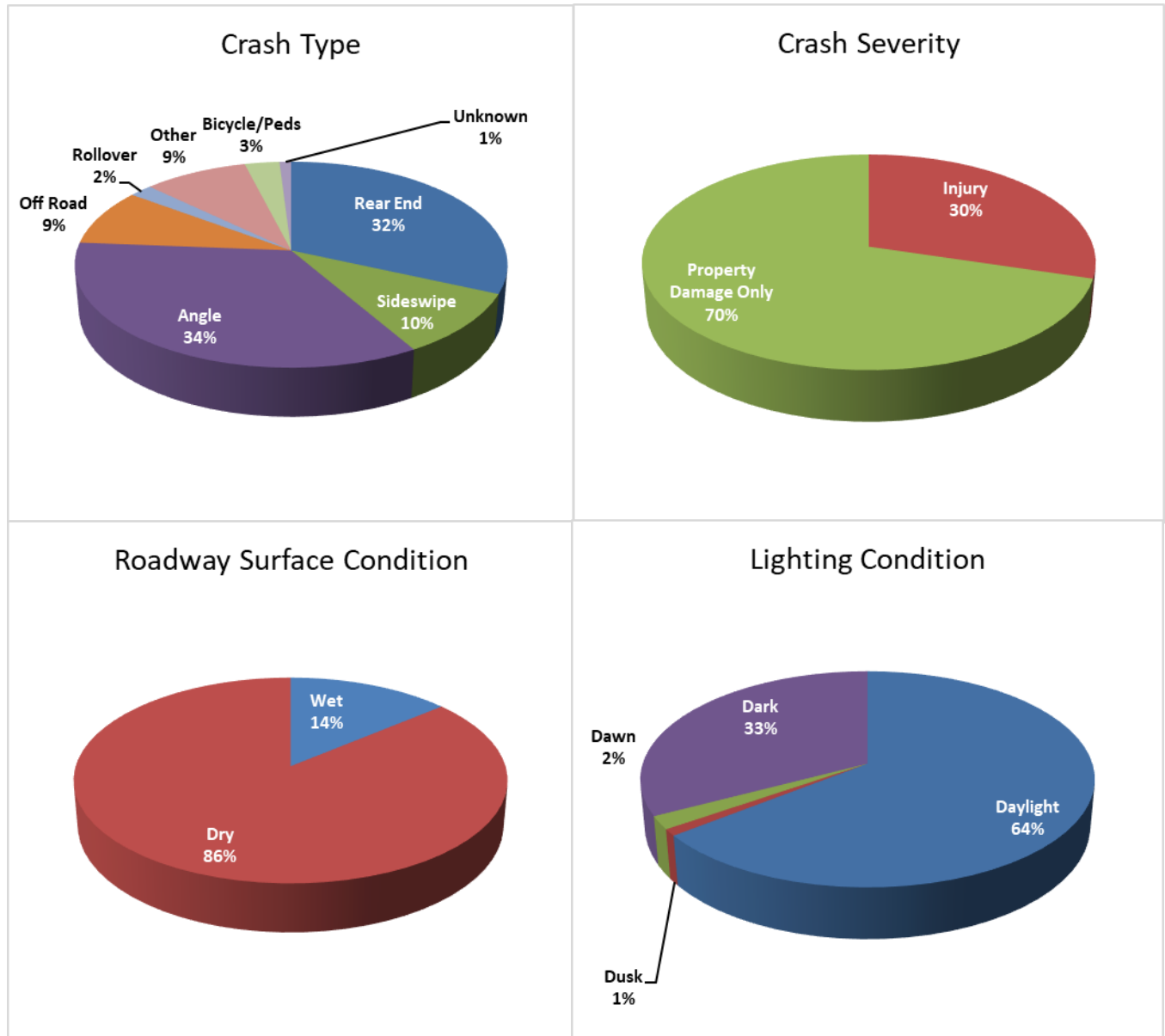


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SW 328th Street / Lucy Street and 162nd Avenue Intersection

The SW 328th Street / Lucy Street and 162nd Avenue Intersection experienced a total of 101 crashes during the five-year analysis period. There were no fatal crashes reported during the study period. At least 30 percent of the total crashes resulted in injuries. As shown in **Figure 3.19**, angle crashes (approximately 34 percent) were the prominent crash type at the intersection, followed by rear-end crashes (approximately 32 percent) as the second most common type of crashes. Reports indicated that 14 percent of the crashes occurred during wet roadway conditions and 33 percent crashes occurred during night-time hours.

Figure 3.19
Crash Data Summary (2013 – 2017) – SW 328th Street / Lucy Street and SW 162nd Avenue Intersection

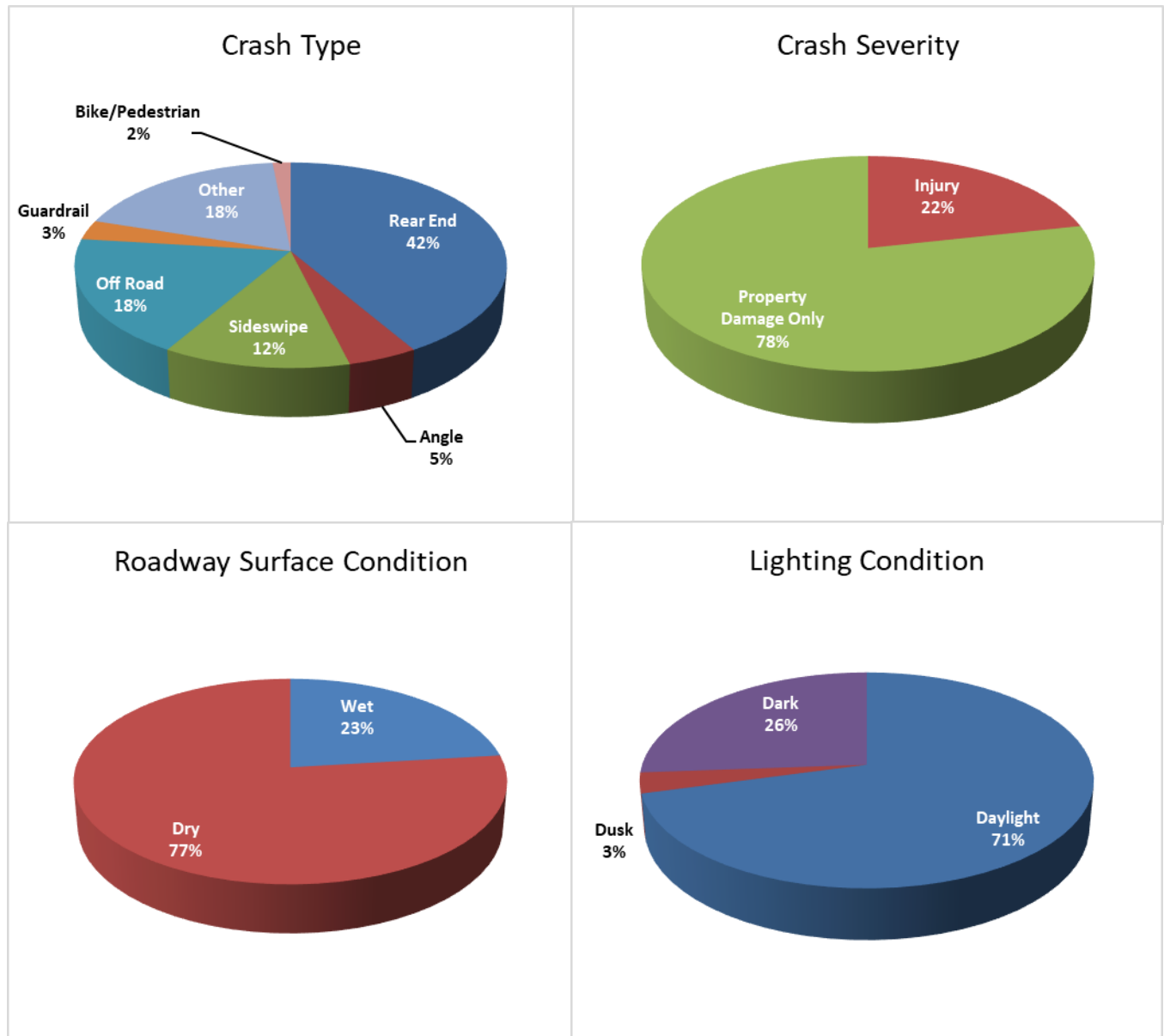


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Florida’s Turnpike Extension Southbound Ramps and SW 312th Street / Campbell Drive Intersection

The Florida’s Turnpike Extension at SW 312th Street / Campbell Drive southbound ramps intersection experienced a total of 65 crashes during the five-year analysis period. There were no fatal crashes reported during the study period. At least 22 percent of the total crashes resulted in injuries. As shown in **Figure 3.20**, rear-end crashes (approximately 42 percent) and off-road crashes (approximately 18 percent) were the prominent crash types along the interchange ramps. Reports indicated that 23 percent of the crashes occurred during wet roadway conditions and 26 percent crashes occurred during night-time hours.

Figure 3.20
Crash Data Summary (2013 – 2017) – Florida’s Turnpike Extension Southbound Ramps at SW 312th Street / Campbell Drive Intersection



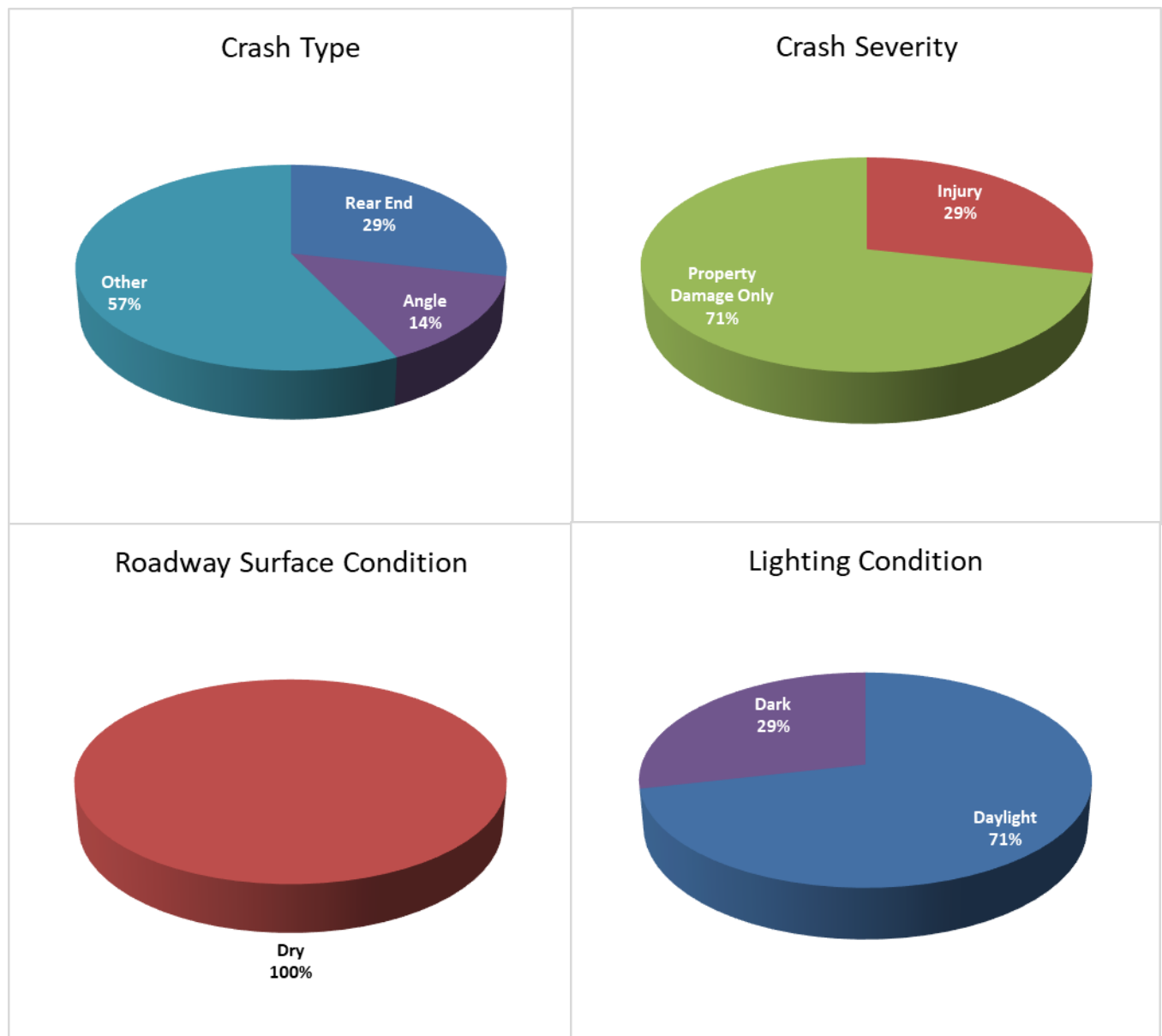
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SW 312th Street / Campbell Drive and Kingman Road Intersection

The SW 312th Street / Campbell Drive and Kingman Road intersection experienced a total of seven crashes during the five-year analysis period. There were no fatal crashes reported during the study period. As shown in **Figure 3.21**, other crashes (such as parked vehicle crashes and back to front collision) (approximately 57 percent) and rear-end (approximately 29 percent) were the prominent crash types. At least 29 percent of the total crashes resulted in injuries. Reports indicated that no crashes occurred during wet roadway conditions and 29 percent crashes occurred during night-time hours.

Figure 3.21

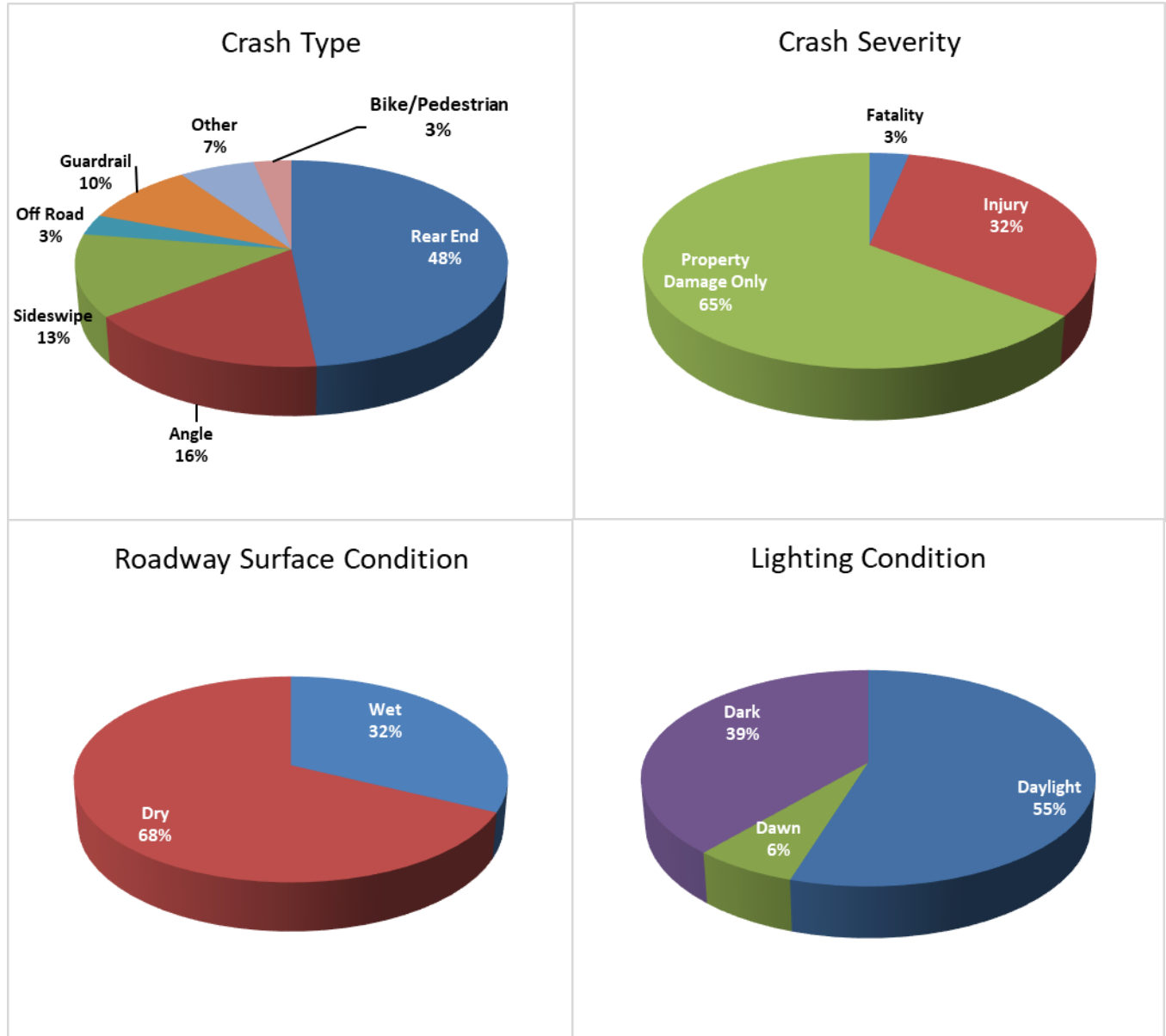
Crash Data Summary (2013 – 2017) – SW 312th Street / Campbell Drive and Kingman Road Intersection



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The Florida’s Turnpike Extension at SW 312th Street / Campbell Drive northbound ramps intersection experienced a total of 31 crashes during the five-year analysis period. There was one fatal crash reported during the study period. At least 32 percent of the total crashes resulted in injuries. As shown in **Figure 3.22**, rear-end crashes (approximately 48 percent) and angle crashes (approximately 16 percent) were the prominent crash types along the interchange ramps. Reports indicated that 32 percent of the crashes occurred during wet roadway conditions and 39 percent crashes occurred during night-time hours.

Figure 3.22
Crash Data Summary (2013 – 2017) – Florida’s Turnpike Extension Northbound Ramps at SW 312th Street / Campbell Drive Intersection



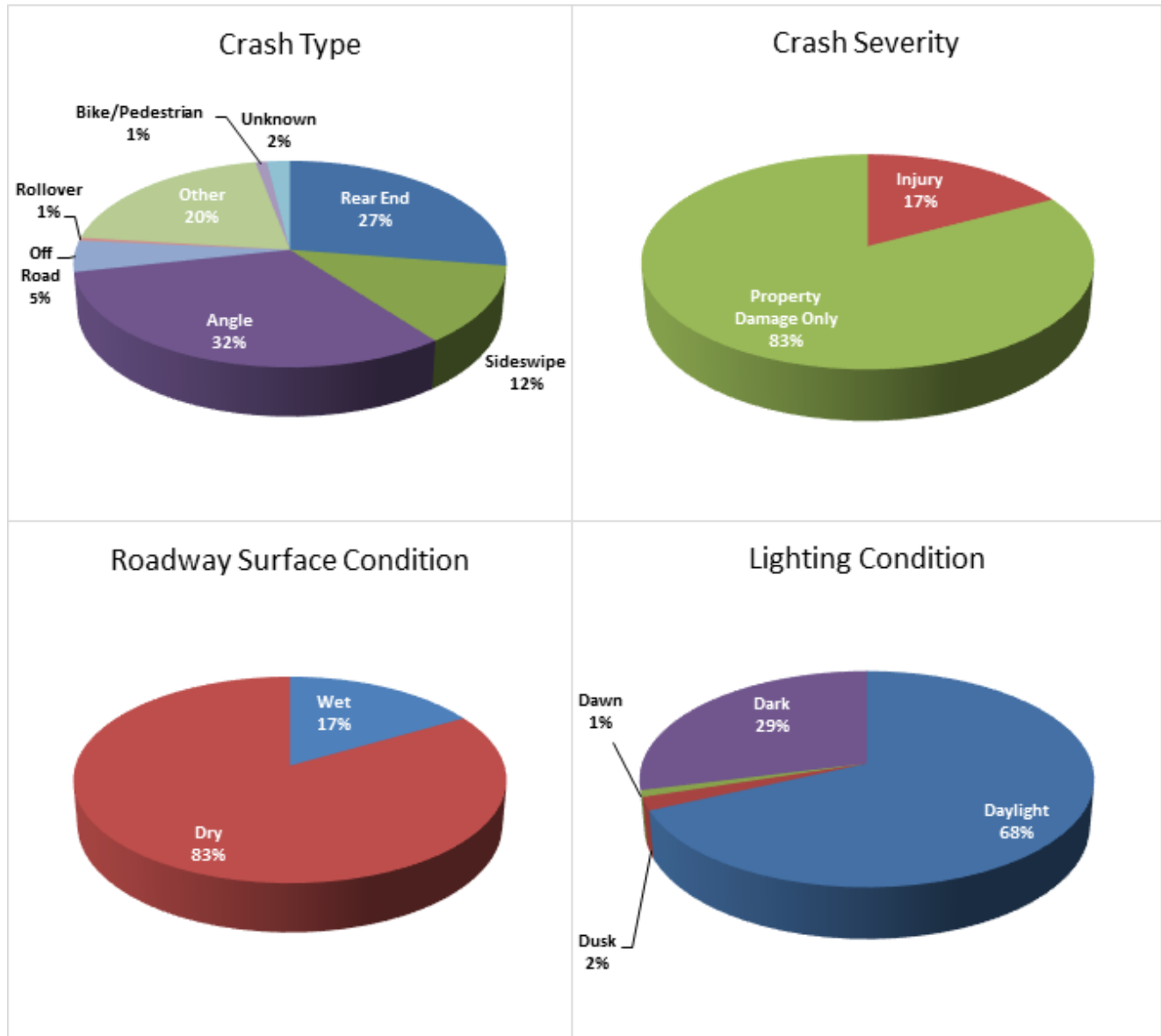
SECTION THREE

SW 312th Street / Campbell Drive and SW 152nd Avenue Intersection

The SW 312th Street / Campbell Drive and SW 152nd Avenue intersection experienced a total of 204 crashes during the five-year analysis period. There were no fatal crashes reported during the study period. At least 17 percent of the total crashes resulted in injuries. As shown in **Figure 3.23**, angle crashes (approximately 32 percent) were the prominent crash type at the intersection, followed by rear-end crashes (approximately 27 percent) as the second most common type of crashes. Reports indicated that 17 percent of the crashes occurred during wet roadway conditions and 29 percent crashes occurred during night-time hours.

Figure 3.23

Crash Data Summary (2013 – 2017) – SW 312th Street / Campbell Drive and SW 152nd Avenue Intersection



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Actual crash rates at the intersections were computed and compared with average crash rates for similar facilities across the State utilizing the Statewide five-year average crash rate (2013 – 2017). Critical crash rates and safety ratios were also estimated. Crash rates for the intersections were estimated as crashes per Million Entering Vehicles (MEV). The critical crash rate is based on the average crash rate for a similar facility adjusted by vehicle exposure and a probability constant. The safety ratio represents the actual crash rate divided by the critical crash rate. If an intersection has an actual crash rate higher than the critical crash rate (i.e., safety ratio > 1.0), it may have a safety deficiency. The crash rates are presented in **Table 3.9**.

Table 3.9
Intersection Crash Rates and Safety Ratios (2013 – 2017)

Description	Total Crashes	Crash Rate			Safety Ratio
		Actual	Average*	Critical	
US 1 at					
SW 328 th Street / Lucy Street	150	2.04	0.517	0.99	2.07
Florida's Turnpike Extension southbound off-ramp / Davis Parkway	86	1.47	0.517	1.05	1.40
SW 344 th Street / Palm Drive	187	2.12	0.749	1.26	1.69
Krome Avenue	14	0.29	0.270	0.71	0.41
Krome Avenue at					
Davis Parkway	41	1.32	0.293	0.88	1.50
SW 344 th Street / Palm Drive	60	1.28	0.517	1.12	1.15
SW 328th Street / Lucy Street at					
SW 6 th Avenue	54	2.56	0.293	1.02	2.50
SW 167 th Avenue	27	1.74	0.194	0.94	1.85
SW 162 nd Avenue	101	6.55	0.517	1.63	4.01
SW 312th Street / Campbell Drive at					
Florida's Turnpike Extension southbound ramps / 157 th Avenue	65	0.82	1.747	2.55	0.32
Kingman Road	7	0.12	0.343	0.79	0.15
Florida's Turnpike Extension northbound ramps	31	0.59	1.507	2.44	0.24
SW 152 nd Avenue	204	3.69	0.270	0.68	5.43

*FDOT Statewide crashes per million vehicles entering (2013 – 2017)

Intersections: Crashes per Million Vehicles Entering

Highlighted = Safety Ratio >1.0

Crash Rate Category Used

23 - SUBURBAN 4-5LN 2WY DIVD RASD

33 - SUBURBAN 6+LN 2WY DIVD RASD

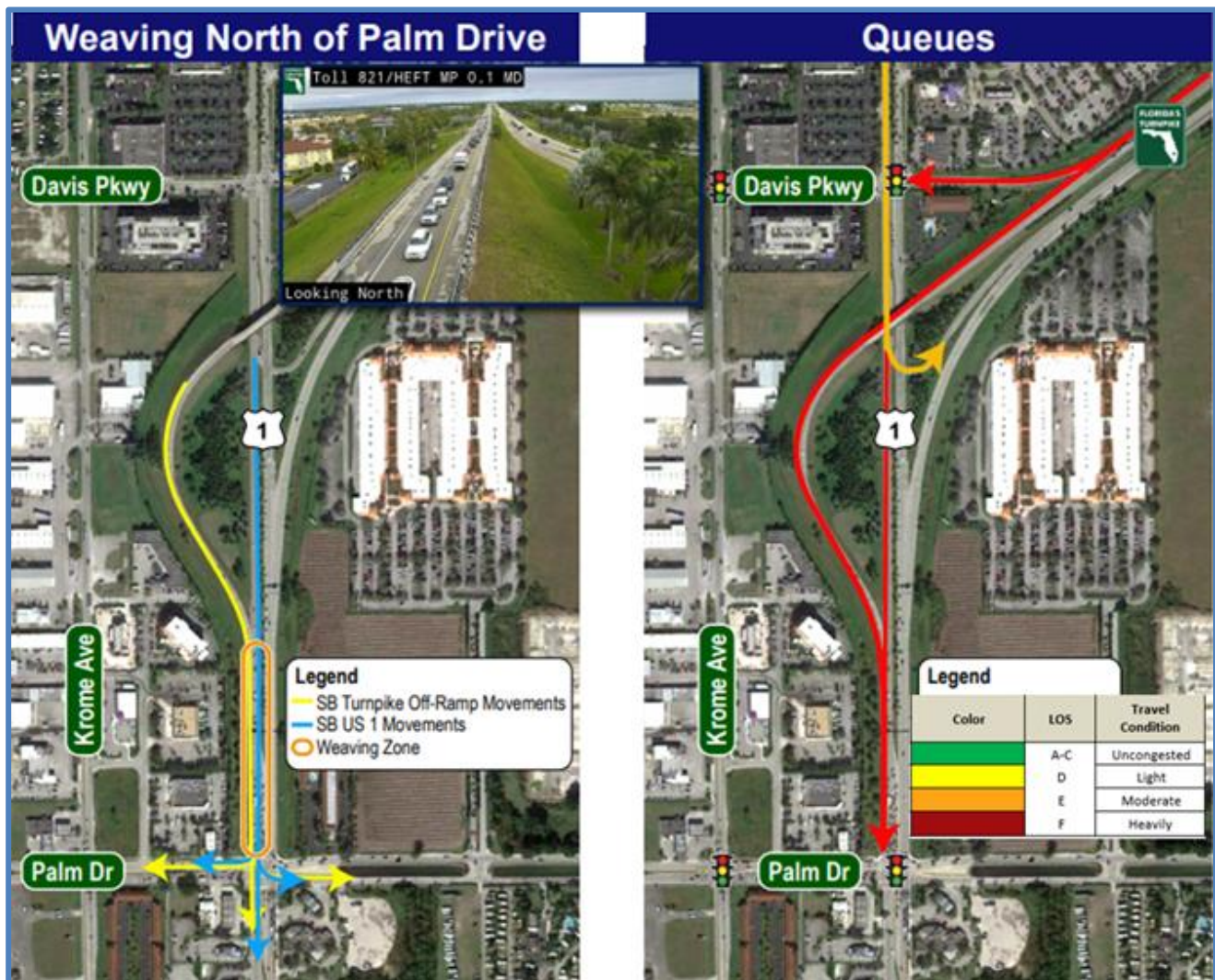
15 - SUBURBAN 2-3LN 2WY UNDIVD

07 - RAMP URBAN

SECTION THREE

Rear-end crashes were prominent at the intersections listed in **Table 3.9**, with safety ratios > 1.0 . Congestion and long queues contributed to the high number of crashes at those locations. The Palm Drive intersection is located approximately 450 feet south of the US 1 exit ramp. Within this relatively short distance, drivers must observe traffic signal indications and weaving among other vehicles to position themselves into the desired lane (see **Figure 3.24**). This creates vehicle conflict points and leads to traffic congestion. The inability of the signal at the US 1/Palm Drive intersection to process the heavy volume of traffic, combined with the weaving condition, leads to congestion on local roads and on the US 1 exit ramp. The queues often extend along the US 1 exit ramp back to Davis Parkway, creating spillbacks onto Turnpike mainline.

Figure 3.24
Level of Service Queues and Weaving North of Palm Drive



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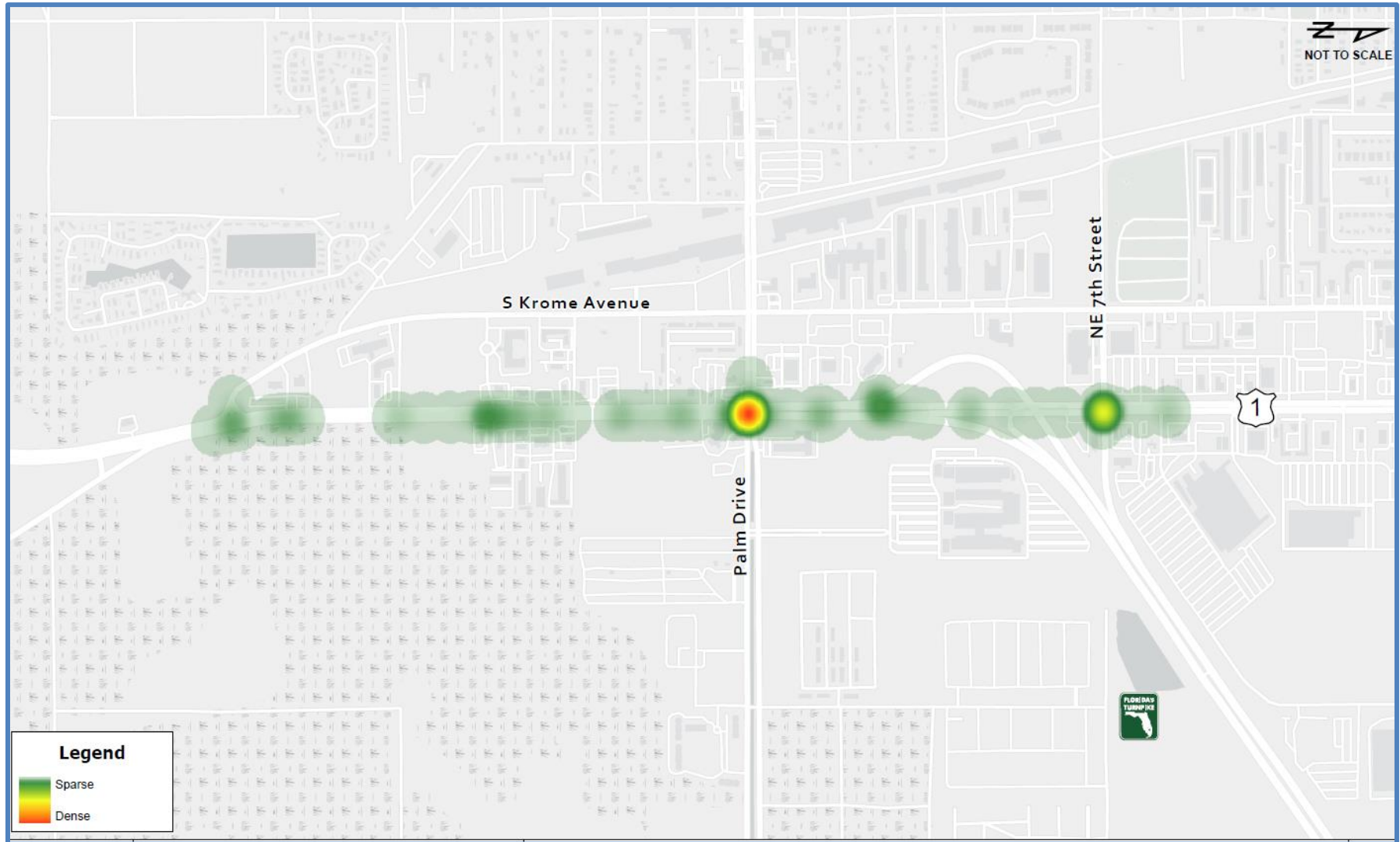
However, the overall predicted crashes (**Table 5.18**) showed lower under the Build alternative when compared to the No-Build alternative due to capacity improvements and redistribution of traffic. Following intersections (safety ratio > 1.0) are anticipated to improve safety under Build alternative due to fly over ramps over Palm Drive, and addition of new interchange that divert traffic from the US 1, Krome Avenue and SW 312th Street/Campbell Drive:

- US 1 at SW 328th Street/Lucy Street
- US 1 at Florida's Turnpike Extension southbound off-ramp/Davis Parkway
- US 1 at SW 344th Street/Palm Drive
- Krome Avenue at Davis Parkway
- Krome Avenue at SW 344th Street/Palm Drive
- SW 312th Street/Campbell Drive at SW 152nd Avenue

Figures 3.25 through **3.27** illustrated the heat maps for the US 1, SW 328th Street/Lucy Street, and SW 312th Street/Campbell Drive corridors, respectively. The annual crash frequencies for the study area are shown in **Table 3.10**.

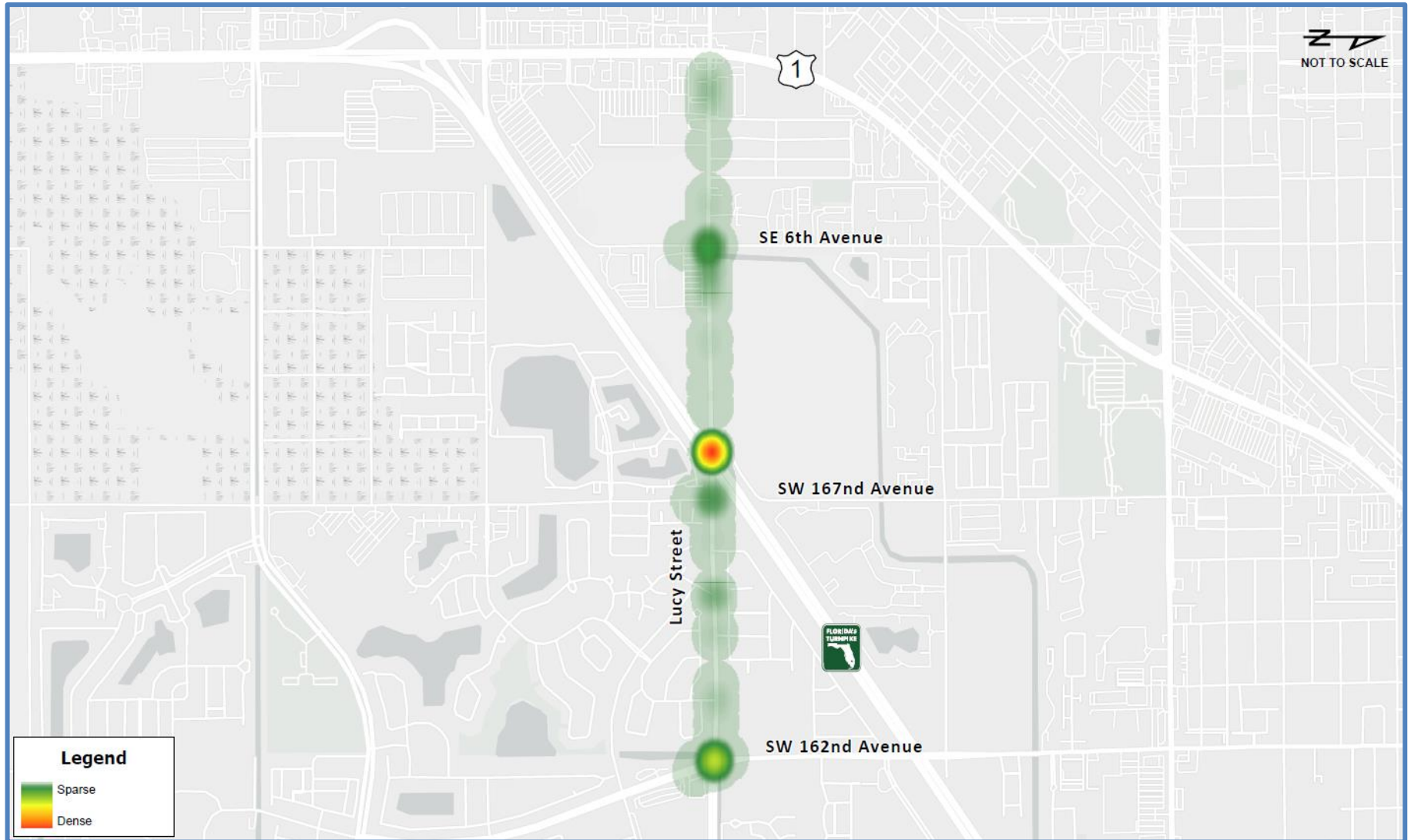
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Figure 3.25
2013 – 2017 Crash Density Heat Map – US 1



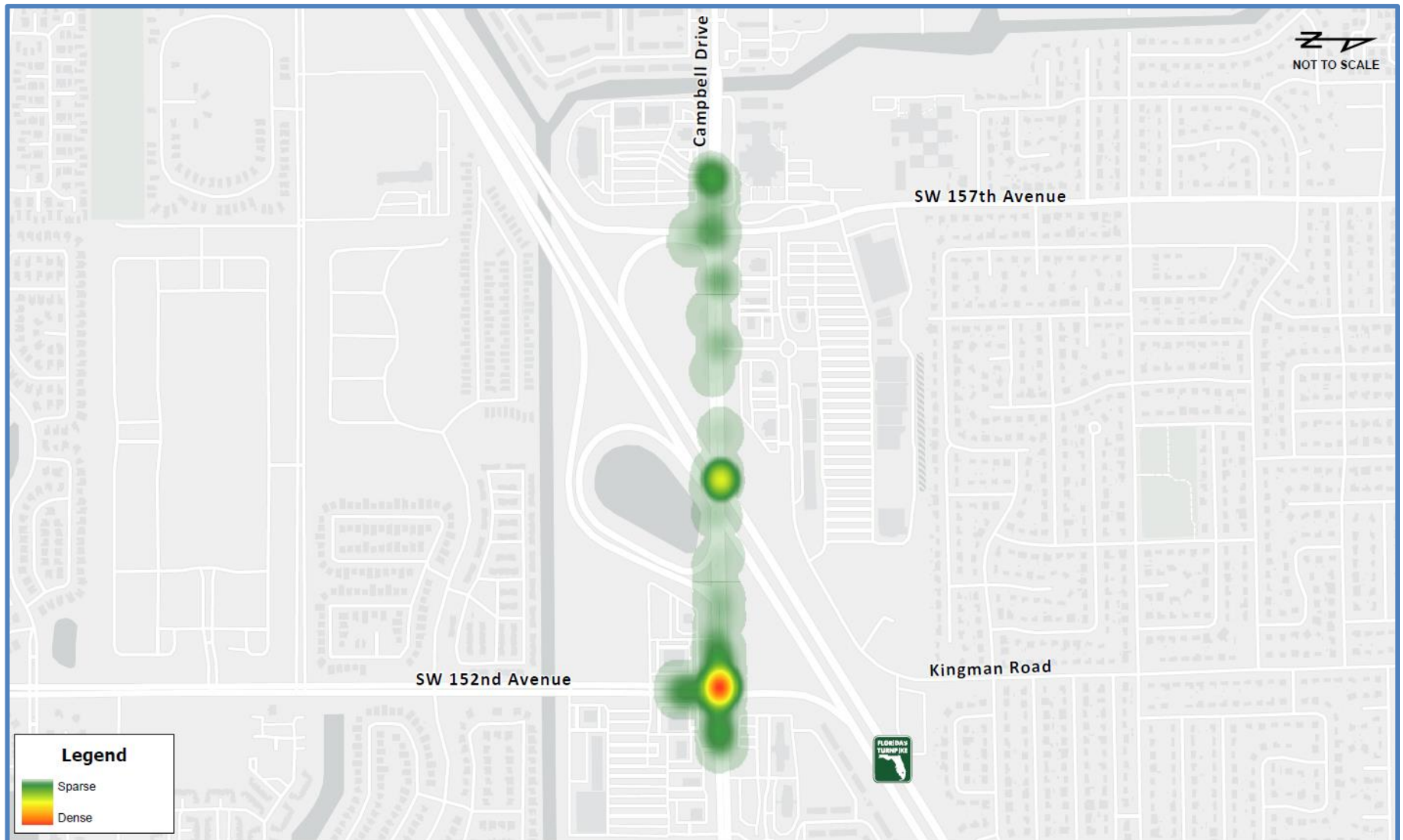
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Figure 3.26
2013 – 2017 Crash Density Heat Map – Lucy Street



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Figure 3.27
2013 – 2017 Crash Density Heat Map – Campbell Drive



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Existing Conditions

Table 3.10
Annual Crash Frequency

Locations	2013	2014	2015	2016	2017	Total	Average Crash Frequency Per Year
Florida's Turnpike Extension Mainline MP 0.54 to MP 3.60	26	21	46	38	59	190	38
US 1 Interchange Ramps	15	8	10	17	12	62	12.4
Campbell Drive Interchange Ramps	6	12	7	5	11	41	8.2
US 1 at SW 328 th Street / Lucy Street	20	15	37	44	34	150	30
US 1 at Florida's Turnpike Extension southbound off-ramp / Davis Parkway	16	22	18	13	17	86	17.2
US 1 at SW 344 th Street / Palm Drive	31	36	39	42	39	187	37.4
US 1 at Krome Avenue	1	4	2	4	3	14	2.8
Krome Avenue at Davis Parkway	6	3	15	11	6	41	8.2
Krome Avenue at SW 344 th Street / Palm Drive	10	13	14	9	14	60	12
Lucy Street at SW 6 th Avenue	9	15	6	13	11	54	10.8
Lucy Street at SW 167 th Avenue	4	9	2	6	6	27	5.4
Lucy Street at SW 162 nd Avenue	17	8	20	29	27	101	20.2
Campbell Drive at Florida's Turnpike Extension southbound ramps / 157 th Avenue	18	12	20	9	6	65	13
Campbell Drive at Kingman Road	1	2	4	0	0	7	1.4
Campbell Drive at Florida's Turnpike Extension northbound ramps	5	5	5	7	9	31	6.2
Campbell Drive at SW 152 nd Avenue	45	40	30	49	40	204	40.8

3.4.5 Arterials Mid-block

Crashes along the arterials at mid-block locations (i.e., outside the intersection influence areas) were also evaluated and discussion is provided.

SW 312th Street/Campbell Drive Mid-block from 152nd Avenue to SW 157th Avenue

A total of 60 crashes were reported along the mid-block sections of SW 312th Street/Campbell Drive within the study area from 2013 through 2017. No fatal crash was reported. Rear-end (51 percent) and sideswipe (17 percent) crashes constituted majority of the crashes. Approximately 83 percent of the crashes resulted in property damage only.

SW 328th Street/Lucy Street Mid-block from SW 162nd Avenue to US 1

A total of 295 crashes were reported along the mid-block sections of SW 328th Street/Lucy Street within the study area from 2013 through 2017. One fatal crash was reported. Rear-end (59 percent) and off-road (14 percent) crashes constituted majority of the crashes. Approximately 83 percent of the crashes resulted in property damage only.

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US 1 from Krome Avenue to SW 328th Street/Lucy Street

A total of 124 crashes were reported along the mid-block sections of US 1 within the study area from 2013 through 2017. A pedestrian fatal crash was reported adjacent to SW 344th Street/Palm Drive and US 1 intersection. Another fatal crash was reported at the Florida's Turnpike Extension northbound on-ramp and US 1 junction. Rear-end (35 percent) and angle (34 percent) crashes constituted majority of the crashes. Approximately 68 percent of the crashes resulted in property damage only.

3.4.6 Pedestrian and Bicycle Safety Analysis

Bicycle and pedestrian crashes were extracted from both the CARS database and Signal Four Analytics tool for the study area. A total of 32 pedestrian and bicycle crashes were reported within the study area for years 2013 through 2017. Crash locations by severity of crashes are depicted in **Figure 3.28**. As shown in **Table 3.11**, 16 pedestrian and bicycle crashes occurred along US 1 from Krome Avenue to Lucy Street. A single fatal crash was reported at SW 344th Street/Palm Drive and Krome Avenue intersection which was a 'hit and run'. Two fatal pedestrian crashes were reported adjacent to SW 344th Street/Palm Drive at the US 1 intersection and mid-block section of along SW 328th Street/Lucy Street. Note that pedestrian and bicycle crashes were discussed in this section are beyond 250 feet from an intersection. **Table 3.11** illustrates the summary of crash severity of all reported crashes from 2013 through 2017.

Table 3.11
Pedestrian and Bicycle Crash Severity (2013 – 2017)

Roadway	Fatality	Injury	Property Damage Only	Total
US 1	1	11	4	16
SW 328 th Street/Lucy Street	1	6	1	8
SW 312 th Street/Campbell Drive	0	3	0	3
Krome Avenue	1	4	0	5
Total	3	24	5	32
Percentage	9%	75%	16%	100%

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Figure 3.28
Pedestrian and Bicycle Crashes (2013 – 2017)



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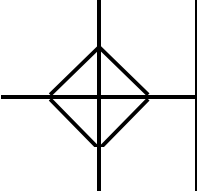


4.1 NO-BUILD ALTERNATIVE – TRANSPORTATION NETWORK

The future year No-Build Alternative network includes the existing roadway conditions plus all funded and committed projects within the study area. **Figure 4.1** presents the No-Build Lane Configuration for the AOI.

4.2 FUTURE NO-BUILD TRAFFIC FORECAST

The Southeast Regional Planning Model version 7 (SERPM 7) was used to develop the traffic forecasts for this project. The SERPM 7 covers a three-county region in Southeast Florida: Palm Beach, Broward, and Miami-Dade. The SERPM produces traffic volumes at a daily level, as well as for five periods: AM Peak (6:00 – 9:00 AM), PM Peak (3:00 – 7:00 PM), Mid-Day (MD, 9:00 AM– 3:00 PM), Evening (EV, 7:00 – 10:00 PM), and Nighttime (NT, remainder of the day). The SERPM version 7 (SERPM 7) was used as a base model for this project since this Activity Based version has an enhanced modeling process for truck traffic. Numerous updates were made to the SERPM 7, which include socioeconomic data and networks, to produce the current FTE version of the model, which is called SERPM 7 FTE. The model was updated specifically for evaluating toll road and managed lane projects in southeast Florida. The results of the travel demand model validation are included in the **Appendix B**. The Daily forecasts for 2025 and 2045 for the Turnpike Mainline and ramps are shown in **Table 4.1**.

Table 4.1
No-Build Mainline and Ramp AADT Forecasts

Milepost - Description		2025	2045
		79,500	108,600
2 – Campbell Drive		32,200	43,700
		4,500	10,400
		51,800	75,300
0 – US 1 (To/From North)		15,400	22,300
0 – US 1 (To/From South)		36,400	53,000

The historic and model growth rates provided for the study area were used to develop the cross-street volumes, as shown in **Table 4.2**.

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**Table 4.2
No-Build Cross-Street AADT Forecasts**

Arterial Segment	2025	2045
Campbell Drive/SW 312th Street		
Campbell Drive – East of 152 nd Avenue	20,900	27,200
Campbell Drive – West of 152 nd Avenue to northbound ramps	28,200	28,300
Campbell Drive – Between northbound ramps and Kingman Road	27,800	30,800
Campbell Drive – Kingman Road to SW 157 th Avenue/southbound ramps	28,300	31,700
Campbell Drive v West of SW 157 th Avenue/southbound ramps	30,000	34,100
SW 152 nd Avenue – South of Campbell Drive	13,900	17,200
Kingman Road – North of Campbell Drive	9,800	9,800
SW 157 th Avenue – North of Campbell Drive	7,900	8,000
Lucy Street		
Lucy Street – West of US 1	12,500	26,300
Lucy Street – West of SE 6 th Avenue	10,900	24,100
Lucy Street – East of SE 6 th Avenue – West of Turnpike	11,400	24,600
Lucy Street – East of Turnpike – West of SW 162 nd Avenue	12,300	26,800
Lucy Street – East of SW 162 nd Avenue	13,700	30,000
SE 6 th Avenue – South of Lucy Street	4,500	5,800
SE 6 th Avenue – North of Lucy Street	4,100	5,300
SW 162 nd Avenue – South of Lucy Street	4,100	8,900
SW 162 nd Avenue – North of Lucy Street	6,300	13,900
US 1		
US 1 – North of Lucy Street	29,800	29,900
US 1 – South of Lucy Street	26,900	27,200
US 1 – North of Davis Parkway	27,400	39,800
US 1 – South of Davis to southbound US 1 – northbound Turnpike on-ramp	22,300	32,200
US 1 – South of southbound US 1 – northbound Turnpike on-ramp to southbound off-ramp to Palm Drive	16,700	24,100
US 1 – Turnpike southbound off-ramp to Palm Drive	48,200	69,800
US 1 – South of Palm Drive	32,100	49,300
Davis Parkway – West of US 1	10,300	14,900
Palm Drive – East of US 1	18,700	30,100
Palm Drive – West of US 1	20,100	34,200

4.3 FUTURE NO-BUILD DIRECTIONAL DESIGN HOUR VOLUMES

The future Directional Design Hour Volumes (DDHVs) are calculated by applying the K factors and existing directional splits (directional distribution factor [D]) to the AADTs at interchange ramp pairs and the Turnpike Mainline control points. The K factor is the proportion of AADT occurring during the selected design hour. The D factor is the proportion of traffic in the design hour traveling in the peak direction.

Consistent with the FDOT districts, the Turnpike has developed standard K factors for use in planning and design applications. The K factor for the mainline section between Campbell Drive and US 1 is based on the Telemetered Traffic Monitoring Site (TTMS) 972262 data in the 2016 Florida Traffic Online (FTO) database and is the same as the K factor for the US 1 Interchange ramps.

The K factors for the ramps at Campbell Drive are based on toll data. The D factors for the Campbell Drive Interchange ramps are based on 2016 toll data.

The Turnpike Extension interchange at US 1 serves both tourist and regular commute traffic. Therefore, future DDHVs were developed for two scenarios: the typical peak commuter design hour and the design hour for a heavy-inbound-keys scenario. The heavy-inbound-keys scenario considers a combination of peak season southbound tourists traveling to the Keys and a non-peak-hour commuter traffic for other movements. For the typical peak hour scenario, DDHVs were calculated based on the standard K factor and the D factor based on existing counts. For the heavy-inbound-keys scenario, the K and D factors were adjusted for the southbound off-ramp to make sure the design will be able to operate acceptably in the tourist traffic peaks. As mentioned in Section 1.1, over 81 percent of the queue incidents between 2015 and 2018 occurred during non-typical peak hours, as a result of weekend and holiday tourist travel demand. Therefore, the directional splits from the FTO database, peak-season peak-hour counts, and peak period counts during typical holidays and weekends were studied and compared. In addition, a one-hour (11:30 AM to 12:30 PM) video was analyzed for the 2016 Labor Day Saturday to derive the D factors when upstream queues were present. Finally, a D factor of 60 percent was selected to produce the volume forecast representing a tourist-considered design volume.

For this specific location, the US 1 interchange ramp volumes are equal to the upstream mainline volumes. Therefore, the ramps (at both US 1 and Campbell Drive) are treated as control points. And mainline traffic volumes were then balanced throughout the system by adding and subtracting the ramp volumes.

Cross streets are forecasted with K factors in the 2016 FTO database and D factors were determined based on 2016 peak-season peak-hour counts.

The truck factor (Tf) is the percentage of truck traffic during the peak hours. The Tf can be estimated as half of the 24-hour truck factor (T), which is the percentage of truck traffic in 24 hours. T factors are based on the 2016 FTI database for cross streets and 2015 Turnpike Truck Factors for mainline segments and ramps.

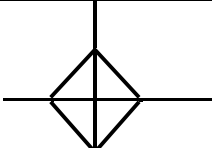
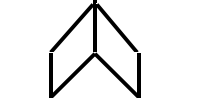
The traffic factors used for future design hour traffic volumes and traffic operational analysis were provided in **Table 2.1**. The future mainline No-Build DDHVs are provided in **Table 4.3**.

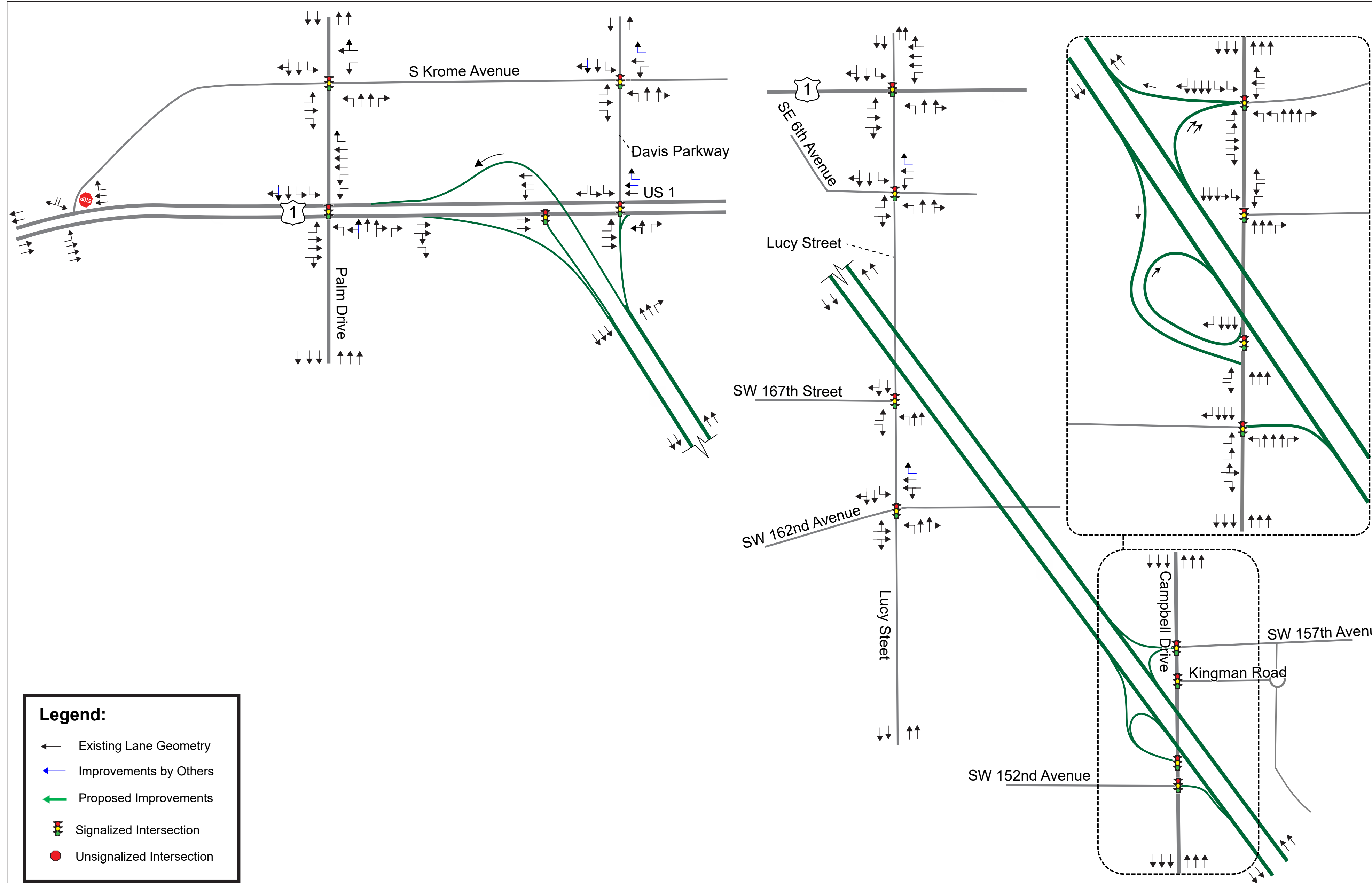
Figures 4.2 through **4.5** present the Opening Year 2025 and Design Year 2045, No-Build Design Hour Volumes for typical commuter design hours and heavy-inbound scenario.

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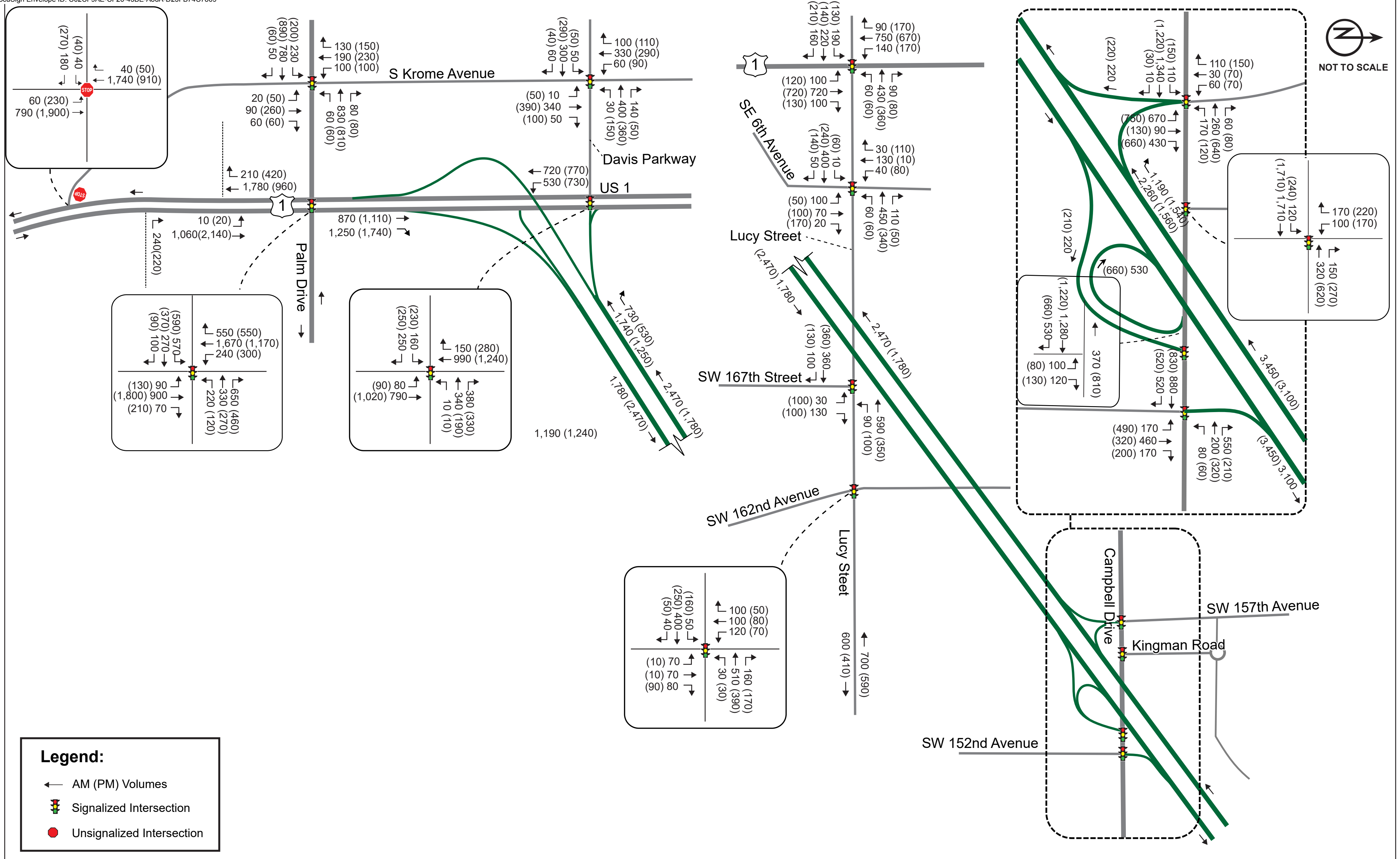
Table 4.3
No-Build DDHVs – Typical and Heavy-Inbound (HI) – Keys Scenario

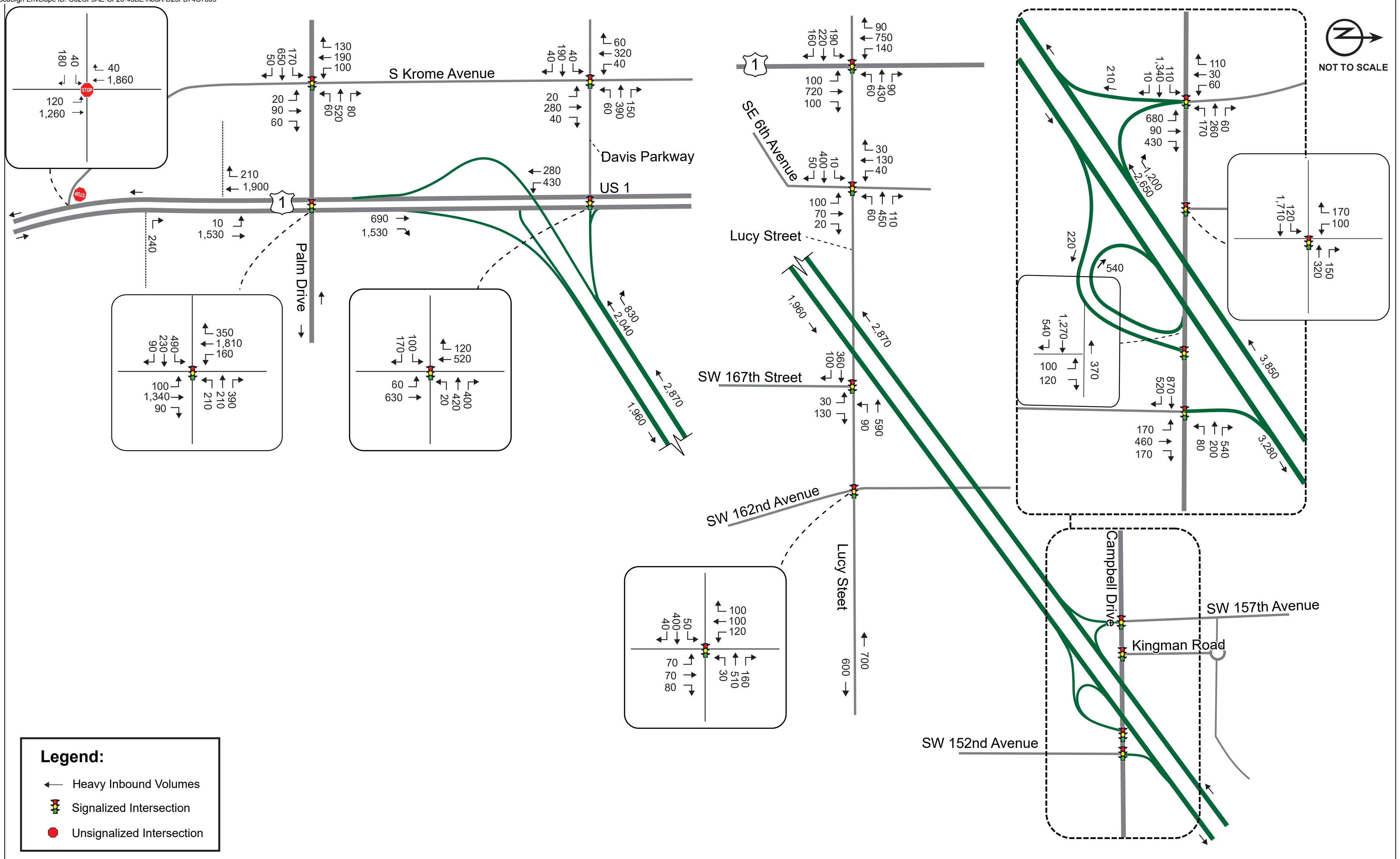
Mile Post-Interchange	2025						2045					
	AM		PM		HI		AM		PM		HI	
	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
2 – Campbell Drive 	3,450	3,100	3,100	3,450	3,850	3,280	4,740	4,160	4,160	4,740	5,290	4,410
	1,190	1,540	1,540	1,190	1,190	540	1,620	2,090	2,090	1,620	1,620	730
	210	220	220	210	210	220	480	510	510	480	480	730
	2,470	1,780	1,780	2,470	2,870	1,960	3,600	2,580	2,580	3,600	4,150	2,830
0 – US 1/Davis Parkway (To/From North)	730	530	530	730	830	430	1,070	770	770	1,070	1,230	920
0 – US 1/Palm Drive (To/From South) 	1,740	1,250	1,250	1,740	2,040	1,530	2,530	1,810	1,810	2,530	2,920	1,910

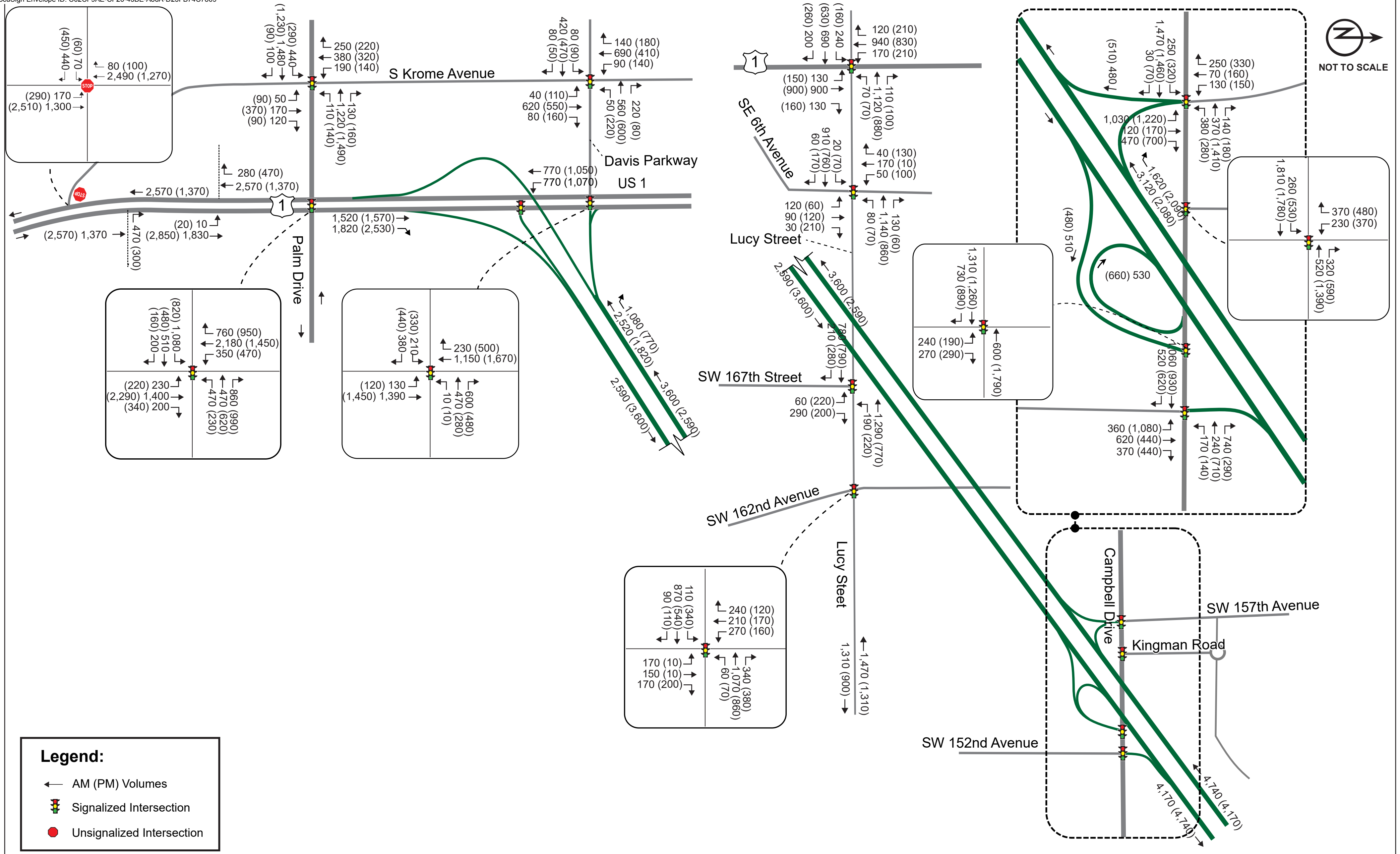


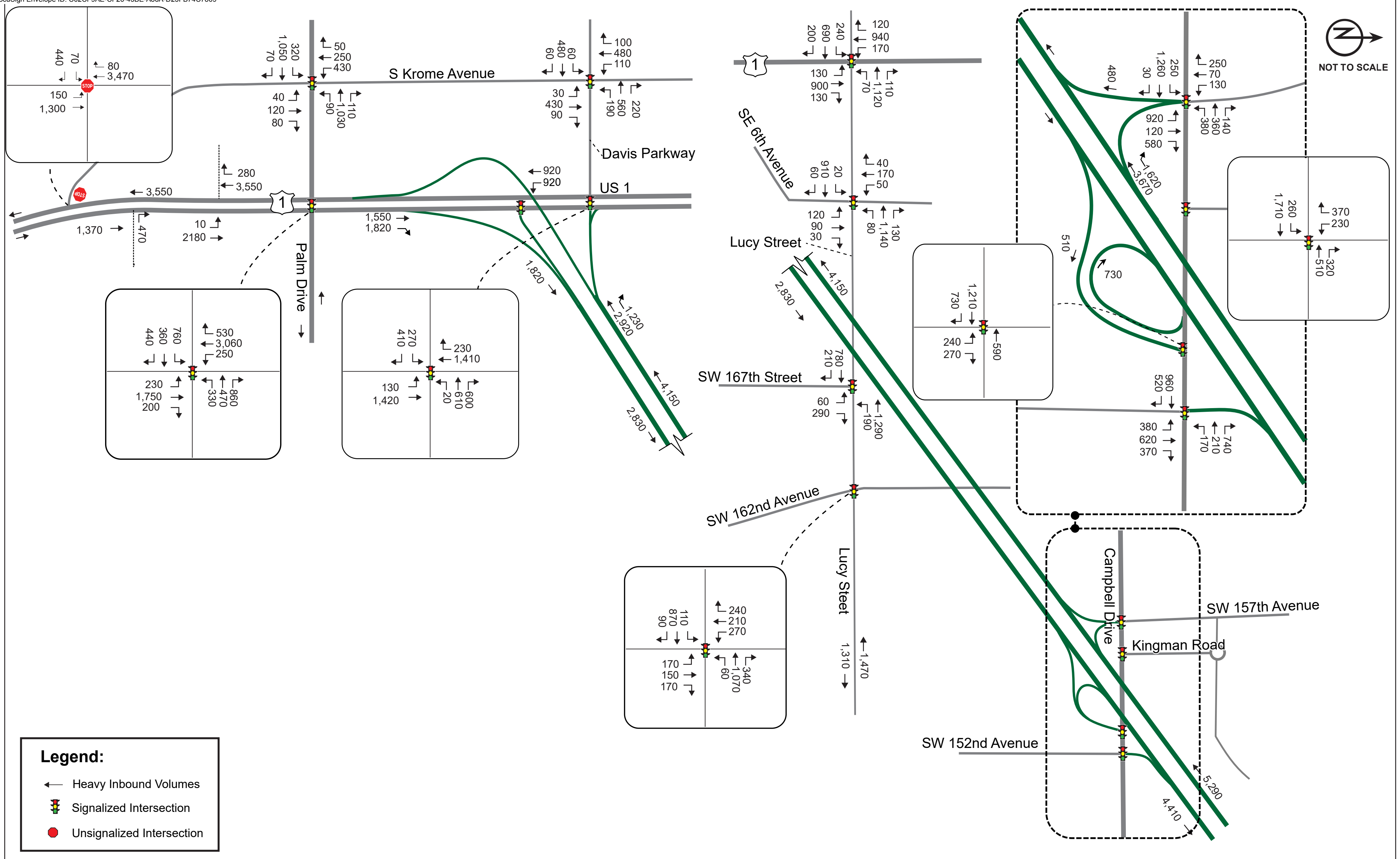
Legend:

- ← Existing Lane Geometry
- ← Improvements by Others
- ← Proposed Improvements
- 🚦 Signalized Intersection
- Unsignalized Intersection









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4.4 MAINLINE LANE REQUIREMENT AND CAPACITY ANALYSIS

The No-Build (i.e., without the new Lucy Street interchange and without modifications at US 1 interchange) Turnpike Extension mainline and ramp lane requirements within the study area for the years 2020 through 2045, using mainline LOS D and ramp (LOS E) maximum service volume (MSV) thresholds are shown in **Table 4.4**. This summary is based on the lane requirement capacity analysis shown in **Table 4.5**. The colors highlight the required directional number of lanes. This analysis is based on the DDHVs for both typical and heavy inbound scenarios.

Table 4.4
Lane Requirements by Year

Turnpike Extension Segment	Number of Lanes per Direction		
	Existing	Typical Scenario Lanes Needed (Year)	Heavy Inbound Scenario Lanes Needed (Year)
North of Campbell Drive Interchange	2	3 (2025)	3 (2022)
US 1 Interchange to South of Campbell Drive Interchange	2	3 (2042)	3 (2034)
Campbell Drive Interchange (MP 2)			
To/From north	2	2 (2037)	2 (2037)
To/From south	1	-	-
Campbell Drive Interchange (MP 0)			
US 1 To/From north	1	1	1
US 1 To/From south	1	2 (2028)	2 (2024)

The number of ramp roadway lanes required was determined based on LOS E capacity as shown in **Table 4.5**. The analysis summary in **Table 4.4** indicates a need to widen the south end of the Turnpike Extension between US 1 and Campbell Drive by 2042 under typical scenario and by 2034 when considering heavy inbound scenario. In addition, the southbound off-ramp to the south at US 1 will need to be widened by 2028 under typical scenario and by 2024 when considering heavy inbound scenario.

The capacity needs for the Campbell Drive were addressed during a PD&E study [FPN 423372-1] for the Turnpike Extension corridor from Campbell Drive (MP 2) north to the Government Center area (MP 12) which was completed in 2013. The proposed improvements were implemented and completed in 2019.

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Table 4.5
Mainline (LOS D MSV in vph) and Ramp Capacity (LOS E MSV in vph) Lane Requirements

Typical Scenario Mainline (LOS D MSV in vph) and Ramp Capacity (LOS E MSV in vph) Lane Requirements – Worst Case AM or PM Design Hour																											
Description		Year																									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
2 - Campbell Drive		2,940	3,040	3,140	3,250	3,350	3,450	3,510	3,560	3,620	3,670	3,730	3,780	3,840	3,890	3,950	4,000	4,070	4,150	4,220	4,300	4,370	4,440	4,520	4,590	4,670	4,740
		1,300	1,350	1,400	1,440	1,490	1,540	1,570	1,590	1,620	1,640	1,670	1,700	1,720	1,750	1,770	1,800	1,830	1,860	1,890	1,920	1,950	1,970	2,000	2,030	2,060	2,090
0 - US 1 to/from north		1,930	2,000	2,060	2,130	2,190	2,260	2,300	2,330	2,370	2,400	2,440	2,470	2,510	2,540	2,580	2,610	2,660	2,710	2,760	2,810	2,870	2,920	2,970	3,020	3,070	3,120
		190	190	200	210	210	220	240	270	290	310	340	360	380	400	430	450	460	460	470	470	480	490	490	500	500	510
0 - US 1 to/from south		2,110	2,180	2,250	2,330	2,400	2,470	2,530	2,580	2,640	2,690	2,750	2,810	2,860	2,920	2,970	3,030	3,090	3,140	3,200	3,260	3,320	3,370	3,430	3,490	3,540	3,600
		670	690	700	710	720	730	750	760	780	800	820	830	850	870	880	900	920	930	950	970	990	1,000	1,020	1,040	1,050	1,070
		1,430	1,500	1,560	1,620	1,680	1,740	1,780	1,820	1,860	1,900	1,940	1,970	2,010	2,050	2,090	2,130	2,170	2,210	2,250	2,290	2,330	2,370	2,410	2,450	2,490	2,530

Heavy Inbound Scenario Mainline (LOS D MSV in vph) and Ramp Capacity (LOS E MSV in vph) Lane Requirements																											
Description		Year																									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
2 - Campbell Drive		3,150	3,310	3,460	3,620	3,770	3,930	4,000	4,070	4,150	4,220	4,290	4,360	4,430	4,510	4,580	4,650	4,670	4,680	4,700	4,710	4,730	4,740	4,760	4,770	4,790	4,800
		1,300	1,350	1,400	1,440	1,490	1,540	1,570	1,590	1,620	1,640	1,670	1,700	1,720	1,750	1,770	1,800	1,830	1,850	1,880	1,900	1,930	1,960	1,980	2,010	2,030	2,060
0 - US 1 to/from north		2,150	2,260	2,380	2,500	2,620	2,740	2,790	2,840	2,900	2,950	3,000	3,050	3,100	3,160	3,210	3,260	3,300	3,340	3,380	3,420	3,470	3,510	3,550	3,590	3,630	3,670
		190	190	200	210	210	220	240	270	290	310	340	360	380	400	430	450	470	480	500	520	540	550	570	590	600	620
0 - US 1 to/from south		2,280	2,390	2,510	2,620	2,740	2,850	2,920	2,980	3,050	3,110	3,180	3,240	3,310	3,370	3,440	3,500	3,570	3,630	3,700	3,760	3,830	3,890	3,960	4,020	4,090	4,150
		720	750	770	790	820	840	860	880	900	920	940	960	980	1,000	1,020	1,040	1,060	1,080	1,100	1,120	1,140	1,150	1,170	1,190	1,230	
		1,550	1,650	1,740	1,830	1,920	2,010	2,060	2,100	2,150	2,190	2,240	2,280	2,330	2,370	2,420	2,460	2,510	2,550	2,600	2,640	2,690	2,740	2,780	2,830	2,870	2,920

Assumptions	
Total Trucks % (T _r)	3.00%
Peak Hour Factor (PHF)	0.95
Speed/Capacity Adjustment Factor	0.88
Intersection Density (ID)	0.20
Grade	0.00%
Terrain	Level
Lane width	12 ft
Right-shoulder Lateral Clearance (LC)	10 ft

Number of Mainline Lanes by LOS D Maximum Service Volume (MSV in vph)	
Number of Lanes	LOS D
2	3,420
3	5,220
4	6,840
5	8,550
6	10,260
FFS	70

Number of Ramp Lanes by Capacity (LOS E MSV in vph)	
Number of Lanes	Capacity (veh/hour)
1	1,840
2	3,680

Free-Flow Speed 31-50 mph

SECTION FOUR

Future Traffic Data

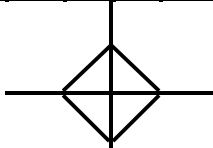








4.5 BUILD ALTERNATIVE – TRANSPORTATION NETWORK

The widening of the Turnpike is planned to include six lanes (three lanes in each direction) for the Build conditions. Future Build alternatives include a planned Turnpike Mainline widening, the modifications of US 1 interchange and the implementation of the new interchange at Lucy Street.

Future Build Traffic Forecast

Similar to No-Build traffic forecasting methodology, the future Build traffic forecasts were developed. Updates were made to the SERPM 7, which include socioeconomic data and networks, to produce the current FTE version of the model, which is called SERPM 7 FTE. The model was updated specifically for evaluating toll road and managed lane projects in southeast Florida. The Build Scenario Daily forecasts for 2025 and 2045 for the Turnpike Mainline and cross-streets are shown in **Tables 4.6** and **4.7**, respectively. The future Build DDHVs are calculated by applying the K and D factors to the AADTs. The future Build DDHVs are provided in **Table 4.8**.

Table 4.6
Build Forecasted Mainline and Ramp AADTs

Milepost - Description		2025	2045
		79,500	108,600
2 – Campbell Drive		27,300	36,000
		4,700	10,800
		56,900	83,400
1 - Lucy Street (SW 328 th Street)		10,800	22,600
		46,100	60,800
0 – US 1/Davis Parkway (To/From North)		8,800	12,800
0 – US 1/Palm Drive (To/From South)		16,400	21,100
0 – US 1 (New To/From South)		20,900	26,900

SECTION FOUR**Future Traffic Data**

Table 4.7
Build Cross-Street AADT Forecasts

Arterial Segment	2025	2045
Campbell Drive/SW 312th Street		
Campbell Drive – East of 152 nd Avenue	21,700	29,200
Campbell Drive – West of 152 nd Avenue to northbound ramps	24,400	25,000
Campbell Drive – Between northbound ramps and Kingman Road	25,500	26,200
Campbell Drive – Kingman Road to SW 157 th Avenue/southbound ramps	26,700	29,600
Campbell Drive v West of SW 157 th Avenue/southbound ramps	25,100	28,900
SW 152 nd Avenue – South of Campbell Drive	12,800	17,200
Kingman Road – North of Campbell Drive	8,600	9,800
SW 157 th Avenue – North of Campbell Drive	6,700	8,200
Lucy Street		
Lucy Street – West of US 1	14,000	30,300
Lucy Street – West of SE 6 th Avenue	14,600	32,400
Lucy Street – East of SE 6 th Avenue – West of Turnpike	16,300	34,900
Lucy Street – East of Turnpike – West of SW 162 nd Avenue	15,100	32,000
Lucy Street – East of SW 162 nd Avenue	27,300	27,300
SE 6 th Avenue – South of Lucy Street	11,900	12,400
SE 6 th Avenue – North of Lucy Street	9,200	9,200
SW 162 nd Avenue – South of Lucy Street	10,000	10,100
SW 162 nd Avenue – North of Lucy Street	8,300	8,300
US 1		
US 1 – North of Lucy Street	20,800	29,000
US 1 – South of Lucy Street	19,900	25,000
US 1 – North of Davis Parkway	24,400	36,300
US 1 – South of Davis to southbound US 1 – northbound Turnpike on-ramp	19,300	28,400
US 1 – South of southbound US 1 – northbound Turnpike on-ramp to southbound Palm Drive off-ramp	16,700	24,100
US 1 – Turnpike southbound off-ramp to Palm Drive	22,900	37,800
US 1 – South of Palm Drive	32,100	49,300
Davis Parkway – West of US 1	7,900	11,800
Palm Drive – East of US 1	15,700	26,600
Palm Drive – West of US 1	18,700	32,600

SECTION FOUR

Future Traffic Data

Table 4.8
Build DDHVs – Typical and Heavy-Inbound-Keys Scenario

Mile Post-Interchange		2025						2045					
		AM		PM		Heavy Inbound		AM		PM		Heavy Inbound	
		SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
2 – Campbell Drive		3,450	3,100	3,120	3,450	3,800	3,280	4,740	4,170	4,170	4,740	5,290	4,410
		1,050	1,410	1,410	1,000	1,070	1,470	1,240	1,850	1,850	1,240	1,240	1,800
		220	220	220	220	220	220	500	530	530	500	500	530
		2,620	1,910	1,930	2,670	2,950	2,030	4,000	2,850	2,850	4,000	4,550	3,140
1 – Lucy Street (SW 328 th Street)		670	620	620	670	590	560	1,000	850	850	1,000	1,000	990
		1,950	1,290	1,310	2,000	2,360	1,470	3,000	2,000	2,000	3,000	3,550	2,150
0 – US 1/Davis Parkway (To/From North)		490	240	340	480	550	140	860	410	590	710	940	560
0 – US 1/Palm Drive (To/From South)		640	520	410	580	830	660	860	790	620	1,240	1,100	790
0 – US 1 (New To/From South)		820	530	560	940	980	670	1,280	800	790	1,050	1,510	800

4.6 DEVELOPMENT AND SCREENING OF BUILD ALTERNATIVES

In addition to the mainline widening evaluation, there were interchange improvements being explored at Campbell Drive and US 1, and a potential partial interchange at Lucy Street providing access to/from north. The alternatives at these interchanges are described below:

4.6.1 Campbell Drive Interchange Alternatives

Ultimate improvement needs at the Campbell Drive Interchange were evaluated and determined during a PD&E study [FPN 423372-1] for the Turnpike Extension corridor from Campbell Drive (MP 2) north to the Government Center area (MP 12) which was completed in 2013. An Interchange Modification Report (IMR) to support the access modification proposed at the Turnpike Extension and Campbell Drive interchange was completed in 2014, followed by a Design Traffic Report (DTR), which was completed in 2015. There were preliminary transportation systems management and operations (TSM&O) improvements which were explored to supplement the ultimate needs recommended in previous studies. The TSM&O solutions explored included turbo lanes and several turn lane reconfigurations. Detailed analysis of the TSM&O alternatives at Campbell Drive Interchange showed added benefits to the ultimate improvements already in place.

4.6.2 Lucy Street Interchange Alternatives

A proposed Lucy Street Interchange was requested as a developer funded project by the developer due to the potential changes in land use development on the parcels they owned. An interchange feasibility study for the potential Turnpike Extension interchange at Lucy Street (SW 328th Street) was conducted in 2005. This ongoing PD&E evaluated the interchange feasibility consistent with current land use amendments within the study area. Similar to the previous feasibility study, a partial interchange providing access to/from north has been proposed and analyses is being documented in this SIJR.

4.6.3 US 1 Interchange Alternatives

Preliminary screening and Synchro analyses were performed for the 11 US 1/Palm Drive Interchange configuration alternatives. The alternatives evaluated are included in the **Appendix H**. The preliminary analyses included several at grade and grade separated concepts. The lanes needed by an at grade alternative were not feasible and required more right-of-way acquisition than viable. Based on the preliminary analyses results, three grade separated alternatives were advanced for more development and detailed analysis in Synchro, HCS, and VISSIM. The three alternatives analyzed were Alternatives A, B, and C. The results showed that Alternative C did not provide more operational benefits compared to Alternatives A or B despite its complex design requirements. Therefore, Alternative C was dropped from further consideration.

SECTION FOUR

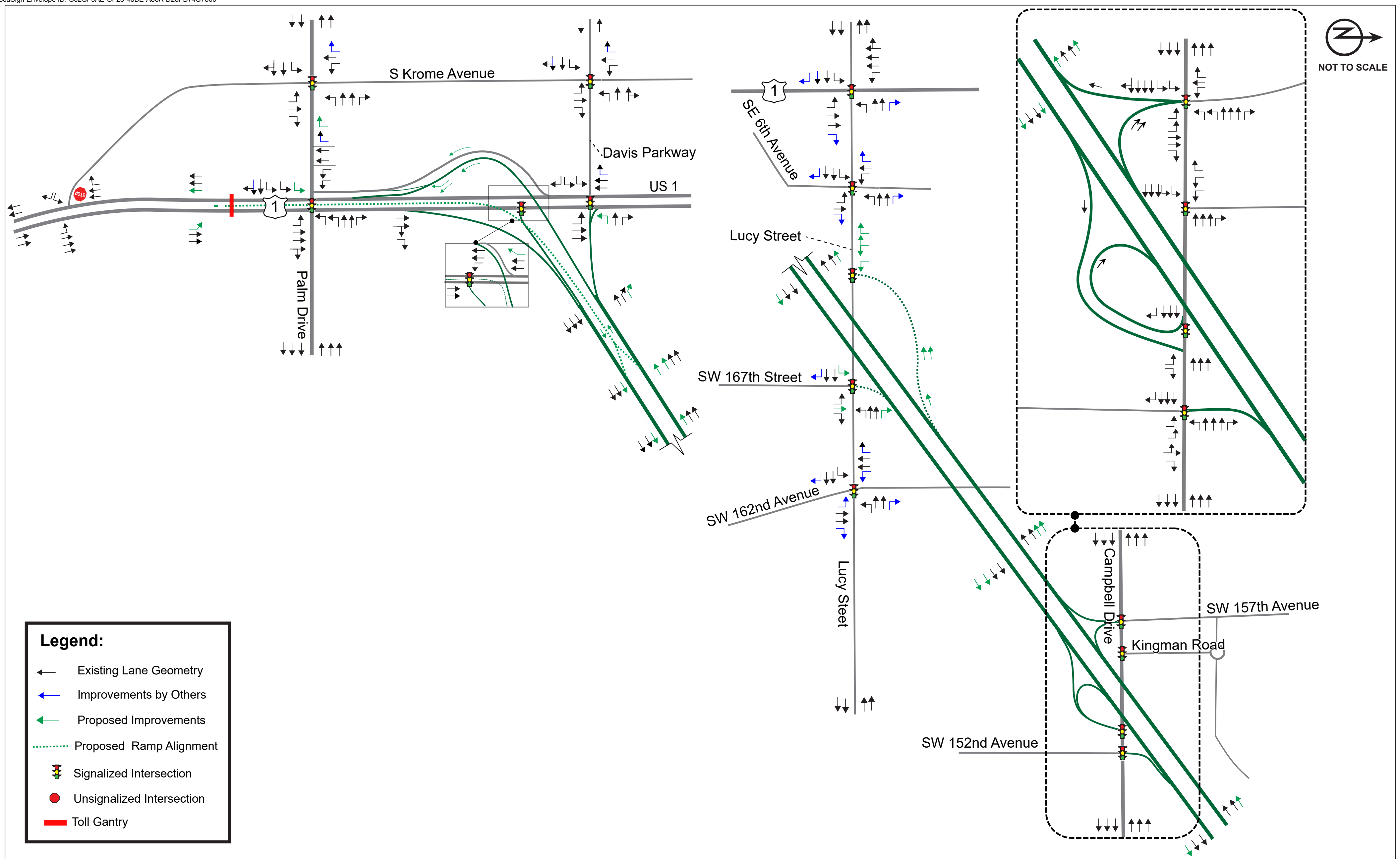
Future Traffic Data

Due to alternatives complexity and in order to capture operational performance at both the intersection and the link levels, VISSIM models were developed in addition to Synchro and HCS analysis. For consistency, detailed result discussions are provided for VISSIM microsimulation analysis. HCS and Synchro operations analysis results are included in **Appendix I**. The following alternatives, including the No-Build Scenario, were advanced for further consideration and traffic operational analysis:

- **No-Build Scenario:** This alternative assumes existing conditions and all committed improvements.
- **Alternative A:** Turnpike Extension new US 1 southbound off and northbound on ramps over US 1 and Palm Drive intersection. These new ramps provide unconstrained travel to/from US 1 south of Palm Drive intersection for the traffic whose destinations are not within Florida City.
- **Alternative B:** This alternative includes the Turnpike Extension new US 1 southbound off-ramps and northbound on-ramps discussed in **Alternative A** with an additional diversion for the US 1 southbound right-turn traffic to the westbound Palm Drive. A single-lane westbound diversion is provided just south of US 1/West Davis Parkway intersection, looping around west of the existing southbound off-ramp. The provided diversion becomes a two-lane segment after the loop, to provide a connection for the southbound off-ramp traffic to westbound Palm Drive.

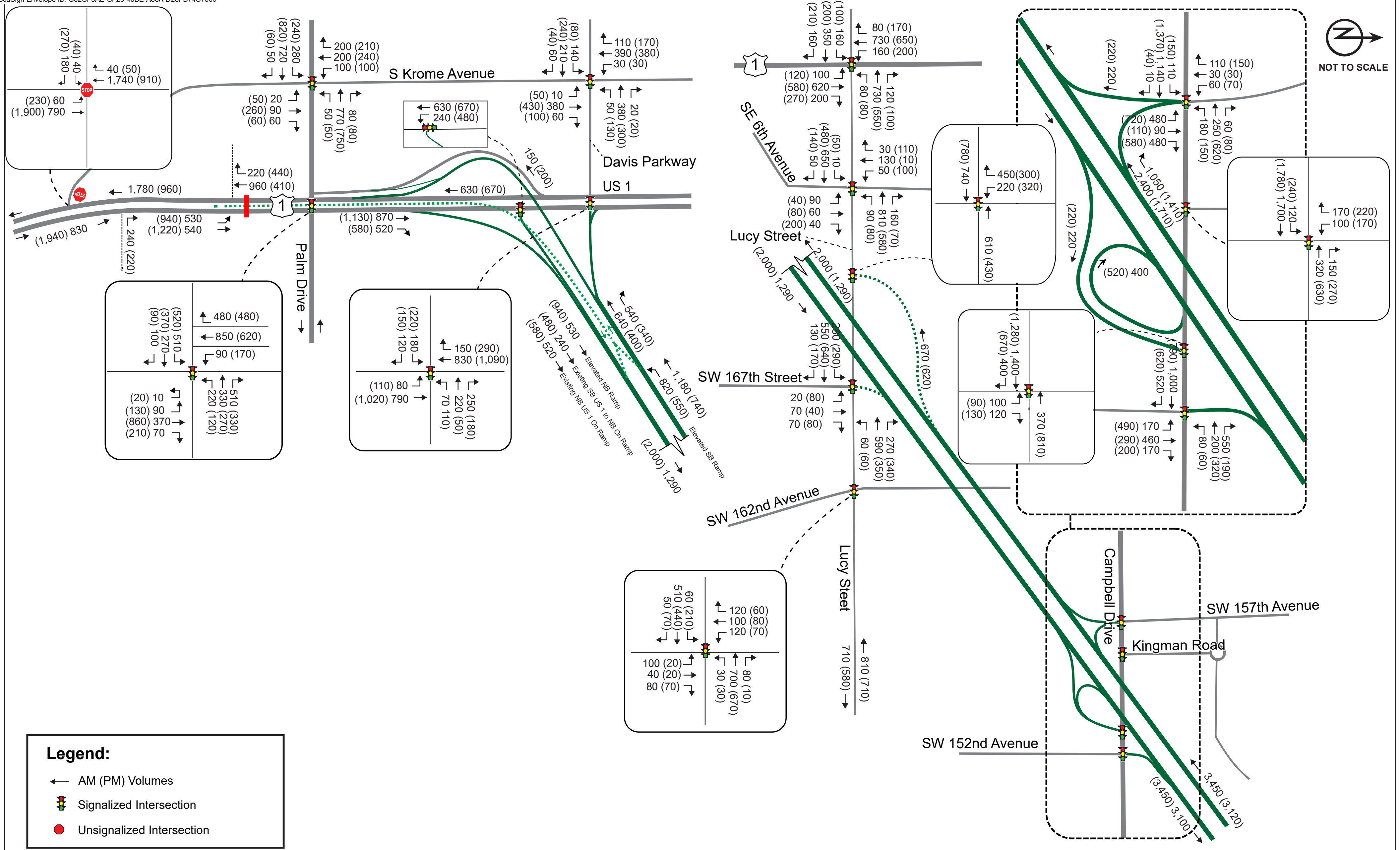
Alternative B scored equal to or better in most of the categories and provided better operational performance than Alternative A. Therefore, Alternative B was recommended as the Preferred Interchange Alternative. ***Alternative B is being considered as the Build alternative for this SIJR.***

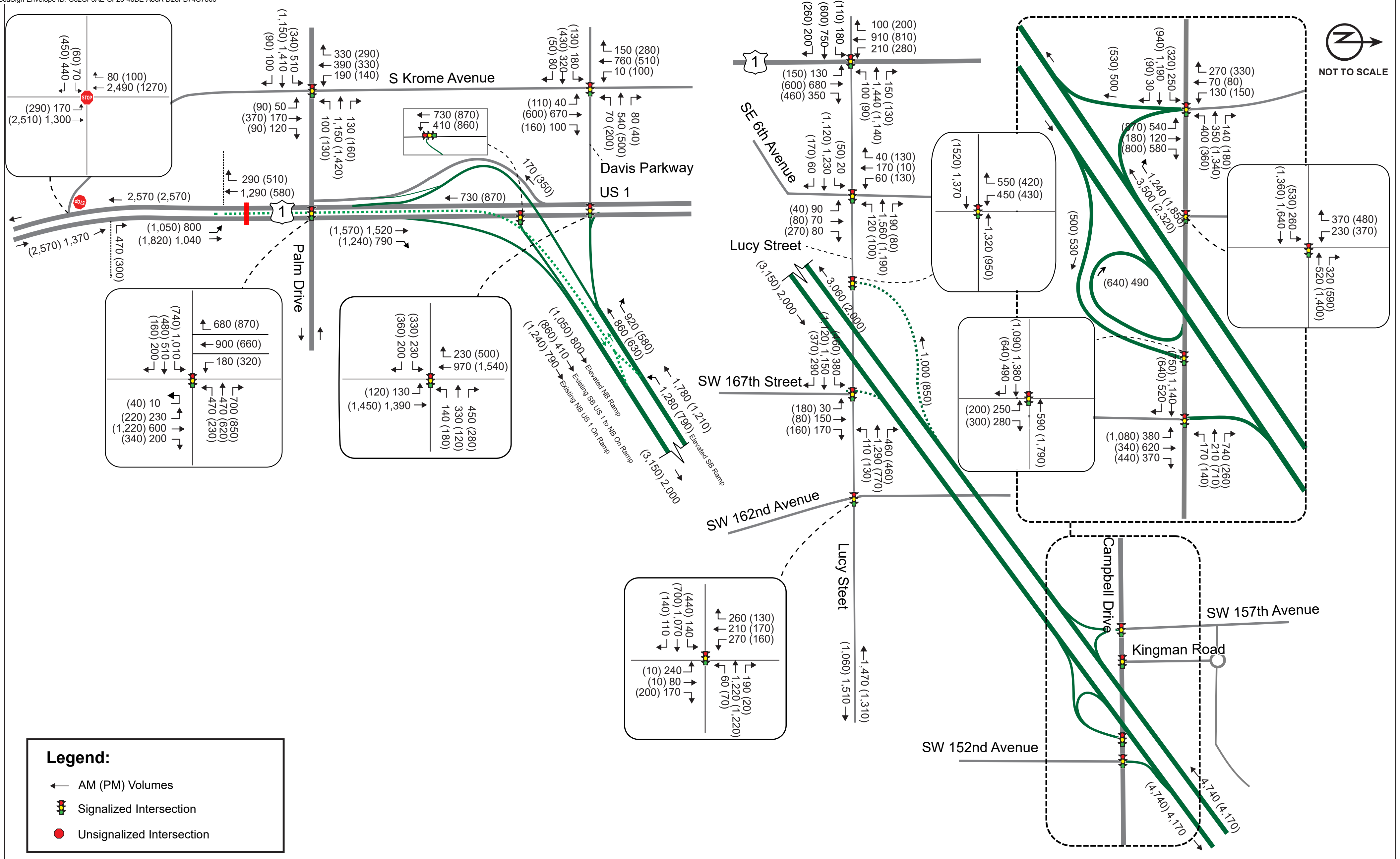
Figure 4.6 shows the Roadway and Intersection Lane Configuration for the Build alternative. The 2025 and 2045 design hour traffic volumes for the Build alternative are shown in **Figures 4.7** and **4.9**, respectively. The 2025 and 2045 Heavy Inbound traffic volumes for the Build alternative are shown in **Figures 4.8** and **4.10**, respectively.

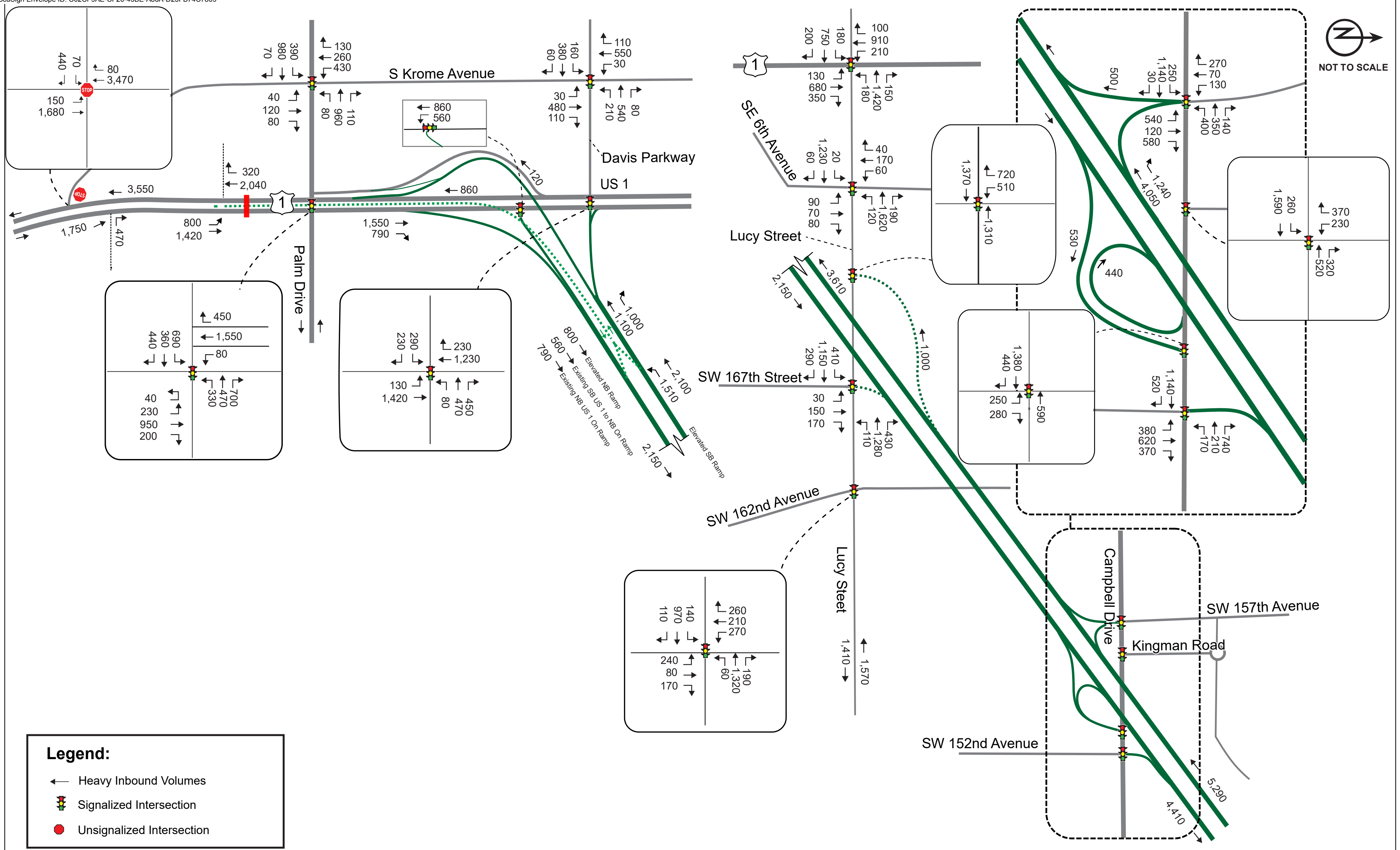


Legend:

- ← Existing Lane Geometry
- ← Improvements by Others
- ← Proposed Improvements
- ⋯ Proposed Ramp Alignment
- 🚦 Signalized Intersection
- Unsignalized Intersection
- ▬ Toll Gantry







5.1 NO-BUILD ALTERNATIVE – TRAFFIC OPERATIONAL ANALYSIS

The future year No-Build Alternative network includes all locally funded and committed projects within the study area, and the improvements proposed in this project.

5.1.1 2025 and 2045 No-Build – Freeway Analysis

The Opening and Design Years (2025 and 2045) mainline/basic and ramp merge/diverge summarized analysis results are provided in **Appendix I**. Documentation of the 2025 and 2045 No-Build Alternative traffic freeway operational analysis is provided in **Appendix J**.

5.1.2 2025 and 2045 No-Build – Intersection Analysis

Intersection analysis for ramp-terminals and adjacent intersections was performed in a similar manner as for the existing conditions. The No-Build Alternative includes all locally funded and committed lane geometries. **Figure 4.1**, previously presented, presents the No-Build Alternative Lane Configuration. Signal timing plans were optimized to reflect routine maintenance operations. The intersection analysis results, for the Opening and Design Years (2025 and 2045) No-Build conditions are summarized and provided in **Appendix I**. **Appendix J** provides the intersection analysis worksheets.

5.2 BUILD ALTERNATIVE – TRAFFIC OPERATIONAL ANALYSIS

In addition to the mainline widening evaluation, there are interchange improvements being explored at US 1 and a potential new partial interchange at Lucy Street providing access to/from north. The alternatives at these interchanges were described in **Section 4.7**.

5.2.1 2025 and 2045 Build Alternative – Freeway Analysis

The Opening and Design Years (2025 and 2045) mainline/basic, and ramp merge/diverge analysis results are summarized and provided in **Appendix K**. Documentation of the 2025 and 2045 Build Alternative traffic freeway operational analysis is provided in **Appendix L**.

5.2.2 2025 and 2045 – Intersection Analysis

Appendix M provides summarized analysis results for the signalized intersection analyses within the project AOI. Signal timing plans were optimized for all intersections. **Appendix L** presents the intersection analysis worksheets.

5.3 VISSIM MICROSIMULATION EVALUATION

VISSIM driving behavior parameters used to calibrate the existing conditions model were carried over to the future year analysis. The driving behavior parameters adjusted for the purposes of evaluating the No-Build and Preferred Build conditions are documented in the calibration report provided in **Appendix F**. This section provides a summary of the No-Build and Build (Preferred Alternative or Alternative B) analyses.

The overall analysis of the Preferred Alternative in comparison to No-Build conditions revealed improvements for the network, at the US 1 interchange ramp terminals and surrounding intersections for both AM and PM peak hours. During the microsimulation analysis, it was observed that future typical and heavy inbound scenarios are quite similar. Therefore, in this section only typical commuter design hours results are presented.

5.3.1 2025 No-Build and Build Alternatives – Freeway Analysis

The No-Build mainline/basic, and ramp merge/diverge VISSIM analysis results, for Opening Year 2025 are summarized in **Figures 5.1** and **5.2** for the northbound and southbound directions. The Opening Year 2025 Build analysis results are depicted in **Figures 5.3** and **5.4** for the northbound and southbound directions. The analysis results in **Figures 5.1** through **5.4** indicate that:

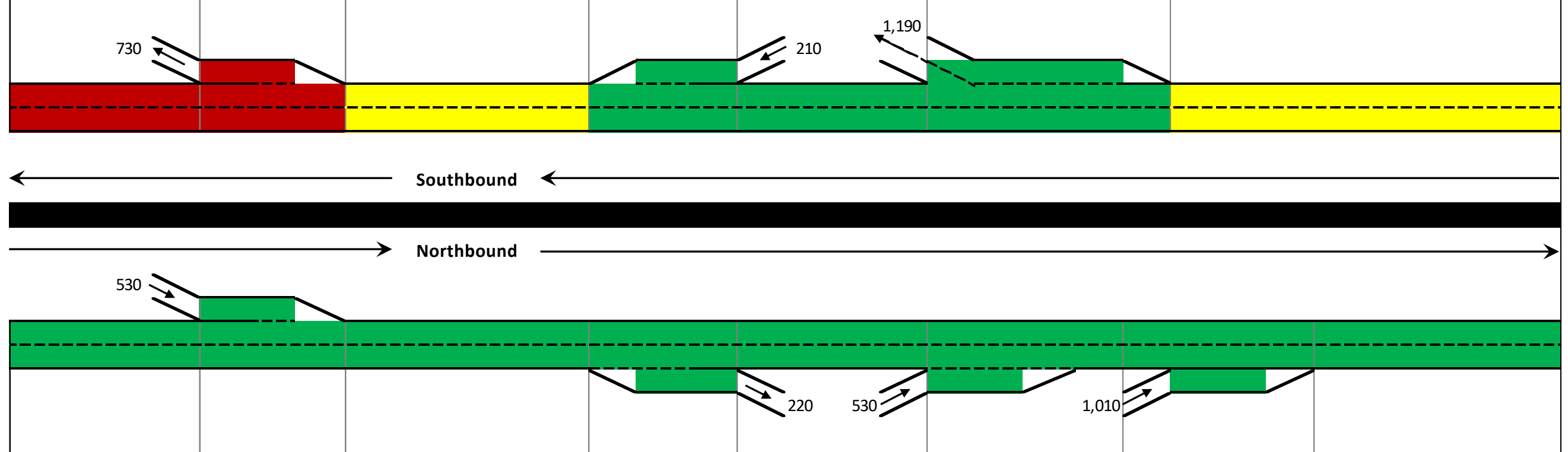
- Under No-Build conditions all mainline and ramp segments are projected to operate at LOS D or better except the segment within the area of influence of the southbound off-ramp at US 1 interchange are expected to operate at LOS F in the AM design hour. The southbound segments leading to the US 1 off-ramp operate at lower speeds in the AM design hour due to the bottleneck conditions at the US 1/Palm Drive intersection.
- For the Build conditions, the results show that all mainline and ramp segments are projected to operate at LOS C or better in both AM and PM design hours.

SECTION FIVE

Future Traffic Conditions

Figure 5.1
2025 AM No-Build Design Hour VISSIM Freeway Performance Results

Sgment	7	6	5	4	3	2	1
Type	Off Ramp to Palm Drive	Diverge to Davis Parkway	Basic	Merge from Campbell Drive	Basic	Diverge to Campbell Drive	Basic
Input Demand (vph)	1,740	2,470	2,470	2,470	2,260	3,450	3,450
Model (vph)	1,505	2,188	2,300	2,323	2,146	3,286	3,294
Processed Demand	86%	89%	93%	94%	95%	95%	95%
Speed (mph)	11	16	44	62	66	65	65
Density (pcpmpl)	71	48	27	13	17	17	26
Estimated LOS	F	F	D	B	B	B	D



Sgment	1	2	3	4	5	6	7	8
Type	On Ramp from Palm Drive	Merge from Davis Parkway	Basic	Diverge to Campbell Drive	Basic	Merge EB Campbell Drive	Merge from WB Campbell Drive	Basic
Input Demand (vph)	1,250	1,780	1,780	1,780	1,560	2,090	3,100	3,100
Model (vph)	1,181	1,671	1,671	1,658	1,456	1,893	2,882	2,881
Processed Demand	94%	94%	94%	93%	93%	91%	93%	93%
Speed (mph)	59	64	65	57	66	65	61	64
Density (pcpmpl)	10	14	13	15	11	15	24	23
Estimated LOS	A	B	B	B	B	B	C	C

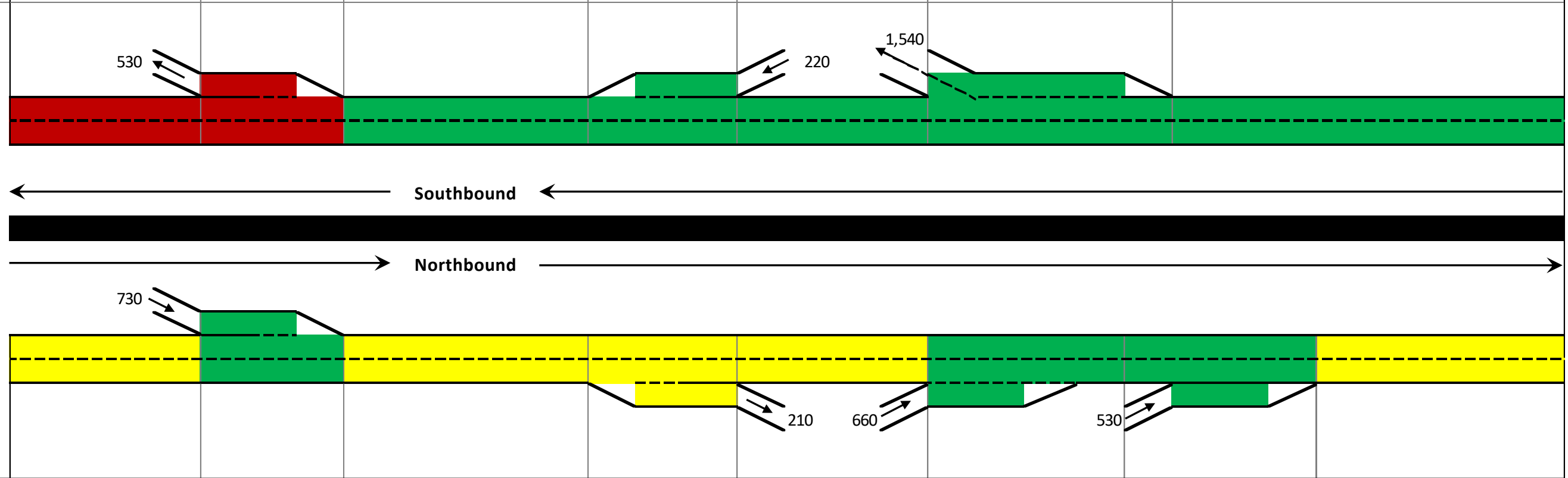


SECTION FIVE

Future Traffic Conditions

Figure 5.2
2025 PM No-Build Design Hour VISSIM Freeway Performance Results

Sgment	7	6	5	4	3	2	1
Type	Off Ramp to Palm Drive	Diverge to Davis Parkway	Basic	Merge from Campbell Drive	Basic	Diverge to Campbell Drive	Basic
Input Demand (vph)	1,250	1,780	1,780	1,780	1,560	3,100	3,100
Model (vph)	1,170	1,697	1,733	1,740	1,539	3,095	3,098
Processed Demand	94%	95%	97%	98%	99%	100%	100%
Speed (mph)	10	18	47	64	66	65	65
Density (pcpmpl)	99	63	26	9	12	16	25
Estimated LOS	F	F	C	A	B	B	C



Sgment	1	2	3	4	5	6	7	8
Type	On Ramp from Palm Drive	Merge from Davis Parkway	Basic	Diverge to Campbell Drive	Basic	Merge EB Campbell Drive	Merge from WB Campbell Drive	Basic
Input Demand (vph)	1,740	2,470	2,470	2,470	2,260	2,920	3,450	3,450
Model (vph)	1,725	2,442	2,442	2,429	2,235	2,891	3,418	3,418
Processed Demand	99%	99%	99%	98%	99%	99%	99%	99%
Speed (mph)	58	61	64	57	65	64	60	63
Density (pcpmpl)	30	21	33	29	33	22	21	32
Estimated LOS	D	C	D	D	D	C	C	D

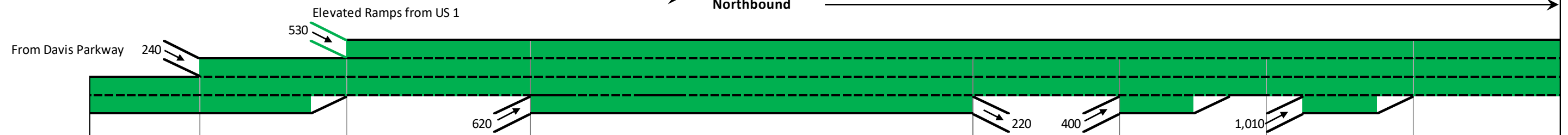
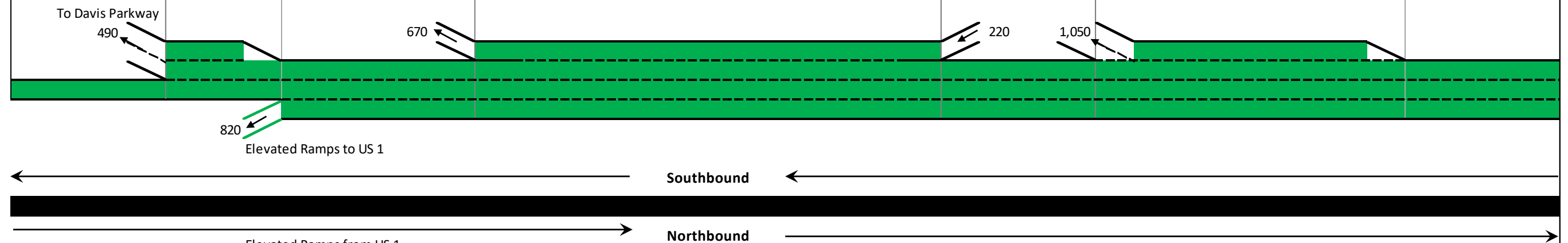
■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Figure 5.3
2025 AM Build Design Hour VISSIM Freeway Performance Results

Sgment	7	6	5	4	3	2	1
Type	Off Ramp to Palm Drive	Diverge to Davis Parkway	Basic	Weave Between SB On from Campbell Drive and SB Off to Lucy Street	Basic	Diverge to Campbell Drive	Basic
Input Demand (vph)	640	1,130	2,000	2,620	2,400	3,450	3,450
Model (vph)	634	1,136	1,948	2,619	2,402	3,432	3,440
Processed Demand	99%	100%	97%	100%	100%	99%	100%
Speed (mph)	55	65	66	66	66	66	66
Density (pcpmpl)	12	10	10	12	10	13	17
Estimated LOS	B	A	A	B	A	B	B



Sgment	1	2	3	4	5	6	7	8
Type	On Ramp from Palm Drive	Merge form Palm Drive	Basic	Weave Between NB On from Lucy Street and NB Off to Campbell Drive	Basic	Merge from EB Campbell Drive	Merge from WB Campbell Drive	Basic
Input Demand (vph)	520	760	1,290	1,910	1,690	2,090	3,100	3,100
Model (vph)	503	730	1,253	1,861	1,639	2,007	3,019	3,006
Processed Demand	97%	96%	97%	97%	97%	96%	97%	97%
Speed (mph)	50	62	67	66	67	66	64	66
Density (pcpmpl)	5	6	10	14	13	16	24	23
Estimated LOS	A	A	A	B	B	B	C	C

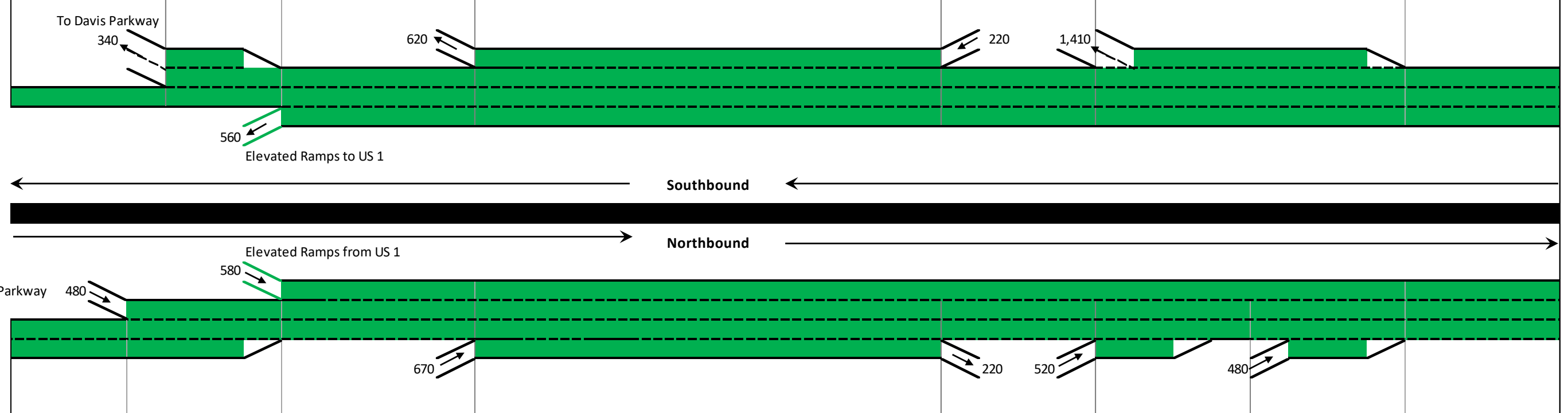
■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Figure 5.4
2025 PM Build Design Hour VISSIM Freeway Performance Results

Sgment	7	6	5	4	3	2	1
Type	Off Ramp to Palm Drive	Diverge to Davis Parkway	Basic	Weave Between SB On from Campbell Drive and SB Off to Lucy Street	Basic	Diverge to Campbell Drive	Basic
Input Demand (vph)	410	750	1,310	1,930	1,710	3,120	3,120
Model (vph)	407	758	1,312	1,926	1,713	3,113	3,116
Processed Demand	99%	100%	100%	100%	100%	100%	100%
Speed (mph)	55	65	66	66	66	66	66
Density (pcpmpl)	12	10	10	12	10	13	17
Estimated LOS	B	A	A	B	A	B	B



Sgment	1	2	3	4	5	6	7	8
Type	On Ramp from Palm Drive	Merge form Palm Drive	Basic	Weave Between NB On from Lucy Street and NB Off to Campbell Drive	Basic	Merge from EB Campbell Drive	Merge from WB Campbell Drive	Basic
Input Demand (vph)	580	1,060	2,000	2,670	2,450	2,970	3,450	3,450
Model (vph)	557	1,015	1,937	2,569	2,343	2,943	3,384	3,360
Processed Demand	96%	96%	97%	96%	96%	99%	98%	97%
Speed (mph)	50	60	66	66	66	65	65	66
Density (pcpmpl)	11	6	10	10	12	12	13	18
Estimated LOS	B	A	A	A	B	B	B	B

LOS = A-C / Uncongested
 LOS = D / Light Congestion
 LOS = E / Moderate Congestion
 LOS = F / Heavily Congested

5.3.2 2045 No-Build and Build Alternatives – Freeway Analysis

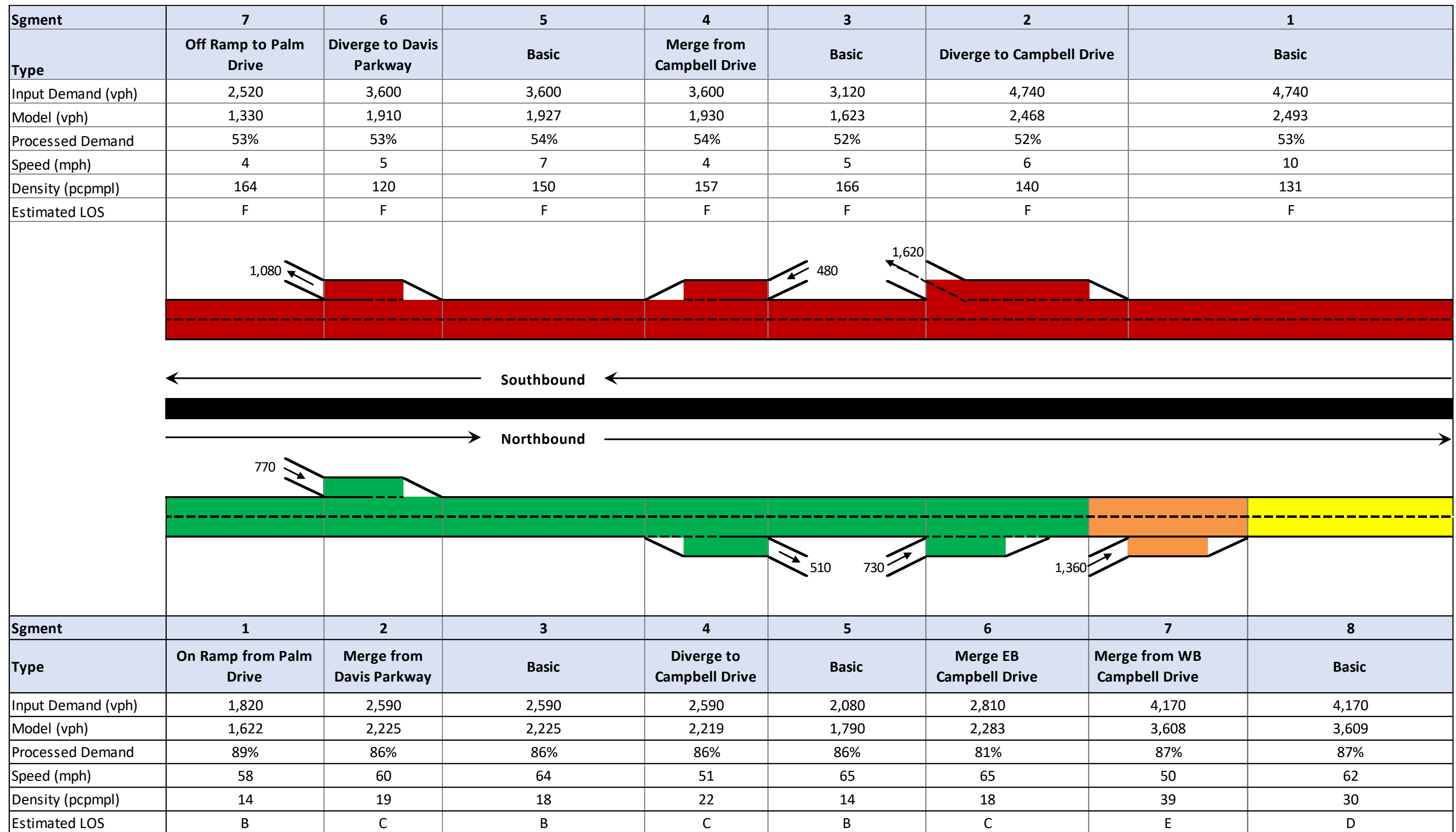
The 2045 Design Year No-Build mainline/basic and ramp merge/diverge VISSIM analysis results are summarized in **Figures 5.5** and **5.6** for the northbound and southbound directions. **Figures 5.7** and **5.8** provide the summarized Design Year 2045 Build analysis results for the northbound and southbound directions. The analysis results indicate the following:

- For the No-Build conditions the southbound mainline segments are projected to operate at LOS F in both the AM and PM design hours caused by the constraining conditions at the US 1/Palm Drive intersection. The northbound mainline and ramp segments operate at LOS D or better in both AM and PM design hours, except the merge segment for the northbound on-ramp from eastbound Campbell Drive operating at LOS E in the PM design hour. In both the AM and PM design hours, all northbound segments show lower processed demands due to constraining conditions at the US 1/Palm Drive intersection inhibiting full demand from reaching the mainline.
- Under Build conditions, the results in **Figures 5.7** and **5.8** show that there are performance improvements, and all southbound segments are projected to operate at LOS C or better in both the AM and PM design hours. The northbound segments are expected to operate at LOS C or better in both the AM and PM design hours, except the merge segment for the northbound on-ramp from westbound Campbell Drive operating at LOS D in the PM design hour. Also, under the Build scenario, there are improvements in operating speeds and the proportions of processed demands are higher compared to No-Build conditions.

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Future Traffic Conditions

Figure 5.5
2045 AM No-Build Design Hour VISSIM Freeway Performance Results



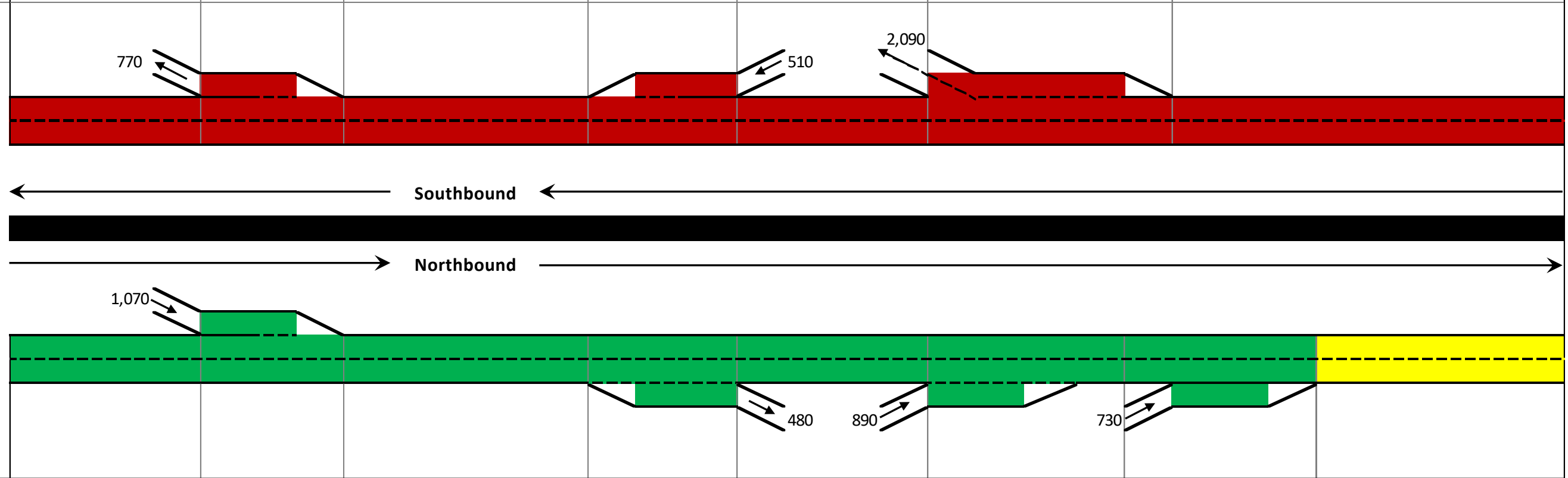
■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

**Figure 5.6
2045 PM No-Build Design Hour VISSIM Freeway Performance Results**

Sgment	7	6	5	4	3	2	1
Type	Off Ramp to Palm Drive	Diverge to Davis Parkway	Basic	Merge from Campbell Drive	Basic	Diverge to Campbell Drive	Basic
Input Demand (vph)	1,820	2,590	2,590	2,590	2,080	4,170	4,170
Model (vph)	1,127	1,565	1,587	1,605	1,361	2,713	2,859
Processed Demand	62%	60%	61%	62%	65%	65%	69%
Speed (mph)	3	4	5	3	4	7	13
Density (pcpmpl)	176	126	166	170	179	133	114
Estimated LOS	F	F	F	F	F	F	F



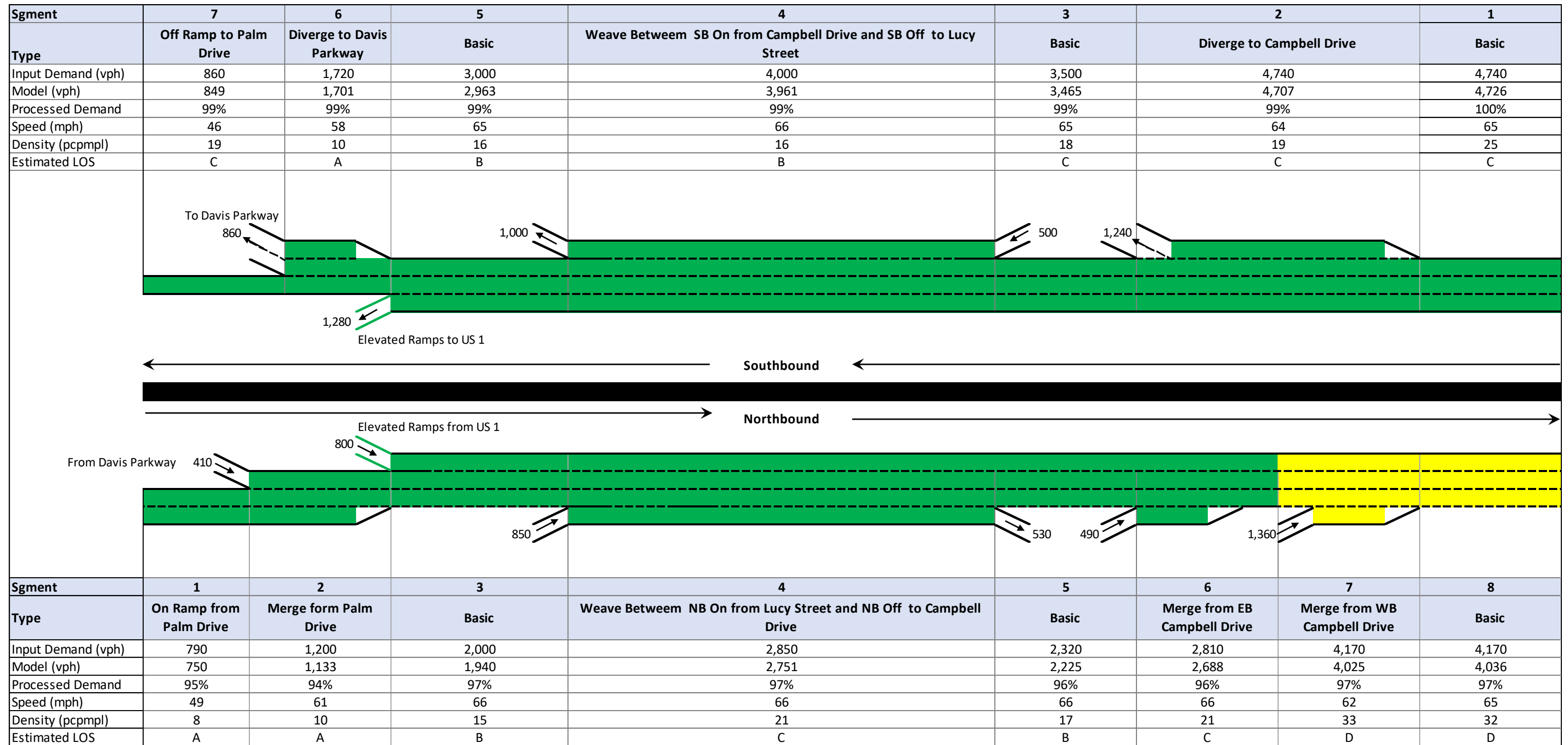
Sgment	1	2	3	4	5	6	7	8
Type	On Ramp from Palm Drive	Merge from Davis Parkway	Basic	Diverge to Campbell Drive	Basic	Merge EB Campbell Drive	Merge from WB Campbell Drive	Basic
Input Demand (vph)	2,530	3,120	3,120	890	4,010	730	4,740	4,740
Model (vph)	1,996	2,374	2,374	581	2,961	572	3,532	3,555
Processed Demand	79%	76%	76%	65%	74%	78%	75%	75%
Speed (mph)	58	34	65	39	64	41	54	62
Density (pcpmpl)	18	14	19	15	16	14	23	29
Estimated LOS	B	B	C	B	B	B	C	D

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

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Figure 5.7
2045 AM Build Design Hour VISSIM Freeway Performance Results

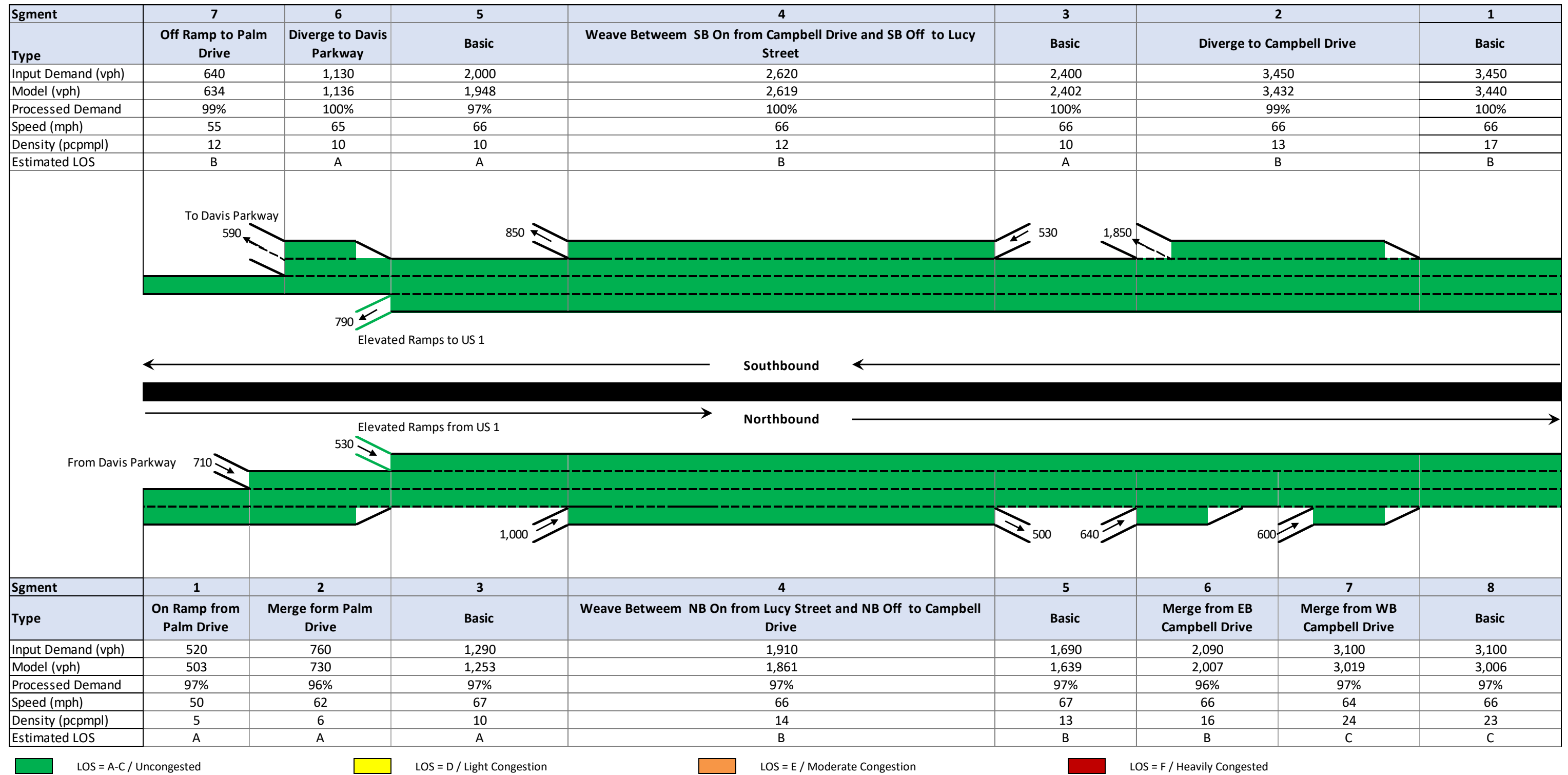


█ LOS = A-C / Uncongested
 █ LOS = D / Light Congestion
 █ LOS = E / Moderate Congestion
 █ LOS = F / Heavily Congested

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Figure 5.8
2045 PM Build Design Hour VISSIM Freeway Performance Results



5.3.3 No-Build and Build Alternatives – Intersection Analysis

Tables 5.1 and **5.2** provide a summarized comparison of the intersection analysis results for the 2025 and 2045 No-Build and Build conditions, respectively. The 2025 No-Build VISSIM Arterial Segment Performance Results are summarized in **Table 5.3**. The 2025 No-Build **Tables 5.4** and **5.5** provide 2025 No-Build Opening Year detailed VISSIM intersection analysis results around the US 1 interchange (Florida City) study area and the northern study areas along Lucy Street and Campbell Drive. The 2025 Build VISSIM Arterial Segment Performance Results are summarized in **Table 5.6**. The Build Opening Year 2025 VISSIM detailed intersection results for the intersections, presented in the same order by location, are provided in **Tables 5.7** and **5.8**. The 2045 No-Build VISSIM Arterial Segment Performance Results are summarized in **Table 5.9**. Provided in the same format, **Tables 5.10** and **5.11** summarize the No-Build Design Year 2045 VISSIM results for the intersections around Florida City within the study area. The 2045 Build VISSIM Arterial Segment Performance Results are summarized in **Table 5.12** for the intersections along Lucy Street and Campbell Drive. **Tables 5.13** and **5.14** provide Design Year 2045 VISSIM intersection summary results for the Build scenario. The intersection analysis results indicate the following:

Opening Year 2025 – No-Build Conditions

- Turnpike ramp terminal intersection at Davis Parkway is projected to operate at LOS C during both AM and PM peak hours. The intersection at US 1 and Palm Drive will be operating at LOS D and E during the AM and PM peak hours, respectively. The northbound and southbound approaches at the US 1/Palm Drive intersection are projected to experience constraining conditions during the PM design hours. The rest of the intersections around US 1 study area are projected to operate at acceptable levels of service.
- The southbound ramp terminal at Campbell Drive is operating at LOS D in the AM and LOS C in the PM, while the northbound ramp terminal at Campbell Drive is operating at LOS B in both the AM and PM design hours. All other intersections along Campbell Drive and Lucy Street are projected to operate at LOS D or better.

Design Year 2045 – No-Build Conditions

- Turnpike ramp terminal intersection at Davis Parkway is expected to operate at LOS C and F during the AM and PM peak hours, respectively. The intersection at US 1 and Palm Drive will operate at LOS F during both the AM and PM peak hours. Conditions at Krome Avenue/Davis Parkway and Krome Avenue/Palm Drive intersections are projected deteriorate, resulting in failing operations of LOS F in both the AM and PM design hours. The intersection at US 1 and Krome Avenue will operate at LOS A and LOS D during the AM and PM design hours, respectively.
- The southbound ramp terminal at Campbell Drive is projected to operate at LOS F in both the AM and PM design hours, while the northbound ramp terminal at Campbell Drive is operating at LOS B and LOS D during the AM and PM design hours, respectively. The Kingman Road/Campbell Drive intersection is projected to operate at LOS D and LOS F during the AM and PM design hours, respectively. The SW 152nd Avenue/Campbell Drive intersection will operate at LOS C and LOS F during the AM and PM design hours, respectively. The US 1/Lucy Street intersection will operate at LOS D

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and LOS F during the AM and PM design hours, respectively. The SW 6th Avenue/Lucy Street intersection will operate at LOS D during the AM design hour and LOS F during the PM design hour. The SW 167th Avenue /Lucy Street intersection will operate at LOS C during the AM design hour and LOS F during the PM design hour. The intersection at SW 162nd Avenue/Lucy Street is expected to operate at LOS F both in the AM and PM design hours.

Opening Year 2025 – Build Conditions

- Turnpike ramp terminal intersection at Davis Parkway is projected to operate at LOS B during both the AM and PM design hours. The intersection at US 1 and Palm Drive will operate at LOS C during both the AM and PM peak hours. The rest of the intersections around US 1 study area are projected to operate at LOS A or better.
- The southbound off-ramp terminal at the new proposed Lucy Street interchange will operate at LOS C during both the AM and PM design hours, and the northbound on-ramp/SW 167th Avenue intersection is expected to operate at LOS C in both the AM and PM design hours. The intersections at SW 6th Avenue and SW 162nd Avenue will operate at LOS D or better while the US 1/Lucy Street intersection will operate at LOS D during both the AM and PM peak hours.
- The southbound ramp terminal at Campbell Drive is expected to operate at LOS D in both the AM and PM peak hours, while the northbound ramp terminal will operate at LOS B in both the AM and PM peak design hours. All other intersections along Campbell Drive are projected to operate at LOS C or better.

Design Year 2045 – Build Conditions

- Turnpike ramp terminal at Davis Parkway is projected to operate at LOS C during both the AM and PM design hours. The intersection at US 1 and Palm Drive is expected to operate at LOS D during both the AM and PM peak hours. Overall, in terms of delays, the intersections around the US 1 study area show improved operational performance in the Build scenario compared to No-Build conditions.
- The southbound off-ramp terminal at the new proposed Lucy Street interchange will operate at LOS B and LOS C during the AM and PM design hours, respectively, and the northbound on-ramp/SW 167th Avenue intersection is expected to operate at LOS D and LOS C during the AM and PM design hours, respectively. The intersection at SW 6th Avenue will operate at LOS C both in the AM and PM design hours, while the SW 162nd Avenue intersection will operate LOS C in the AM and LOS D in the PM design hours. The US 1/Lucy Street intersection will operate at LOS E during both the AM and PM peak hours. In the Build alternative, there are turn lanes added at the intersections along Lucy Street to facilitate signal coordination and enhance traffic flow along the corridor. Since the interchange at Lucy Street was requested by a developer with support from local agencies; in later phases, there will be more coordinated efforts to make sure mitigation measures are applied to improve intersections and segments operations along Lucy Street.
- The southbound ramp terminal at Campbell Drive is operating at LOS D in both the AM and PM peak hours, while the northbound ramp terminal at Campbell Drive is expected to operate at LOS C in the AM and LOS A in the PM peak hours. All other intersections along Campbell Drive are projected to operate at LOS D or better.

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Table 5.1
Comparison of 2025 No-Build and Build

Arterial/Area	Intersections	Opening Year 2025		Change in Delay
		No-Build	Build	
		LOS (Delay)	LOS (Delay)	
AM Peak				
US 1 (Florida City Area)	US 1/Davis Parkway	C (21.8)	B (18.7)	-14%
	US 1/Palm Drive	D (38.0)	C (24.3)	-36%
	US 1/Krome Avenue	A (2.1)	A (2.6)	24%
	Krome Avenue/Davis Parkway	C (25.6)	C (23.2)	-9%
	Krome Avenue/Palm Drive	B (26.6)	B (19.6)	-26%
Lucy Street	US 1/SW 328 th Street (Lucy Street)	D (37.7)	D (43.0)	14%
	SW 6 th Avenue/Lucy Street	D (40.3)	C (20.3)	-50%
	Southbound off-ramp/Lucy Street	--	C (22.3)	--
	SW 167 th Avenue (Northbound on-ramp)/Lucy Street	C (23.9)	C (22.0)	-8%
	SW 162 nd Avenue/Lucy Street	D (39.7)	C (27.4)	-31%
Campbell Drive	Southbound Ramps/Campbell Drive	D (45.2)	D (43.5)	-4%
	Kingman Road/Campbell Drive	B (18.9)	B (15.2)	-20%
	Northbound Ramps/Campbell Drive	B (12.9)	B (11.5)	-11%
	SW 152 nd Avenue Intersection/Campbell Drive	B (14.8)	B (17.0)	15%
PM Peak				
US 1 (Florida City Area)	US 1/Davis Parkway	C (26.8)	B (19.8)	-26%
	US 1/Palm Drive	E (62.4)	C (24.3)	-61%
	US 1/Krome Avenue	A (3.2)	A (4.1)	28%
	Krome Avenue/Davis Parkway	C (33.4)	C (21.8)	-35%
	Krome Avenue/Palm Drive	D (42.6)	C (21.9)	-49%
Lucy Street	US 1/SW 328 th Street (Lucy Street)	D (40.3)	D (37.5)	-7%
	SW 6 th Avenue/Lucy Street	C (34.4)	C (21.8)	-37%
	Southbound off-ramp/Lucy Street	--	C (22.5)	--
	SW 167 th Avenue (Northbound on-ramp)/Lucy Street	C (26.1)	C (32.8)	26%
	SW 162 nd Avenue/Lucy Street	D (52.4)	D (35.8)	-32%
Campbell Drive	Southbound Ramps/Campbell Drive	C (33.0)	D (43.1)	31%
	Kingman Road/Campbell Drive	B (16.0)	C (20.4)	28%
	Northbound Ramps/Campbell Drive	B (13.2)	C (27.1)	105%
	SW 152 nd Avenue Intersection/Campbell Drive	C (21.1)	A (1.1)	-95%

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Table 5.2
Comparison of 2045 No-Build and Build

Arterial/Area	Intersections	Design Year 2045		Change in Delay
		No-Build	Build	
		LOS (Delay)	LOS (Delay)	
AM Peak				
US 1 (Florida City Area)	US 1/Davis Parkway	C (24.4)	C (33.3)	36%
	US 1/Palm Drive	F (119.7)	D (36.3)	-70%
	US 1/Krome Avenue	A (3.1)	B (11.2)	261%
	Krome Avenue/Davis Parkway	F (>250.0)	E (60.5)	-78%
	Krome Avenue/Palm Drive	F (185.2)	F (88.2)	-52%
Lucy Street	US 1/SW 328 th Street (Lucy Street)	D (54.7)	E (56.4)	3%
	SW 6 th Avenue/Lucy Street	D (36.7)	C (26.3)	-28%
	Southbound off-ramp/Lucy Street	--	B (18.4)	--
	SW 167 th Avenue (Northbound on-ramp)/Lucy Street	C (28.0)	D (54.3)	94%
	SW 162 nd Avenue/Lucy Street	F (198.6)	C (35.0)	-82%
Campbell Drive	Southbound Ramps/Campbell Drive	F (177.4)	D (40.6)	-77%
	Kingman Road/Campbell Drive	D (50.0)	C (16.4)	-67%
	Northbound Ramps/Campbell Drive	B (14.4)	C (20.3)	41%
	SW 152 nd Avenue Intersection/Campbell Drive	C (25.9)	D (40.0)	54%
PM Peak				
US 1 (Florida City Area)	US 1/Davis Parkway	F (149.9)	C (30.1)	-80%
	US 1/Palm Drive	F (247.0)	D (42.9)	-83%
	US 1/Krome Avenue	D (49.4)	A (5.8)	-88%
	Krome Avenue/Davis Parkway	F (111.7)	D (49.1)	-56%
	Krome Avenue/Palm Drive	F (110.8)	D (48.8)	-56%
Lucy Street	US 1/SW 328 th Street (Lucy Street)	F (178.7)	E (76.5)	-57%
	SW 6 th Avenue/Lucy Street	F (>250.0)	C (32.8)	-93%
	Southbound off-ramp/Lucy Street	--	C (29.6)	--
	SW 167 th Avenue (Northbound on-ramp)/Lucy Street	F (>250.0)	C (31.7)	-93%
	SW 162 nd Avenue/Lucy Street	F (>250.0)	D (53.4)	-81%
Campbell Drive	Southbound Ramps/Campbell Drive	F (>250.0)	D (43.0)	-84%
	Kingman Road/Campbell Drive	F (94.3)	C (23.6)	-75%
	Northbound Ramps/Campbell Drive	D (52.6)	A (9.9)	-81%
	SW 152 nd Avenue Intersection/Campbell Drive	F (115.9)	C (26.0)	-78%

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For the mainline, interchange ramps and the intersections, VISSIM analysis results show that the Preferred Build Alternative provide improved operational performance compared to No-Build scenario. These improvements are also reflected around the study region using the network-wide performance results shown in **Table 5.16**. The results in **Table 5.16** show that the Preferred Build Alternative provide overall improved network-wide performance compared to No-Build.

The arterial analysis results indicate some minor performance differences when comparing the Build and No-Build alternatives for the segments around Florida City study area.

Since VISSIM is a microsimulation tool which considers physical capacity constraints of each roadway element, it can form bottlenecks in segments with demand exceeding capacity. This can cause demand starvation downstream of the locations where traffic is being metered. Similarly, if the upstream conditions allow more vehicles than intersection capacity, there will be accumulation of vehicles from each simulation interval. Intersection delays from VISSIM are calculated considering the vehicles within the node formed by the approaching links. If there are instances of demand starvation due to upstream bottlenecks, delays from VISSIM can be significantly lower than those from deterministic tools such as HCM/HCS and Synchro. Also, if there are periodic vehicle accumulations, delays from VISSIM can be significantly higher than those from HCM/HCS and Synchro. Therefore, intersection delays and estimated level of service from VISSIM outputs should be interpreted with caution. The results are not meant to be standalone but to be interpreted with segment results from the links approaching the intersections. This applies to segment results as well, VISSIM results should be viewed for the system to identify what contributes to the operating conditions of each individual roadway element.

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**Table 5.3
2025 No-Build VISSIM Arterial Segment Performance Results**

Direction	Segment	AM Peak Hour					PM Peak Hour			
		Volume			Speed (mph)		Volume			Speed (mph)
		Demand	Model	Processed Demand	Posted	Model	Demand	Model	Processed Demand	Model
Southbound/Westbound	US 1 north of Davis Parkway	1,140	972	85%	45	11	1,220	1,210	99%	12
	US 1 between Davis Parkway and Turnpike northbound on-ramp from southbound US 1	1,250	1,087	87%	45	32	1,195	1,184	99%	32
	US 1 between Turnpike northbound on-ramp from southbound US 1 and southbound off-ramp to US 1/Palm Drive	720	603	84%	45	43	725	721	99%	40
	US 1 between southbound off-ramp and US 1/Palm Drive Intersection	2,460	2,064	84%	45	12	1,485	1,403	95%	4
	US 1 south of US 1/Palm Drive Intersection	1,780	1,511	85%	45	49	690	655	95%	51
	Palm Drive east of US 1	1,200	1,056	88%	30	35	770	763	99%	28
	Palm Drive between US 1 and Krome Avenue	970	847	87%	30	27	790	737	93%	28
	Palm Drive west of Krome Avenue	980	868	89%	30	33	850	786	92%	34
Northbound/Eastbound	US 1 South of US 1/Palm Drive Intersection	1,060	1,042	98%	45	6	1,590	1,561	98%	5
	US 1 between US 1/Palm Drive Intersection and Turnpike on-ramp from northbound US 1	2,120	1,933	91%	45	39	2,220	2,174	98%	37
	US 1 between Turnpike on-ramp from northbound US 1 and Turnpike northbound on-ramp from southbound US 1	870	750	86%	45	25	1,030	1,001	97%	44
	US 1 between Turnpike northbound on-ramp from southbound US 1 and Davis Parkway/US 1 Intersection	870	745	86%	45	23	1,030	1,006	98%	12
	US 1 north of Davis Parkway	1,330	1,167	88%	45	42	1,450	1,399	96%	42
	Palm Drive west of Krome Avenue	1,060	1,039	98%	30	9	1,060	1,051	99%	10
	Palm Drive between Krome Avenue and US 1	940	916	97%	30	29	960	926	96%	25
	Palm Drive east of US 1	580	594	100%	30	34	860	845	98%	34

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

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Table 5.4
2025 No-Build VISSIM Intersection Performance Results at US 1 Study Area

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
US 1/Davis Parkway	NBL	80	64	80%	17.1	B	252	335	90	84	93%	25.2	C	554
	NBT	790	676	86%	6.3	A	252	680	1,020	960	94%	18.7	B	554
	SBT	990	835	84%	19.8	B	385	NA	1,240	1,229	99%	27.4	C	734
	SBR	150	129	86%	4.7	A	282	350	280	278	99%	7.1	A	632
	EBL	160	165	100%	61.8	E	271	170	230	231	100%	62.4	E	332
	EBR	250	248	99%	18.3	B	198	550	250	244	98%	17.0	B	259
	WBL	10	8	80%	60.3	E	470	830	10	9	90%	54.4	D	457
	WBT	340	294	86%	56.9	E	470	830	190	180	95%	64.0	E	457
	WBR	380	339	89%	16.8	B	491	385	330	319	97%	26.3	C	478
	Overall	3,150	2,758	88%	21.8	C	NA	NA	3,640	3,534	97%	26.8	C	NA
US 1/Palm Drive	NBL	90	92	100%	43.5	D	350	345	130	133	100%	68.6	E	1,213
	NBT	900	884	98%	34.8	C	350	3,935	1,800	1,735	96%	73.6	E	1,213
	NBR	70	72	100%	30.3	C	374	3,935	210	205	98%	73.6	E	1,238
	SBL	240	193	80%	90.4	F	547	450	300	277	92%	225.9	F	552
	SBT	1,670	1,415	85%	46.7	D	547	5,595	1,170	1,127	96%	61.9	E	552
	SBR	550	470	85%	18.4	B	581	300	550	526	96%	27.6	C	585
	EBL	570	497	87%	30.7	C	356	380	590	582	99%	35.6	D	514
	EBT	270	340	100%	38.1	D	356	545	370	380	100%	38.9	D	514
	EBR	100	90	90%	23.7	C	391	545	90	81	90%	24.9	C	548
	WBL	220	195	89%	50.8	D	261	310	120	124	100%	52.6	D	228
	WBT	330	285	86%	49.6	D	261	NA	270	267	99%	56.3	E	228
	WBR	650	559	86%	18.2	B	261	NA	460	457	99%	22.5	C	228
Overall	5,660	5,092	90%	38.0	D	NA	NA	6,060	5,894	97%	62.4	E	NA	
US 1/Krome Avenue	NBL	60	55	92%	12.4	B	89	350	230	224	97%	12.3	B	188
	NBT	790	789	100%	1.2	A	0	NA	1,900	1,884	99%	2.9	A	16
	SBT	1,740	1,453	84%	1.9	A	9	NA	910	878	96%	1.5	A	0
	SBR	40	35	88%	3.7	A	8	255	50	50	100%	4.8	A	43
	EBL	40	35	88%	18.0	B	78	NA	40	37	93%	14.8	B	71
	EBR	180	163	91%	1.0	A	0	NA	270	249	92%	1.5	A	0
	Overall	2,850	2,530	89%	2.1	A	NA	NA	3,400	3,322	98%	3.2	A	NA

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Table 5.4 (continued)
2025 No-Build VISSIM Intersection Performance Results at US 1 Study Area

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Krome Avenue/Davis Parkway	NBL	10	8	80%	13.5	B	217	415	50	46	92%	31.1	C	430
	NBT	340	324	95%	9.1	A	217	2,560	390	401	100%	30.0	C	430
	NBR	50	51	100%	5.0	A	239	415	100	97	97%	10.2	B	452
	SBL	60	64	100%	15.7	B	322	350	90	88	98%	25.9	C	302
	SBT	330	351	100%	12.7	B	322	NA	290	286	99%	14.3	B	302
	SBR	100	109	100%	3.5	A	352	350	110	113	100%	3.2	A	332
	EBL	50	46	92%	55.7	E	248	335	50	46	92%	59.0	E	241
	EBT	300	293	98%	42.3	D	248	NA	290	282	97%	40.9	D	241
	EBR	60	61	100%	32.6	C	282	410	40	40	100%	35.9	D	275
	WBL	30	23	77%	61.8	E	485	200	150	145	97%	63.0	E	611
	WBT	400	337	84%	50.8	D	485	560	360	335	93%	53.5	D	611
	WBR	140	124	89%	9.6	A	518	560	50	51	100%	9.6	A	645
	Overall		1,870	1,791	96%	25.6	C	NA	NA	1,970	1,930	98%	33.4	C
Krome Avenue/Palm Drive	NBL	20	17	85%	60.4	E	151	300	50	49	98%	92.9	F	415
	NBT	90	84	93%	41.4	D	151	NA	260	258	99%	53.2	D	415
	NBR	60	57	95%	7.0	A	172	300	60	60	100%	8.3	A	436
	SBL	100	105	100%	42.7	D	590	300	100	95	95%	130.4	F	1,329
	SBT	190	192	100%	49.7	D	590	2,560	230	219	95%	131.3	F	1,329
	SBR	130	135	100%	38.2	D	628	2,560	150	143	95%	115.1	F	1,367
	EBL	230	227	99%	19.6	B	535	275	200	206	100%	20.3	C	558
	EBT	780	771	99%	19.9	B	535	NA	890	871	98%	21.3	C	558
	EBR	50	44	88%	15.4	B	563	NA	60	52	87%	16.0	B	586
	WBL	60	53	88%	21.3	C	357	245	60	57	95%	22.0	C	404
	WBT	830	728	88%	27.2	C	357	545	810	782	97%	25.8	C	404
	WBR	80	74	93%	9.3	A	385	545	80	76	95%	10.0	A	432
	Overall		2,620	2,487	95%	26.6	C	NA	NA	2,950	2,868	97%	42.6	D

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

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Table 5.5
2025 No-Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Southbound Ramps/Campbell Drive	NBL	670	635	95%	29.2	C	141	285	750	750	100%	36.3	D	473
	NBT	90	85	94%	28.6	C	141	1,300	130	129	99%	35.0	D	473
	NBR	430	412	96%	7.0	A	141	310	660	673	100%	14.1	B	473
	SBL	60	55	92%	34.8	C	96	355	70	68	97%	34.3	C	160
	SBT	30	30	100%	51.7	D	96	NA	70	67	96%	75.8	E	160
	SBR	110	112	100%	4.9	A	129	NA	150	149	99%	6.2	A	195
	EBL	110	91	83%	64.9	E	1,060	200	150	140	93%	55.3	E	482
	EBT	1,340	1,116	83%	79.6	E	1,060	NA	1,220	1,219	100%	46.2	D	482
	EBR	10	11	100%	79.0	E	1,060	NA	30	26	87%	44.2	D	482
	WBL	170	136	80%	42.9	D	135	230	120	106	88%	50.2	D	258
	WBT	260	275	100%	21.7	C	135	520	640	632	99%	18.8	B	258
	WBR	60	67	100%	24.0	C	135	230	80	88	100%	17.0	B	258
	Overall		3,340	3,025	91%	45.2	D	NA	NA	4,070	4,047	99%	33.0	C
Kingman Road/Campbell Drive	SBL	100	106	100%	31.1	C	119	225	170	171	100%	41.9	D	191
	SBR	170	160	94%	6.4	A	147	225	220	213	97%	6.9	A	219
	EBL	120	97	81%	35.5	D	409	290	240	246	100%	32.2	C	475
	EBT	1,710	1,485	87%	18.2	B	409	520	1,710	1,713	100%	15.2	B	475
	WBT	320	318	99%	25.8	C	134	1,300	620	612	99%	12.0	B	149
	WBR	150	145	97%	4.8	A	0	270	270	270	100%	6.3	A	0
	Overall		2,570	2,311	90%	18.9	B	NA	NA	3,230	3,225	100%	16.0	B
Northbound Ramps/Campbell Drive	NBL	100	96	96%	49.0	D	175	300	80	77	96%	56.8	E	151
	NBR	120	112	93%	9.2	A	88	320	130	127	98%	11.6	B	99
	EBT	1,280	1,144	89%	15.3	B	323	400	1,220	1,233	100%	14.9	B	297
	EBR	530	440	83%	8.4	A	190	250	660	654	99%	11.8	B	515
	WBT	370	368	99%	2.5	A	75	485	810	805	99%	7.7	A	219
	Overall		2,400	2,160	90%	12.9	B	NA	NA	2,900	2,896	100%	13.2	B


LOS = A-C / Uncongested
 LOS = D / Light Congestion
 LOS = E / Moderate Congestion
 LOS = F / Heavily Congested


SECTION FIVE

Future Traffic Conditions


Table 5.5 (continued)
2025 No-Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
SW 152 nd Avenue (Northbound on-ramp from WB)/Campbell Drive	NBL	170	164	96%	19.4	B	527	195	490	489	100%	23.3	C	577
	NBT	460	456	99%	23.7	C	527	NA	320	324	100%	28.8	C	577
	NBR	170	176	100%	9.1	A	347	195	200	199	100%	11.5	B	396
	EBT	880	787	89%	22.9	C	340	430	830	793	96%	34.1	C	419
	EBR	520	469	90%	1.4	A	308	365	520	566	100%	4.4	A	387
	WBL	80	77	96%	45.4	D	164	360	60	62	100%	47.7	D	138
	WBT	200	204	100%	17.2	B	164	NA	320	316	99%	20.9	C	138
	WBR	550	541	98%	2.2	A	0	365	210	209	100%	1.2	A	0
	Overall		2,480	2,874	100%	14.8	B	NA	NA	2,740	2,958	100%	21.1	C
US 1/SW 328 th Street (Lucy Street)	NBL	100	99	99%	70.9	E	573	325	120	120	100%	71.6	E	613
	NBT	720	718	100%	48.3	D	573	NA	720	720	100%	50.7	D	613
	NBR	100	97	97%	41.7	D	603	NA	130	130	100%	42.1	D	643
	SBL	140	136	97%	76.8	E	338	355	170	173	100%	106.0	F	411
	SBT	750	742	99%	44.2	D	338	NA	670	663	99%	43.2	D	411
	SBR	90	85	94%	35.4	D	88	NA	170	170	100%	37.0	D	161
	EBL	190	184	97%	32.8	C	288	380	130	129	99%	28.4	C	230
	EBT	220	218	99%	25.9	C	288	NA	140	137	98%	26.5	C	230
	EBR	160	165	100%	17.5	B	309	NA	210	213	100%	13.0	B	251
	WBL	60	59	98%	11.4	B	128	460	60	66	100%	9.6	A	132
	WBT	430	442	100%	14.2	B	128	1,925	360	398	100%	13.9	B	132
	WBR	90	88	98%	8.1	A	157	1,925	80	84	100%	8.6	A	160
	Overall		3,050	3,033	99%	37.7	D	NA	NA	2,960	3,003	100%	40.3	D

 LOS = A-C / Uncongested

 LOS = D / Light Congestion

 LOS = E / Moderate Congestion

 LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.5 (continued)
2025 No-Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
SW 6 th Avenue/Lucy Street	NBL	100	101	100%	26.3	C	130	185	50	47	94%	26.2	C	318
	NBT	70	64	91%	27.5	C	130	NA	100	95	95%	28.3	C	318
	NBR	20	20	100%	15.3	B	155	NA	170	172	100%	18.1	B	344
	SBL	40	44	100%	54.5	D	279	290	80	77	96%	57.8	E	188
	SBT	130	134	100%	58.4	E	279	NA	10	10	100%	53.5	D	188
	SBR	30	30	100%	39.7	D	290	NA	110	110	100%	10.9	B	199
	EBL	10	9	90%	49.2	D	316	390	60	62	100%	44.3	D	272
	EBT	400	391	98%	59.4	E	316	1,925	240	235	98%	49.5	D	272
	EBR	50	52	100%	43.0	D	346	1,925	140	143	100%	34.7	C	302
	WBL	60	62	100%	37.8	D	433	350	60	59	98%	44.0	D	344
	WBT	450	456	100%	27.3	C	433	2,580	340	391	100%	34.6	C	344
	WBR	110	102	93%	22.0	C	493	2,580	50	57	100%	26.2	C	404
	Overall		1,470	1,465	100%	40.3	D	NA	NA	1,410	1,458	100%	34.4	C
SW 167 th Avenue/Lucy Street	NBL	30	28	93%	44.2	D	107	230	100	98	98%	52.1	D	160
	NBR	130	130	100%	6.3	A	130	NA	100	102	100%	5.7	A	183
	EBT	360	358	99%	31.1	C	377	2,590	360	359	100%	19.8	B	295
	EBR	100	102	100%	26.6	C	377	2,590	130	122	94%	14.3	B	295
	WBL	90	89	99%	27.8	C	326	365	100	112	100%	39.0	D	256
	WBT	590	591	100%	21.4	C	326	2,635	350	411	100%	30.5	C	256
	Overall		1,300	1,298	100%	23.9	C	NA	NA	1,140	1,204	100%	26.1	C
SW 162 nd Avenue/Lucy Street	NBL	70	72	100%	45.2	D	164	NA	10	19	100%	27.2	C	115
	NBT	70	72	100%	44.2	D	164	NA	10	21	100%	23.2	C	115
	NBR	80	71	89%	19.1	B	164	NA	90	177	100%	6.7	A	115
	SBL	120	124	100%	67.6	E	228	355	70	158	100%	72.9	E	312
	SBT	100	110	100%	65.1	E	228	NA	80	178	100%	71.2	E	312
	SBR	100	104	100%	29.7	C	228	NA	50	112	100%	39.7	D	312
	EBL	50	53	100%	78.7	E	267	395	160	159	99%	108.9	F	304
	EBT	400	387	97%	26.9	C	267	2,675	250	248	99%	34.7	C	304
	EBR	40	41	100%	19.9	B	304	2,675	50	50	100%	20.4	C	342
	WBL	30	27	90%	75.7	E	511	350	30	28	93%	79.4	E	401
	WBT	510	506	99%	38.2	D	511	NA	390	395	100%	56.0	E	401
	WBR	160	154	96%	33.4	C	543	NA	170	161	95%	44.9	D	432
Overall		1,730	1,721	99%	39.7	D	NA	NA	1,360	1,706	100%	52.4	D	NA

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

**Table 5.6
2025 Build VISSIM Arterial Segment Performance Results**

Direction	Segment	AM Peak Hour					PM Peak Hour			
		Volume			Speed (mph)		Volume			Speed (mph)
		Demand	Model	Processed Demand	Posted	Model	Demand	Model	Processed Demand	Model
Southbound/Westbound	US 1 north of Davis Parkway	980	977	100%	45	47	1,380	1,372	99%	14
	US 1 between Davis Parkway and Turnpike northbound on-ramp from southbound US 1	1,020	1,012	99%	45	40	1,350	1,318	98%	26
	US 1 between Turnpike northbound on-ramp from southbound US 1 and southbound off-ramp to US 1/Palm Drive	630	635	100%	45	22	660	651	99%	45
	US 1 between southbound off-ramp and US 1/Palm Drive Intersection	1,420	1,425	100%	45	13	1,280	1,252	98%	11
	US 1 south of US 1/Palm Drive Intersection	1,170	1,081	92%	45	42	830	534	64%	33
	Palm Drive east of US 1	1,060	1,056	100%	30	9	720	713	99%	35
	Palm Drive between US 1 and Krome Avenue	900	889	99%	30	30	890	854	96%	28
	Palm Drive west of Krome Avenue	990	970	98%	30	34	1,020	986	97%	33
Northbound/Eastbound	US 1 south of US 1/Palm Drive Intersection	540	535	99%	45	47	1,200	1,196	100%	46
	US 1 between US 1/Palm Drive Intersection and Turnpike on-ramp from northbound US 1	1,390	1,352	97%	45	40	1,710	1,623	95%	39
	US 1 between Turnpike on-ramp from northbound US 1 and Turnpike northbound on-ramp from southbound US 1	870	851	98%	45	22	1,130	1,076	95%	21
	US 1 between Turnpike northbound on-ramp from southbound US 1 and Davis Parkway/US 1 Intersection	870	842	97%	45	13	1,130	1,061	94%	11
	US 1 north of Davis Parkway	1,220	1,201	98%	45	42	1,420	1,342	94%	42
	Palm Drive west of Krome Avenue	1,050	1,037	99%	30	9	1,120	1,089	97%	10
	Palm Drive between Krome Avenue and US 1	880	840	95%	30	30	980	913	93%	30
	Palm Drive east of US 1	430	420	98%	30	34	750	728	97%	34

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.7
2025 Build VISSIM Intersection Performance Results at US 1 Study Area

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
US 1/Davis Parkway	NBL	80	71	89%	35.0	D	454	335	110	104	95%	36.0	D	594
	NBT	790	767	97%	13.9	B	454	680	1,020	954	94%	17.4	B	594
	SBT	830	821	99%	18.2	B	329	NA	1,090	1,056	97%	22.4	C	523
	SBR	150	153	100%	4.3	A	242	350	290	305	100%	5.3	A	436
	EBL	180	181	100%	48.4	D	194	170	220	207	94%	42.0	D	208
	EBR	120	115	96%	7.4	A	126	550	150	143	95%	8.7	A	141
	WBL	70	75	100%	20.6	C	204	830	110	115	100%	21.8	C	144
	WBT	170	166	98%	34.1	C	204	830	50	52	100%	34.4	C	144
	WBR	250	253	100%	12.4	B	224	385	180	185	100%	10.8	B	158
	Overall		2,640	2,602	99%	18.7	B	NA	NA	3,220	3,121	97%	19.8	B
US 1/Palm Drive	NBL	100	92	92%	37.4	D	156	345	130	122	94%	38.0	D	336
	NBT	370	881	100%	36.7	D	156	3,935	860	1,733	100%	43.3	D	336
	NBR	70	61	87%	12.5	B	156	3,935	210	208	99%	24.2	C	336
	SBL	90	96	100%	47.0	D	572	450	170	171	100%	50.4	D	459
	SBT	850	1,658	100%	52.0	D	572	5,595	620	1,155	100%	47.4	D	459
	SBR	480	479	100%	10.6	B	572	300	490	470	96%	10.7	B	459
	EBL	510	501	98%	35.6	D	228	380	520	501	96%	34.1	C	245
	EBT	270	263	97%	36.1	D	228	545	370	348	94%	30.9	C	245
	EBR	100	100	100%	20.9	C	228	545	90	87	97%	20.9	C	245
	WBL	220	233	100%	48.3	D	228	310	120	120	100%	46.9	D	191
	WBT	330	325	98%	31.2	C	228	NA	270	269	100%	31.2	C	191
	WBR	510	497	97%	5.8	A	264	NA	330	317	96%	4.9	A	227
	Overall		3,900	5,186	100%	24.3	C	NA	NA	4,180	5,501	100%	24.3	C
US 1/Krome Avenue	NBL	60	56	93%	12.7	B	87	350	230	219	95%	10.6	B	125
	NBT	790	793	100%	1.9	A	0	NA	1,900	1,868	98%	4.9	A	0
	SBT	1,740	1,746	100%	2.4	A	0	NA	910	759	83%	1.0	A	0
	SBR	40	39	98%	3.8	A	13	255	50	44	88%	3.7	A	43
	EBL	40	39	98%	13.1	B	62	NA	40	39	98%	7.5	A	81
	EBR	180	176	98%	1.3	A	0	NA	270	257	95%	1.6	A	0
	Overall		2,850	2,849	100%	2.6	A	NA	NA	3,400	3,186	94%	4.1	A

LOS = A-C / Uncongested
 LOS = D / Light Congestion
 LOS = E / Moderate Congestion
 LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.7 (continued)
2025 Build VISSIM Intersection Performance Results at US 1 Study Area

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Krome Avenue/Davis Parkway	NBL	10	9	90%	35.1	D	403	415	50	48	96%	25.7	C	349
	NBT	380	371	98%	25.1	C	403	2,560	430	409	95%	17.8	B	349
	NBR	60	62	100%	6.0	A	428	415	100	90	90%	5.8	A	375
	SBL	30	27	90%	30.6	C	434	350	30	29	97%	30.7	C	386
	SBT	390	376	96%	22.7	C	434	NA	380	362	95%	22.1	C	386
	SBR	160	165	100%	5.4	A	464	350	170	170	100%	5.9	A	416
	EBL	140	142	100%	31.8	C	203	335	80	80	100%	30.8	C	195
	EBT	210	209	100%	26.5	C	203	NA	240	235	98%	31.5	C	195
	EBR	60	57	95%	13.7	B	236	410	40	35	88%	21.8	C	228
	WBL	50	53	100%	25.1	C	218	200	130	135	100%	25.4	C	211
	WBT	330	315	95%	28.4	C	218	560	300	311	100%	27.3	C	211
	WBR	20	24	100%	20.1	C	251	560	20	18	90%	22.1	C	244
	Overall		1,840	1,810	98%	23.2	C	NA	NA	1,970	1,922	98%	21.8	C
Krome Avenue/Palm Drive	NBL	20	17	85%	45.2	D	137	300	50	49	98%	48.2	D	294
	NBT	90	87	97%	33.8	C	137	NA	260	250	96%	38.2	D	294
	NBR	60	59	98%	6.6	A	158	300	60	50	83%	6.7	A	315
	SBL	100	101	100%	24.1	C	281	300	100	92	92%	39.5	D	370
	SBT	200	197	99%	25.6	C	281	2,560	240	228	95%	34.2	C	370
	SBR	200	192	96%	9.1	A	318	300	210	211	100%	10.1	B	407
	EBL	280	281	100%	25.3	C	460	275	240	230	96%	22.2	C	415
	EBT	720	698	97%	15.4	B	460	NA	820	791	96%	16.4	B	415
	EBR	50	53	100%	9.7	A	489	NA	60	61	100%	11.0	B	445
	WBL	50	47	94%	34.4	C	332	245	50	48	96%	32.5	C	346
	WBT	770	754	98%	21.7	C	332	545	760	721	95%	20.5	C	346
	WBR	80	80	100%	6.9	A	360	545	80	79	99%	6.4	A	374
Overall		2,620	2,566	98%	19.6	B	NA	NA	2,930	2,810	96%	21.9	C	NA

LOS = A-C / Uncongested
 LOS = D / Light Congestion
 LOS = E / Moderate Congestion
 LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.8
2025 Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Southbound Ramps/Campbell Drive	NBL	480	469	98%	35.9	D	190	285	720	723	100%	33.5	C	214
	NBT	90	83	92%	39.9	D	190	1,300	110	109	99%	32.0	C	214
	NBR	480	476	99%	7.4	A	190	310	580	566	98%	7.7	A	214
	SBL	60	65	100%	47.5	D	123	355	70	71	100%	37.1	D	135
	SBT	30	31	100%	96.7	F	123	NA	30	30	100%	47.5	D	135
	SBR	110	102	93%	5.2	A	153	NA	150	138	92%	6.2	A	157
	EBL	110	114	100%	63.8	E	1,140	200	150	149	99%	66.8	E	1,714
	EBT	1,280	1,262	99%	64.7	E	1,140	NA	1,370	1,251	91%	113.4	F	1,714
	EBR	10	9	90%	67.1	E	1,140	NA	40	39	98%	126.0	F	1,714
	WBL	180	178	99%	45.1	D	156	230	150	147	98%	36.9	D	141
	WBT	250	245	98%	20.8	C	156	520	620	613	99%	11.0	B	141
	WBR	60	54	90%	23.0	C	156	230	80	72	90%	18.6	B	141
	Overall		3,140	3,088	98%	43.5	D	NA	NA	4,070	3,908	96%	52.8	D
Kingman Road/Campbell Drive	SBL	100	99	99%	45.1	D	137	225	170	166	98%	28.7	C	152
	SBR	170	169	99%	6.2	A	165	225	220	217	99%	7.0	A	180
	EBL	120	123	100%	25.0	C	312	290	240	224	93%	35.6	D	460
	EBT	1,700	1,665	98%	9.7	A	312	520	1,780	1,661	93%	18.5	B	460
	WBT	320	307	96%	41.0	D	242	1,300	630	620	98%	25.8	C	229
	WBR	150	150	100%	6.1	A	19	270	270	253	94%	6.6	A	3
	Overall		2,560	2,513	98%	15.2	B	NA	NA	3,310	3,141	95%	20.0	B
Northbound Ramps/Campbell Drive	NBL	100	96	96%	63.0	E	192	300	90	86	96%	43.1	D	151
	NBR	120	118	98%	10.5	B	73	320	130	124	95%	11.2	B	79
	EBT	1,400	1,392	99%	11.7	B	260	400	1,280	1,205	94%	13.2	B	304
	EBR	400	371	93%	6.9	A	167	250	670	609	91%	11.1	B	385
	WBT	370	368	99%	2.0	A	65	485	810	796	98%	4.0	A	171
	Overall		2,390	2,345	98%	11.5	B	NA	NA	2,980	2,820	95%	11.0	B
SW 152 nd Avenue Intersection/ Campbell Drive	NBL	170	166	98%	27.2	C	660	195	490	485	99%	26.0	C	530
	NBT	460	471	100%	32.4	C	660	NA	290	277	96%	31.1	C	530
	NBR	170	165	97%	14.0	B	479	195	200	199	100%	11.5	B	349
	EBT	1,000	989	99%	20.8	C	467	430	790	758	96%	30.9	C	449
	EBR	520	512	98%	2.0	A	435	365	620	570	92%	3.3	A	417
	WBL	80	76	95%	52.2	D	167	360	60	63	100%	57.6	E	157
	WBT	200	202	100%	21.1	C	167	NA	320	312	98%	20.5	C	157
	WBR	550	543	99%	2.3	A	0	365	190	179	94%	1.2	A	0
	Overall		3,150	3,124	99%	17.0	B	NA	NA	2,960	2,843	96%	20.8	C

SECTION FIVE

Future Traffic Conditions

Table 5.8 (continued)
2025 Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
US 1/SW 328 th Street (Lucy Street)	NBL	100	99	99%	60.2	E	553	325	120	124	100%	41.8	D	505
	NBT	620	621	100%	57.9	E	553	NA	580	564	97%	60.0	E	505
	NBR	200	201	100%	8.2	A	585	325	270	259	96%	8.7	A	537
	SBL	160	157	98%	69.2	E	364	355	200	196	98%	41.5	D	416
	SBT	730	727	100%	49.7	D	364	NA	650	637	98%	52.6	D	416
	SBR	80	80	100%	45.0	D	383	NA	170	160	94%	45.1	D	435
	EBL	160	155	97%	31.5	C	226	380	100	94	94%	36.6	D	155
	EBT	350	347	99%	33.9	C	226	NA	200	203	100%	31.9	C	155
	EBR	160	163	100%	7.1	A	244	380	210	207	99%	6.4	A	173
	WBL	80	74	93%	29.9	C	543	460	80	78	98%	23.5	C	378
	WBT	730	731	100%	47.1	D	543	1,925	550	543	99%	27.0	C	378
	WBR	120	119	99%	7.7	A	571	1,925	100	91	91%	5.6	A	406
	Overall		3,490	3,474	100%	43.0	D	NA	NA	2,641	2,483	94%	37.5	D
SW 6 th Avenue/Lucy Street	NBL	90	91	100%	56.3	E	171	185	40	43	100%	58.4	E	184
	NBT	60	55	92%	69.8	E	171	NA	80	78	98%	74.9	E	184
	NBR	40	40	100%	7.4	A	175	185	200	190	95%	8.8	A	207
	SBL	50	46	92%	52.5	D	268	290	100	95	95%	55.0	E	167
	SBT	130	124	95%	72.9	E	268	NA	10	7	70%	64.7	E	167
	SBR	30	32	100%	6.7	A	277	290	110	111	100%	6.9	A	176
	EBL	10	10	100%	10.5	B	313	390	50	53	100%	13.6	B	212
	EBT	650	649	100%	12.5	B	313	1,925	480	463	96%	23.0	C	212
	EBR	50	49	98%	4.5	A	313	1,925	140	136	97%	11.0	B	212
	WBL	90	88	98%	18.7	B	245	350	80	75	94%	18.8	B	353
	WBT	810	810	100%	14.0	B	245	2,580	580	564	97%	17.6	B	353
	WBR	160	151	94%	6.8	A	303	2,580	70	67	96%	7.2	A	410
	Overall		2,170	2,145	99%	20.3	C	NA	NA	1,205	1,101	91%	21.8	C

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.8 (continued)
2025 Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Southbound off-ramp/Lucy Street	SBL	220	209	95%	11.6	B	179	1,650	320	308	96%	10.4	B	154
	SBR	450	453	100%	9.2	A	179	1,650	300	304	100%	7.0	A	154
	EBT	740	729	99%	39.0	D	392	1,820	780	741	95%	24.7	C	454
	WBT	610	594	97%	15.3	B	458	710	430	408	95%	39.4	D	395
	Overall	2,020	1,985	98%	22.3	C	NA	NA	1,830	1,761	96%	22.5	C	NA
SW 167 th Avenue (Northbound on-ramp)/Lucy Street	NBL	20	19	95%	65.1	E	162	230	80	78	98%	62.5	E	156
	NBT	70	70	100%	66.3	E	162	NA	40	40	100%	60.5	E	156
	NBR	70	64	91%	6.0	A	191	230	80	79	99%	7.1	A	180
	EBL	280	266	95%	8.0	A	275	280	290	281	97%	13.8	B	356
	EBT	550	551	100%	3.6	A	275	685	640	608	95%	20.9	C	356
	EBR	130	125	96%	3.7	A	156	280	170	159	94%	4.9	A	389
	WBL	60	63	100%	26.9	C	450	365	60	53	88%	35.7	D	415
	WBT	590	573	97%	47.9	D	450	2,635	350	333	95%	78.9	E	415
	WBR	270	271	100%	14.4	B	450	365	340	329	97%	33.0	C	415
	Overall	2,040	2,002	98%	22.0	C	NA	NA	2,050	1,960	96%	32.8	C	NA
SW 162 nd Avenue/Lucy Street	NBL	100	96	96%	49.7	D	162	265	20	22	100%	62.5	E	79
	NBT	40	43	100%	59.8	E	162	NA	20	20	100%	59.9	E	79
	NBR	80	79	99%	8.6	A	157	265	70	65	93%	6.7	A	70
	SBL	120	122	100%	58.6	E	185	355	70	70	100%	68.6	E	160
	SBT	100	94	94%	62.5	E	185	NA	80	77	96%	65.7	E	160
	SBR	120	125	100%	14.0	B	225	355	60	57	95%	6.6	A	200
	EBL	60	59	98%	36.8	D	392	400	210	205	98%	22.1	C	264
	EBT	510	491	96%	25.2	C	392	2,675	440	415	94%	11.6	B	264
	EBR	50	53	100%	4.0	A	431	400	70	61	87%	3.4	A	303
	WBL	30	30	100%	17.7	B	337	350	30	28	93%	53.3	D	501
	WBT	700	690	99%	22.2	C	337	NA	670	656	98%	54.8	D	501
	WBR	80	79	99%	3.5	A	371	350	10	9	90%	6.1	A	535
Overall	1,990	1,961	99%	27.4	C	NA	NA	1,750	1,685	96%	35.8	D	NA	

LOS = A-C / Uncongested
 LOS = D / Light Congestion
 LOS = E / Moderate Congestion
 LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

**Table 5.9
2045 No-Build VISSIM Arterial Segment Performance Results**

Direction	Segment	AM Peak Hour					PM Peak Hour			
		Volume			Speed (mph)		Volume			Speed (mph)
		Demand	Model	Processed Demand	Posted	Model	Demand	Model	Processed Demand	Model
Southbound/Westbound	US 1 north of Davis Parkway	1,380	1,374	100%	45	10	1,220	1,210	99%	12
	US 1 between Davis Parkway and Turnpike northbound on-ramp from southbound US 1	1,540	1,375	89%	45	17	1,195	1,184	99%	32
	US 1 between Turnpike northbound on-ramp from southbound US 1 and southbound off-ramp to US 1/Palm Drive	770	774	100%	45	39	725	721	99%	40
	US 1 between southbound off-ramp and US 1/Palm Drive Intersection	3,290	2,095	64%	45	9	1,485	1,403	95%	4
	US 1 south of US 1/Palm Drive Intersection	2,570	1,776	69%	45	49	690	655	95%	51
	Palm Drive east of US 1	1,800	1,742	97%	30	12	770	763	99%	28
	Palm Drive between US 1 and Krome Avenue	1,460	1,074	74%	30	22	790	737	93%	28
	Palm Drive west of Krome Avenue	1,520	1,066	70%	30	33	850	786	92%	34
Northbound/Eastbound	US 1 south of US 1/Palm Drive Intersection	1,830	1,702	93%	45	3	1,590	1,561	98%	5
	US 1 between US 1/Palm Drive Intersection and Turnpike on-ramp from northbound US 1	3,340	2,950	88%	45	38	2,220	2,174	98%	37
	US 1 between Turnpike on-ramp from northbound US 1 and Turnpike northbound on-ramp from southbound US 1	1,520	1,326	87%	45	24	1,030	1,001	97%	44
	US 1 between Turnpike northbound on-ramp from southbound US 1 and Davis Parkway/US 1 Intersection	1,520	1,314	86%	45	24	1,030	1,006	98%	12
	US 1 north of Davis Parkway	2,200	1,658	75%	45	43	1,450	1,399	96%	42
	Palm Drive west of Krome Avenue	2,020	1,707	85%	30	5	1,060	1,051	99%	10
	Palm Drive between Krome Avenue and US 1	1,790	1,453	81%	30	18	960	926	96%	25
	Palm Drive east of US 1	1,060	797	75%	30	34	860	845	98%	34

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.10
2045 No-Build VISSIM Intersection Performance Results at US 1 Study Area

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
US 1/Davis Parkway	NBL	130	119	92%	27.0	C	378	335	120	93	78%	27.8	C	527
	NBT	1,390	1,192	86%	5.3	A	378	680	1,450	1,072	74%	21.8	C	527
	SBT	1,150	1,136	99%	32.3	C	846	NA	1,670	690	41%	>250.0	F	2,110
	SBR	230	228	99%	9.9	A	744	350	500	216	43%	>250.0	F	2,008
	EBL	210	152	72%	55.4	E	425	170	330	300	91%	68.5	E	657
	EBR	380	236	62%	19.0	B	351	550	440	424	96%	71.7	E	583
	WBL	10	5	50%	56.4	E	793	830	10	6	60%	108.5	F	620
	WBT	470	244	52%	63.7	E	793	830	280	154	55%	86.9	F	620
	WBR	600	326	54%	34.3	C	814	385	480	279	58%	34.8	C	642
	Overall	4,570	3,638	80%	24.4	C	NA	NA	5,280	3,234	61%	149.9	F	NA
US 1/Palm Drive	NBL	230	181	79%	>250.0	F	1,941	345	220	149	68%	>250.0	F	4,120
	NBT	1,400	1,338	96%	99.0	F	1,941	3,935	2,290	1,529	67%	>250.0	F	4,120
	NBR	200	182	91%	99.8	F	1,966	3,935	340	231	68%	>250.0	F	4,145
	SBL	350	225	64%	156.0	F	550	450	470	273	58%	>250.0	F	556
	SBT	2,180	1,416	65%	57.7	E	550	5,595	1,450	812	56%	70.7	E	556
	SBR	760	473	62%	23.1	C	584	300	950	538	57%	31.4	C	590
	EBL	1,080	894	83%	43.1	D	692	380	820	789	96%	46.9	D	678
	EBT	510	402	79%	35.8	D	692	545	480	452	94%	37.6	D	678
	EBR	200	168	84%	23.2	C	727	545	160	158	99%	25.5	C	712
	WBL	470	402	86%	227.1	F	3,471	310	230	209	91%	>250.0	F	4,198
	WBT	470	419	89%	224.4	F	3,471	NA	620	552	89%	>250.0	F	4,198
	WBR	860	721	84%	>250.0	F	3,471	NA	990	845	85%	>250.0	F	4,198
	Overall	8,710	6,821	78%	119.7	F	NA	NA	9,020	6,537	72%	247.0	F	NA
US 1/Krome Avenue	NBL	170	173	100%	19.5	B	178	350	450	223	50%	34.6	C	1,614
	NBT	1,300	1,289	99%	2.0	A	10	NA	2,510	1,945	77%	81.8	F	1,435
	SBT	2,490	1,702	68%	1.9	A	0	NA	1,270	816	64%	1.3	A	0
	SBR	80	52	65%	3.9	A	27	255	100	64	64%	4.3	A	47
	EBL	70	50	71%	26.7	C	104	NA	60	46	77%	13.7	B	88
	EBR	440	308	70%	1.6	A	8	NA	450	335	74%	1.4	A	0
	Overall	4,550	3,574	79%	3.1	A	NA	NA	4,840	3,429	71%	49.4	D	NA

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.10 (continued)
2045 No-Build VISSIM Intersection Performance Results at US 1 Study Area

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Krome Avenue/Davis Parkway	NBL	40	33	83%	42.1	D	509	415	110	107	97%	46.0	D	572
	NBT	620	561	90%	20.5	C	509	2,560	550	485	88%	35.0	D	572
	NBR	80	68	85%	6.2	A	531	415	160	145	91%	18.4	B	594
	SBL	90	59	66%	>250.0	F	3,974	350	140	100	71%	>250.0	F	3,980
	SBT	690	453	66%	>250.0	F	3,974	NA	410	316	77%	>250.0	F	3,980
	SBR	140	89	64%	>250.0	F	4,003	350	180	139	77%	>250.0	F	4,009
	EBL	80	47	59%	>250.0	F	5,197	335	90	84	93%	51.6	D	365
	EBT	420	259	62%	>250.0	F	5,197	NA	470	464	99%	43.9	D	365
	EBR	80	45	56%	>250.0	F	5,231	410	50	48	96%	49.0	D	399
	WBL	50	32	64%	216.0	F	563	200	220	113	51%	70.2	E	684
	WBT	560	395	71%	41.5	D	563	560	600	327	55%	52.3	D	684
	WBR	220	155	70%	16.5	B	597	560	80	43	54%	11.8	B	717
	Overall		3,070	2,196	72%	>250.0	F	NA	NA	3,060	2,371	77%	111.7	F
Krome Avenue/Palm Drive	NBL	50	41	82%	70.7	E	223	300	90	74	82%	211.1	F	755
	NBT	170	163	96%	42.7	D	223	NA	370	307	83%	70.7	E	755
	NBR	120	104	87%	7.7	A	244	300	90	72	80%	16.4	B	776
	SBL	190	126	66%	>250.0	F	2,690	300	140	107	76%	>250.0	F	2,640
	SBT	380	253	67%	>250.0	F	2,690	2,560	320	223	70%	>250.0	F	2,640
	SBR	250	153	61%	>250.0	F	2,727	2,560	220	143	65%	>250.0	F	2,678
	EBL	440	372	85%	224.9	F	5,617	275	290	301	100%	50.8	D	1,150
	EBT	1,480	1,252	85%	209.4	F	5,617	NA	1,230	1,209	98%	48.9	D	1,150
	EBR	100	83	83%	190.1	F	5,646	NA	90	84	93%	34.0	C	1,178
	WBL	110	77	70%	27.0	C	453	245	140	101	72%	30.1	C	553
	WBT	1,220	881	72%	32.1	C	453	545	1,490	995	67%	33.8	C	553
	WBR	130	123	95%	13.7	B	480	545	160	129	81%	13.5	B	580
Overall		4,640	3,628	78%	185.2	F	NA	NA	4,630	3,745	81%	110.8	F	NA

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.11
2045 No-Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Southbound Ramps/Campbell Drive	NBL	1,030	531	52%	40.6	D	499	285	1,220	786	64%	144.0	F	1,289
	NBT	120	63	53%	29.3	C	499	1,300	170	105	62%	74.0	E	1,289
	NBR	470	239	51%	8.2	A	499	310	700	458	65%	42.1	D	1,289
	SBL	130	125	96%	29.7	C	238	355	150	59	39%	>250.0	F	5,632
	SBT	70	62	89%	>250.0	F	238	NA	160	57	36%	>250.0	F	5,632
	SBR	250	246	98%	6.6	A	273	NA	330	156	47%	>250.0	F	5,667
	EBL	250	158	63%	>250.0	F	10,854	200	320	206	64%	>250.0	F	10,936
	EBT	1,470	950	65%	>250.0	F	10,854	NA	1,460	916	63%	>250.0	F	10,936
	EBR	30	18	60%	>250.0	F	10,854	NA	70	40	57%	>250.0	F	10,936
	WBL	380	284	75%	225.8	F	679	230	280	141	50%	>250.0	F	685
	WBT	370	315	85%	44.5	D	679	520	1,410	995	71%	40.8	D	685
	WBR	140	127	91%	49.0	D	679	230	180	141	78%	36.6	D	685
	Overall		4,710	3,118	66%	177.4	F	NA	NA	6,450	4,060	63%	>250.0	F
Kingman Road/Campbell Drive	SBL	230	201	87%	70.8	E	1,180	225	370	304	82%	111.2	F	1,525
	SBR	370	313	85%	90.5	F	1,208	225	480	402	84%	135.0	F	1,554
	EBL	260	171	66%	45.0	D	403	290	530	354	67%	47.8	D	475
	EBT	1,810	1,145	63%	18.5	B	403	520	1,780	1,087	61%	14.9	B	475
	WBT	520	449	86%	122.0	F	966	1,300	1,390	915	66%	196.9	F	1,424
	WBR	320	311	97%	14.3	B	712	270	590	416	71%	71.6	E	1,169
	Overall		3,510	2,590	74%	50.0	D	NA	NA	5,140	3,478	68%	94.3	F
Northbound Ramps/Campbell Drive	NBL	240	207	86%	44.0	D	308	300	190	129	68%	159.5	F	888
	NBR	270	221	82%	8.2	A	111	320	290	221	76%	49.0	D	530
	EBT	1,310	852	65%	19.3	B	302	400	1,260	819	65%	16.2	B	241
	EBR	730	500	68%	8.2	A	183	250	890	579	65%	10.2	B	307
	WBT	600	619	100%	5.0	A	191	485	1,790	1,298	73%	84.9	F	668
	Overall		3,150	2,399	76%	14.4	B	NA	NA	4,420	3,046	69%	52.6	D
SW 152 nd Avenue/Campbell Drive	NBL	360	378	100%	31.6	C	924	195	1,080	793	73%	196.6	F	4,765
	NBT	620	608	98%	49.6	D	924	NA	440	314	71%	197.5	F	4,765
	NBR	370	357	96%	41.4	D	744	195	440	308	70%	208.6	F	4,585
	EBT	1,060	720	68%	24.0	C	362	430	930	631	68%	34.8	C	421
	EBR	520	356	68%	1.8	A	330	365	620	416	67%	4.1	A	390
	WBL	170	170	100%	55.5	E	271	360	140	132	94%	108.6	F	2,038
	WBT	240	247	100%	19.6	B	271	NA	710	588	83%	117.1	F	2,038
	WBR	740	723	98%	4.3	A	37	365	290	259	89%	60.3	E	1,803
Overall		3,340	3,559	100%	25.9	C	NA	NA	4,360	3,441	79%	115.9	F	NA

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.11 (continued)
2045 No-Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
US 1/SW 328 th Street (Lucy Street)	NBL	130	122	94%	101.1	F	1,178	325	150	108	72%	203.7	F	1,633
	NBT	900	887	99%	95.8	F	1,178	NA	900	653	73%	244.7	F	1,633
	NBR	130	121	93%	93.3	F	1,208	NA	160	104	65%	>250.0	F	1,663
	SBL	170	171	100%	118.4	F	479	355	210	100	48%	>250.0	F	2,322
	SBT	940	925	98%	44.9	D	479	NA	830	809	97%	55.9	E	2,322
	SBR	120	121	100%	36.2	D	229	NA	210	205	98%	47.4	D	2,073
	EBL	240	234	98%	75.0	E	562	380	160	128	80%	>250.0	F	3,097
	EBT	690	693	100%	33.4	C	562	NA	630	478	76%	>250.0	F	3,097
	EBR	200	198	99%	30.3	C	582	NA	260	195	75%	>250.0	F	3,118
	WBL	70	69	99%	19.1	B	838	460	70	58	83%	18.3	B	440
	WBT	1,120	1,054	94%	30.6	C	838	1,925	880	762	87%	15.3	B	440
	WBR	110	100	91%	26.6	C	867	1,925	100	81	81%	16.3	B	469
	Overall		4,820	4,695	97%	54.7	D	NA	NA	4,560	3,681	81%	178.7	F
SW 6 th Avenue/Lucy Street	NBL	120	120	100%	45.2	D	236	185	60	47	78%	>250.0	F	2,688
	NBT	90	87	97%	40.3	D	236	NA	120	45	38%	>250.0	F	2,688
	NBR	30	26	87%	25.7	C	261	NA	210	80	38%	>250.0	F	2,713
	SBL	50	51	100%	59.3	E	305	290	100	70	70%	>250.0	F	2,727
	SBT	170	166	98%	59.5	E	305	NA	10	9	90%	>250.0	F	2,727
	SBR	40	40	100%	43.4	D	316	NA	130	112	86%	>250.0	F	2,737
	EBL	20	18	90%	58.8	E	709	390	70	73	100%	>250.0	F	2,090
	EBT	910	900	99%	49.5	D	709	1,925	760	446	59%	>250.0	F	2,090
	EBR	60	58	97%	45.4	D	739	1,925	170	129	76%	>250.0	F	2,120
	WBL	80	72	90%	41.3	D	799	350	70	98	100%	121.7	F	699
	WBT	1,140	1,060	93%	20.9	C	799	2,580	860	810	94%	23.9	C	699
	WBR	130	114	88%	17.1	B	860	2,580	60	60	100%	19.8	B	759
	Overall		2,840	2,712	95%	36.7	D	NA	NA	2,620	1,794	68%	>250.0	F

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.11 (continued)
2045 No-Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
SW 167 th Avenue/Lucy Street	NBL	60	56	93%	52.7	D	183	230	220	154	70%	>250.0	F	3,360
	NBR	290	294	100%	10.0	A	206	NA	200	141	71%	>250.0	F	3,383
	EBT	780	764	98%	44.5	D	875	2,590	790	431	55%	>250.0	F	2,748
	EBR	210	206	98%	43.0	D	875	2,590	280	142	51%	>250.0	F	2,748
	WBL	190	165	87%	34.6	C	518	365	220	210	95%	37.3	D	539
	WBT	1,290	1,193	92%	17.2	B	518	2,635	770	787	100%	32.1	C	539
	Overall	2,820	2,678	95%	28.0	C	NA	NA	2,480	1,865	75%	>250.0	F	NA
SW 162 nd Avenue/Lucy Street	NBL	170	165	97%	97.1	F	488	NA	10	11	100%	49.3	D	153
	NBT	150	145	97%	85.1	F	488	NA	10	9	90%	47.0	D	153
	NBR	170	170	100%	65.6	E	488	NA	200	196	98%	7.3	A	153
	SBL	270	215	80%	>250.0	F	3,227	355	160	160	100%	75.8	E	321
	SBT	210	166	79%	>250.0	F	3,227	NA	170	167	98%	73.5	E	321
	SBR	240	177	74%	>250.0	F	3,227	NA	120	121	100%	38.3	D	321
	EBL	110	106	96%	89.6	F	836	395	340	214	63%	>250.0	F	2,831
	EBT	870	854	98%	26.3	C	836	2,675	540	301	56%	>250.0	F	2,831
	EBR	90	89	99%	23.9	C	873	2,675	110	61	55%	>250.0	F	2,868
	WBL	60	61	100%	191.4	F	3,660	350	70	73	100%	66.0	E	820
	WBT	1,070	1,018	95%	169.6	F	3,660	NA	860	866	100%	41.9	D	820
	WBR	340	308	91%	167.0	F	3,691	NA	380	359	94%	39.2	D	851
	Overall	3,750	3,474	93%	198.6	F	NA	NA	2,970	2,538	85%	274.1	F	NA

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

**Table 5.12
2045 Build VISSIM Arterial Segment Performance Results**

Direction	Segment	AM Peak Hour					PM Peak Hour			
		Volume			Speed (mph)		Volume			Speed (mph)
		Demand	Model	Processed Demand	Posted	Model	Demand	Model	Processed Demand	Model
Southbound/Westbound	US 1 north of Davis Parkway	1,200	1,196	100%	45	47	2,070	2,015	97%	11
	US 1 between Davis Parkway and Turnpike northbound on-ramp from southbound US 1	1,310	1,289	98%	45	36	2,120	1,982	93%	21
	US 1 between Turnpike northbound on-ramp from southbound US 1 and southbound off-ramp to US 1/Palm Drive	730	728	100%	45	20	1,030	1,017	99%	45
	US 1 between southbound off-ramp and US 1/Palm Drive Intersection	1,760	1,747	99%	45	11	2,030	1,997	98%	12
	US 1 south of US 1/Palm Drive Intersection	1,570	1,405	90%	45	42	1,220	946	78%	39
	Palm Drive East of US 1	1,640	1,637	100%	30	6	1,680	1,668	99%	32
	Palm Drive Between US 1 and Krome Avenue	1,380	1,348	98%	30	26	1,710	1,664	97%	16
	Palm Drive west of Krome Avenue	1,530	1,460	95%	30	34	1,800	1,647	91%	33
Northbound/Eastbound	US 1 south of US 1/Palm Drive Intersection	1,040	1,028	99%	45	47	1,790	1,799	100%	17
	US 1 between US 1/Palm Drive Intersection and Turnpike on-ramp from northbound US 1	2,310	2,191	95%	45	36	2,810	2,637	94%	33
	US 1 between Turnpike on-ramp from northbound US 1 and Turnpike northbound on-ramp from southbound US 1	1,520	1,424	94%	45	20	1,570	1,454	93%	19
	US 1 between Turnpike northbound on-ramp from southbound US 1 and Davis Parkway/US 1 Intersection	1,520	1,415	93%	45	11	1,570	1,432	91%	12
	US 1 north of Davis Parkway	2,070	1,959	95%	45	42	2,060	1,909	93%	43
	Palm Drive west of Krome Avenue	2,020	1,857	92%	30	6	1,580	1,535	97%	6
	Palm Drive between Krome Avenue and US 1	1,720	1,551	90%	30	26	1,380	1,240	90%	27
	Palm Drive east of US 1	890	854	96%	30	34	1,140	1,104	97%	34

LOS = A-C / Uncongested
 LOS = D / Light Congestion
 LOS = E / Moderate Congestion
 LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.13
2045 Build VISSIM Intersection Performance Results at US 1 Study Area

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
US 1/Davis Parkway	NBL	130	121	93%	61.1	E	736	335	120	102	85%	46.3	D	670
	NBT	1,390	1,301	94%	17.5	B	736	680	1,450	1,328	92%	16.0	B	670
	SBT	970	959	99%	26.3	C	478	NA	1,570	1,476	94%	38.8	D	2,035
	SBR	230	231	100%	5.1	A	391	350	500	502	100%	19.9	B	1,948
	EBL	230	211	92%	65.6	E	231	170	330	314	95%	65.0	E	545
	EBR	200	194	97%	7.9	A	164	550	360	296	82%	19.4	B	478
	WBL	140	135	96%	30.6	C	919	830	190	197	100%	32.5	C	334
	WBT	270	258	96%	56.4	E	919	830	120	108	90%	47.5	D	334
	WBR	450	445	99%	84.8	F	938	385	280	275	98%	27.8	C	353
	Overall	4,010	3,855	96%	33.3	C	NA	NA	4,920	4,598	93%	30.1	C	NA
US 1/Palm Drive	NBL	240	219	91%	78.2	E	340	345	210	215	100%	51.7	D	1,754
	NBT	600	1,385	100%	59.7	E	340	3,935	1,240	2,183	100%	100.3	F	1,754
	NBR	200	208	100%	36.8	D	340	3,935	340	323	95%	92.5	F	1,754
	SBL	180	167	93%	31.6	C	679	450	320	321	100%	47.9	D	443
	SBT	900	2,143	100%	69.2	E	679	5,595	830	1,590	100%	42.6	D	443
	SBR	680	666	98%	11.3	B	679	300	880	842	96%	12.7	B	443
	EBL	1,010	935	93%	40.2	D	593	380	740	682	92%	48.8	D	482
	EBT	510	481	94%	38.6	D	593	545	480	453	94%	31.4	C	482
	EBR	200	183	92%	31.2	C	593	545	160	132	83%	25.5	C	482
	WBL	470	477	100%	106.7	F	1,041	310	230	221	96%	96.3	F	977
	WBT	470	474	100%	59.0	E	1,041	NA	620	620	100%	73.0	E	977
	WBR	700	684	98%	21.2	C	1,076	NA	830	797	96%	28.9	C	1,013
Overall	6,160	8,022	100%	36.3	D	NA	NA	6,880	8,379	100%	42.9	D	NA	
US 1/Krome Avenue	NBL	170	163	96%	49.1	D	322	350	290	285	98%	21.8	C	210
	NBT	1,300	1,307	100%	3.3	A	150	NA	2,530	2,507	99%	6.6	A	0
	SBT	2,490	2,454	99%	4.7	A	403	NA	1,440	1,400	97%	1.7	A	0
	SBR	80	78	98%	5.5	A	45	255	100	95	95%	4.9	A	64
	EBL	70	69	99%	143.4	F	1,055	NA	60	49	82%	18.0	B	73
	EBR	440	418	95%	38.6	D	933	NA	450	361	80%	2.2	A	0
	Overall	4,550	4,489	99%	11.2	B	NA	NA	4,870	4,697	96%	5.8	A	NA

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.13 (continued)
2045 Build VISSIM Intersection Performance Results at US 1 Study Area

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Krome Avenue/Davis Parkway	NBL	40	37	93%	61.8	E	820	415	50	98	100%	49.9	D	1,059
	NBT	670	617	92%	31.4	C	820	2,560	430	563	100%	39.6	D	1,059
	NBR	100	84	84%	11.6	B	846	415	100	147	100%	17.0	B	1,085
	SBL	10	7	70%	122.9	F	3,949	350	30	96	100%	61.2	E	3,935
	SBT	760	704	93%	108.5	F	3,949	NA	380	383	100%	60.1	E	3,935
	SBR	210	190	90%	84.4	F	3,979	350	170	270	100%	35.5	D	3,964
	EBL	180	181	100%	47.1	D	277	335	80	133	100%	53.7	D	857
	EBT	320	318	99%	39.0	D	277	NA	240	368	100%	62.0	E	857
	EBR	80	78	98%	34.5	C	311	410	40	48	100%	69.5	E	890
	WBL	70	68	97%	53.6	D	357	200	130	182	100%	75.1	E	418
	WBT	480	472	98%	52.0	D	357	560	300	492	100%	43.7	D	418
	WBR	80	77	96%	47.5	D	390	560	20	36	100%	43.6	D	451
	Overall		3,000	2,833	94%	60.5	E	NA	NA	1,970	2,816	100%	49.1	D
Krome Avenue/Palm Drive	NBL	50	44	88%	59.4	E	283	300	90	59	66%	53.9	D	491
	NBT	170	165	97%	41.7	D	283	NA	370	318	86%	51.9	D	491
	NBR	120	119	99%	7.6	A	304	300	90	80	89%	8.6	A	512
	SBL	190	160	84%	157.4	F	2,338	300	140	88	63%	>250.0	F	2,702
	SBT	390	356	91%	132.3	F	2,338	2,560	330	229	69%	164.0	F	2,702
	SBR	330	289	88%	83.7	F	2,375	300	290	208	72%	90.9	F	2,738
	EBL	510	455	89%	184.8	F	4,874	275	340	347	100%	81.1	F	1,003
	EBT	1,410	1,305	93%	108.6	F	4,874	NA	1,150	1,099	96%	29.7	C	1,003
	EBR	100	96	96%	95.2	F	4,903	NA	90	80	89%	23.9	C	1,032
	WBL	100	100	100%	46.3	D	549	245	130	137	100%	31.6	C	611
	WBT	1,150	1,138	99%	32.1	C	549	545	1,420	1,386	98%	24.2	C	611
	WBR	130	127	98%	8.5	A	576	545	160	151	94%	7.2	A	638
Overall		4,650	4,354	94%	88.2	F	NA	NA	4,600	4,182	91%	48.8	D	NA

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

**Table 5.14
2045 Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive**

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Southbound Ramps/Campbell Drive	NBL	540	545	100%	45.8	D	334	285	870	839	96%	74.4	E	1,254
	NBT	120	119	99%	47.7	D	334	1,300	180	181	100%	54.7	D	1,254
	NBR	580	577	99%	6.6	A	334	310	800	768	96%	16.5	B	1,254
	SBL	130	127	98%	31.5	C	192	355	150	166	100%	37.5	D	308
	SBT	70	74	100%	57.6	E	192	NA	80	69	86%	73.3	E	308
	SBR	270	262	97%	6.8	A	228	NA	330	298	90%	13.5	B	343
	EBL	250	249	100%	51.0	D	580	200	320	330	100%	50.6	D	356
	EBT	1,190	1,166	98%	51.8	D	580	NA	940	906	96%	41.4	D	356
	EBR	30	25	83%	54.1	D	580	NA	90	77	86%	47.1	D	356
	WBL	400	397	99%	66.7	E	462	230	360	376	100%	76.2	E	357
	WBT	350	334	95%	35.6	D	462	520	1,340	1,334	100%	33.1	C	357
	WBR	140	131	94%	41.1	D	462	230	180	187	100%	37.4	D	357
	Overall		4,070	4,006	98%	40.6	D		NA	5,640	5,531	98%	43.0	D
Kingman Road/Campbell Drive	SBL	230	225	98%	43.1	D	304	225	370	357	96%	42.5	D	1,049
	SBR	370	371	100%	9.0	A	332	225	480	463	96%	19.2	B	1,077
	EBL	260	277	100%	25.2	C	268	290	530	472	89%	32.7	C	543
	EBT	1,640	1,607	98%	8.3	A	268	520	1,360	1,354	100%	11.0	B	543
	WBT	520	497	96%	35.2	D	326	1,300	1,400	1,443	100%	31.9	C	634
	WBR	320	308	96%	9.4	A	74	270	590	548	93%	16.6	B	380
	Overall		3,340	3,285	98%	16.4	B		NA	4,730	4,637	98%	23.6	C
Northbound Ramps/Campbell Drive	NBL	250	232	93%	63.1	E	504	300	200	169	85%	53.8	D	297
	NBR	280	273	98%	30.2	C	262	320	300	268	89%	11.7	B	126
	EBT	1,380	1,357	98%	20.7	C	217	400	1,090	1,069	98%	12.0	B	188
	EBR	490	466	95%	9.5	A	325	250	640	634	99%	9.3	A	564
	WBT	590	575	97%	6.2	A	202	485	1,790	1,836	100%	4.5	A	427
	Overall		2,990	2,903	97%	20.3	C		NA	4,020	3,976	99%	9.9	A
SW 152 nd Avenue Intersection/ Campbell Drive	NBL	380	372	98%	65.2	E	1,540	195	1,080	1,111	100%	30.9	C	877
	NBT	620	598	96%	84.8	F	1,540	NA	340	329	97%	37.8	D	877
	NBR	370	348	94%	85.8	F	1,360	195	440	389	88%	27.1	C	697
	EBT	1,140	1,117	98%	35.0	D	539	430	750	719	96%	38.1	D	395
	EBR	520	514	99%	5.9	A	507	365	640	617	96%	3.7	A	363
	WBL	170	164	96%	52.4	D	267	360	140	119	85%	48.8	D	272
	WBT	210	208	99%	19.9	B	267	NA	710	730	100%	23.1	C	272
	WBR	740	743	100%	4.3	A	46	365	260	231	89%	2.4	A	38
	Overall		4,150	4,064	98%	40.0	D	1,540	NA	4,360	4,245	97%	26.0	C

SECTION FIVE

Future Traffic Conditions

Table 5.14 (continued)
2045 Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
US 1/SW 328 th Street (Lucy Street)	NBL	130	126	97%	73.1	E	666	325	150	144	96%	29.2	C	360
	NBT	680	684	100%	60.7	E	666	NA	600	578	96%	34.7	C	360
	NBR	350	350	100%	19.8	B	697	325	460	456	99%	14.5	B	391
	SBL	210	212	100%	144.6	F	631	355	280	291	100%	29.2	C	388
	SBT	910	891	98%	52.4	D	631	NA	810	768	95%	31.6	C	388
	SBR	100	101	100%	46.8	D	650	NA	200	194	97%	27.9	C	407
	EBL	180	179	99%	70.8	E	454	380	110	107	97%	59.3	E	368
	EBT	750	740	99%	37.0	D	454	NA	600	593	99%	55.0	D	368
	EBR	200	200	100%	8.3	A	472	380	260	257	99%	8.7	A	386
	WBL	100	90	90%	52.8	D	1,041	460	90	83	92%	196.3	F	2,082
	WBT	1,440	1,356	94%	70.6	E	1,041	1,925	1,140	945	83%	215.7	F	2,082
	WBR	150	142	95%	27.7	C	1,069	1,925	130	96	74%	152.7	F	2,110
	Overall		5,200	5,071	98%	56.4	E	NA	NA	2,641	2,483	94%	76.5	E
SW 6 th Avenue/Lucy Street	NBL	90	90	100%	56.4	E	170	185	40	40	100%	107.6	F	161
	NBT	70	64	91%	68.8	E	170	NA	80	70	88%	82.6	F	161
	NBR	80	80	100%	13.1	B	192	185	270	266	99%	14.7	B	184
	SBL	60	57	95%	53.0	D	375	290	130	109	84%	83.3	F	576
	SBT	170	165	97%	79.3	E	375	NA	10	6	60%	174.0	F	576
	SBR	40	41	100%	11.7	B	384	290	130	117	90%	81.8	F	585
	EBL	20	18	90%	23.7	C	659	390	50	56	100%	19.8	B	551
	EBT	1,230	1,224	100%	15.6	B	659	1,925	1,120	1,097	98%	22.5	C	551
	EBR	60	63	100%	6.3	A	659	1,925	170	167	98%	12.1	B	551
	WBL	120	119	99%	29.3	C	616	350	100	89	89%	25.2	C	424
	WBT	1,560	1,485	95%	28.3	C	616	2,580	1,190	1,059	89%	36.9	D	424
	WBR	190	183	96%	11.0	B	673	2,580	80	81	100%	7.5	A	482
	Overall		3,690	3,589	97%	26.3	C	NA	NA	1,205	1,101	91%	32.8	C

■ LOS = A-C / Uncongested
 ■ LOS = D / Light Congestion
 ■ LOS = E / Moderate Congestion
 ■ LOS = F / Heavily Congested

SECTION FIVE

Future Traffic Conditions

Table 5.14 (continued)
2045 Build VISSIM Intersection Performance Results Along Lucy Street and Campbell Drive

Intersection Name	Movement	AM Peak Hour						Queue Storage (feet)	PM Peak Hour					
		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)		Volume			Delay (sec/veh)	Estimated LOS	Maximum Queue (feet)
		Demand	Model	Processed Demand					Demand	Model	Processed Demand			
Southbound off-ramp/Lucy Street	SBL	450	440	98%	27.0	C	348	1,650	430	436	100%	25.5	C	288
	SBR	550	549	100%	21.5	C	348	1,650	420	390	93%	15.8	B	288
	EBT	1,370	1,356	99%	23.6	C	612	1,820	1,520	1,463	96%	42.5	D	1,204
	WBT	1,320	1,238	94%	8.1	A	427	710	950	877	92%	16.2	B	601
	Overall	3,690	3,583	97%	18.4	B	NA	NA	3,320	3,166	95%	29.6	C	NA
SW 167 th Avenue (Northbound on-ramp)/ Lucy Street	NBL	30	31	100%	61.5	E	320	230	180	148	82%	80.3	F	374
	NBT	150	149	99%	71.7	E	320	NA	80	90	100%	75.0	E	374
	NBR	170	167	98%	13.8	B	349	230	160	169	100%	13.1	B	404
	EBL	380	372	98%	14.3	B	579	280	460	441	96%	6.7	A	337
	EBT	1,150	1,143	99%	9.6	A	579	685	1,120	1,080	96%	9.2	A	337
	EBR	290	282	97%	5.7	A	393	280	370	375	100%	5.2	A	370
	WBL	110	104	95%	100.5	F	2,379	365	130	119	92%	44.7	D	555
	WBT	1,290	1,208	94%	114.3	F	2,379	2,635	770	729	95%	75.7	E	555
	WBR	320	302	94%	74.6	E	2,379	365	460	426	93%	40.3	D	555
	Overall	3,890	3,758	97%	54.3	D	NA	NA	3,730	3,577	96%	31.7	C	NA
SW 162 nd Avenue/Lucy Street	NBL	240	232	97%	66.9	E	372	265	10	10	100%	92.1	F	105
	NBT	80	87	100%	66.6	E	372	NA	10	9	90%	36.4	D	105
	NBR	170	168	99%	13.6	B	383	265	200	196	98%	10.7	B	117
	SBL	270	268	99%	68.6	E	416	355	160	151	94%	68.6	E	226
	SBT	210	212	100%	74.9	E	416	NA	170	178	100%	71.5	E	226
	SBR	260	256	98%	20.8	C	456	355	130	116	89%	15.1	B	266
	EBL	140	132	94%	49.2	D	686	400	440	398	90%	183.6	F	1,915
	EBT	1,070	1,064	99%	27.5	C	686	2,675	700	670	96%	28.7	C	1,915
	EBR	110	108	98%	7.3	A	726	400	140	126	90%	7.5	A	1,955
	WBL	60	55	92%	32.8	C	715	350	70	75	100%	30.0	C	661
	WBT	1,220	1,205	99%	30.0	C	715	NA	1,220	1,180	97%	36.4	D	661
	WBR	190	195	100%	8.2	A	748	350	20	18	90%	6.1	A	694
	Overall	4,020	3,982	99%	35.0	C	NA	NA	3,270	3,127	96%	53.4	D	NA

LOS = A-C / Uncongested
 LOS = D / Light Congestion
 LOS = E / Moderate Congestion
 LOS = F / Heavily Congested

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The queues in **Table 5.11** are the intersection approach queues while the queues in **Table 5.15** are the backup queues measured from the stop bar at the ramp terminal in the direction of the off-ramp. An additional node evaluation is placed at each off-ramp gore point to capture queues exceeding the off-ramp queue storage. If the off-ramp terminal queue length exceeds the off-ramp queue storage, the queue length in **Table 5.15** is calculated as the length of the off-ramp plus the queue length measured from the gore point.

Table 5.15 summarizes the results of the off-ramp signals back of queue analyses for the AM and PM design hours for the 2045 Build conditions for the No-Build and Build conditions, respectively. The results present the queue length in feet for each lane group movement. The available storage length was calculated from the stop bar at the ramp terminal intersection to the gore with Turnpike mainline minus the 570 feet required for stopping distance for a design speed of 65 mph per FDOT's 2016 Green book (**Table 3-22**), and accounting for the changes in number of lanes. For the No-Build conditions, the southbound off-ramp queues at Campbell Drive interchange will extend north past Biscayne Drive interchange due to extended queues from US 1 interchange. The Build queue analysis results indicate that the off-ramp queue lengths are not expected to exceed the available storage lengths at US 1, Lucy Street and Campbell Drive interchanges.

5.3.4 Build Alternative Year of Failure Estimation

Year of failure was estimated for the mainline and the intersections around the study area. For the mainline, the segment carrying the highest volume (4,740 vph) is north of Campbell Drive interchange. The estimated 2050 volume for this segment is 5,090 vph which is less than 5,220 vph, the LOS D MSV for six lane freeway facility.

For the intersections around the study area, the 2025, 2035 and 2045 intersection delays were interpolated and extrapolated to estimate delays for the intermediate and outer design years. **Table 5.17** provides intersection average delay per vehicle for the 2025 through 2050 worst case AM or PM design hour. All intersections around the study area are projected to operate at LOS D or better through 2050 except the intersections at Krome Avenue/Davis Parkway, Krome Avenue/Palm Drive, US 1/Lucy Street, SW 167th Avenue (Northbound on-ramp)/Lucy Street and SW 162nd Avenue/Lucy Street which are projected to start operating at LOS E or worse from 2033 through 2050. The SW 167th Avenue (Northbound on-ramp)/Lucy Street is the only ramp terminal that is projected to operate at LOS E after the design year. The 2025 through 2050 queue analysis results for the Build alternative indicate that the off-ramp queue lengths are not anticipated to create backups into the high-speed lanes of the Turnpike at US 1, Lucy Street and Campbell Drive interchanges.

For the intersections showing failure before the design year, there will be more coordinated efforts in the later phases of the project to make sure mitigation measures are applied to improve operations.

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Table 5.15
2045 Off-Ramp Queuing Analysis Results

Intersection	Approach	Movement	Available Storage (feet)	Queue (feet)			
				No-Build		Build	
				AM	PM	AM	PM
Campbell Drive at southbound off-ramp	Northbound	L (WB)	1,250	11,773	11,688	334	1,240
		TH (NB)					
		R (EB)					
Campbell Drive at northbound off-ramp	Northbound	L (WB)	3,120	308	888	504	297
		R (EB)					
Lucy Street at southbound off-ramp	Southbound	L (EB)	1,650	--	--	348	288
		R (WB)					
Davis Parkway/US 1 North at southbound off-ramp	Westbound	L (SB)	1,030	790	21,309	919	334
		TH (WB)					
		R (NB)					
US 1 South at Palm Drive	Southbound	L (EB)	2,940	2,940	23,348	679	443
		TH (SB)					
		R (WB)					

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Table 5.16
VISSIM Network Vehicle Performance

Performance Measure	No-Build		Build		% Difference	
	AM	PM	AM	PM	AM	PM
2025						
Vehicle Network Performance Processed Demand	99%	100%	100%	100%	1%	0%
Latent Demand (vph)	1	1	0	0	-100%	-60%
Total Travel Time (hours)	1,416	1,655	1,384	1,441	-2%	-13%
Total Delay Time (hours)	377	556	285	356	-25%	-36%
Vehicle Miles Traveled (VMT)	49,899	54,604	52,670	53,836	6%	-1%
Latent Delay (hours)	0.5	0.5	0.2	0.3	-51%	-37%
Average Delay (sec/veh)	79	102	58	70	-27%	-32%
Average Speed (mph)	35	33	38	37	8%	13%
2045						
Vehicle Network Performance Processed Demand	83%	76%	100%	100%	17%	24%
Latent Demand (vph)	3,641	6,192	14	42	-100%	-99%
Total Travel Time (hours)	4,364	5,964	2,342	2,321	-46%	-61%
Total Delay Time (hours)	3,000	4,702	747	721	-75%	-85%
Vehicle Miles Traveled (VMT)	62,043	61,006	78,121	78,371	26%	28%
Latent Delay (hours)	2,043	3,277	3	10	-100%	-100%
Average Delay (sec/veh)	413	619	100	95	-76%	-85%
Average Speed (mph)	14	10	29	34	103%	229%

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Future Traffic Conditions

**Table 5.17
Build Alternative Year of Failure Estimation**

Intersection	Intersection Average Delay per Vehicle - Worst Case AM or PM Design Hour																									
	Year																									
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
US 1/Davis Parkway	20	20	21	22	23	23	24	25	25	26	27	27	28	29	29	30	31	31	32	33	33	34	35	35	36	37
US 1/Palm Drive	24	25	26	27	28	29	30	31	32	33	34	35	35	36	37	38	39	40	41	42	43	44	45	46	47	48
US 1/Krome Avenue	4	4	5	5	6	6	6	7	7	7	8	8	8	9	9	9	10	10	10	11	11	12	12	12	13	13
Krome Avenue/Davis Parkway	23	25	27	29	31	33	34	36	38	40	42	44	46	47	49	51	53	55	57	59	61	62	64	66	68	70
Krome Avenue/Palm Drive	22	25	29	32	35	38	42	45	48	52	55	58	62	65	68	72	75	78	82	85	88	92	95	98	101	105
US 1/SW 328th Street (Lucy Street)	43	45	46	48	50	51	53	55	56	58	60	61	63	65	66	68	70	71	73	75	77	78	80	82	83	85
SW 6th Avenue/Lucy Street	22	22	23	23	24	25	25	26	26	27	27	28	28	29	30	30	31	31	32	32	33	33	34	34	35	36
Southbound off-ramp/Lucy Street	23	23	23	24	24	24	25	25	25	26	26	26	27	27	27	28	28	29	29	29	30	30	30	31	31	31
SW 167th Avenue (Northbound on-ramp)/Lucy Street	33	34	35	36	37	38	39	40	41	42	44	45	46	47	48	49	50	51	52	53	54	55	56	58	59	60
SW 162nd Avenue/Lucy Street	36	37	38	38	39	40	41	42	43	44	45	45	46	47	48	49	50	51	52	53	53	54	55	56	57	58
Southbound Ramps/Campbell Drive	44	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
Kingman Road/Campbell Drive	20	21	21	21	21	21	21	22	22	22	22	22	22	22	23	23	23	23	23	23	24	24	24	24	24	24
Northbound Ramps/Campbell Drive	27	27	26	26	26	25	25	25	24	24	24	23	23	23	22	22	22	21	21	21	20	20	20	19	19	19
SW 152nd Avenue Intersection/Campbell Drive	17	18	19	20	22	23	24	25	26	27	29	30	31	32	33	34	35	37	38	39	40	41	42	43	45	46

LOS = A-C / Uncongested
 LOS = D / Light Congestion
 LOS = E / Moderate Congestion
 LOS = F / Heavily Congested

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5.1 SAFETY ANALYSIS OF THE 2045 NO-BUILD AND BUILD ALTERNATIVES

5.1.1 HSM Analysis

A safety analysis was conducted to study the impacts of the proposed Build Alternative on the local street network within the AOI. The study area focused on the Florida's Turnpike freeway segments, ramp terminals, and ramp segments for US 1, SW 328th Street / Lucy Street, Krome Avenue and SW 312th Street/ Campbell Drive arterial segments and major intersections along the arterials. The analysis was conducted using the predictive methods in Chapters 12 and 19 of the HSM, where available, and the Enhanced Interchange Safety Analysis Tool (ISATe), which apply a combination of Safety Performance Functions (SPFs), crash modification factors (CMFs), and calibration factors to estimate frequency and cost of crashes for each segment and intersection. Note that the resulting predictions should be used with caution if the input AADTs (highlighted cell in the HSM tools) exceed the range of data used to develop one or more of the SPFs. The growth rates were estimated based on 2025 and 2045 AADTs.

The following crash severity level costs were used for the crash cost saving analysis (Source: FDOT 2022 Design Manual Crash Cost Table 122.6.2)

- Fatal (K) \$10,890,000
- Severe Injury (A) \$888,030
- Moderate Injury (B) \$180,180
- Minor Injury (C) \$103,950
- Property Damage Only (O) \$7,700

The No-Build and Build Alternatives were evaluated, the predicted number of crashes and associated costs were compared for the 2025 to 2045 analysis period. The results of the safety analysis are summarized in **Table 5.18**. It is important to note that the safety analysis tools available to date are deterministic in nature and estimate future crashes mainly based on AADT and roadway characteristics. These tools do not account for vehicle interactions. The No-Build Alternative is expected to have extensive congestion and queues that may potentially impact crashes specially along US 1. Consequently, cost savings would be higher than reported. Nevertheless, the overall predicted crashes are lower for the Build Alternative compared to the No-Build Alternative due to added capacity along the Florida's Turnpike Extension mainline and fly over ramps over Palm Drive that divert traffic from US 1. The following intersections under the Build Alternative are anticipated to perform better than No-Build where existing safety ratios were greater than one (see **Table 3.9**):

- US 1 at SW 328th Street/Lucy Street (predicted crashes reduced by approximately 14 percent)
- US 1 at Florida's Turnpike Extension southbound off-ramp/Davis Parkway (predicted crashes reduced by approximately 15 percent)
- US 1 at SW 344th Street/Palm Drive (predicted crashes reduced by approximately 40 percent)
- Krome Avenue at Davis Parkway (predicted crashes reduced by approximately 9 percent)

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- Krome Avenue at SW 344th Street/Palm Drive (predicted crashes reduced by approximately 5 percent)
- SW 312th Street/Campbell Drive at SW 152nd Avenue (predicted crashes reduced by approximately 15 percent)

The following existing ramp terminals showed reduction in predictive crashes under the Build Alternative compared to the No-Build Alternative. This reduction is due to the anticipated diversion of traffic due to a new interchange at Lucy Street.

- US 1 at Florida's Turnpike Extension southbound off-ramp/Davis Parkway (predicted crashes reduced by approximately 15 percent)
- Southbound US 1 to Turnpike northbound on-ramp (predicted crashes reduced by approximately 25 percent)
- Campbell Drive Interchange Ramp Terminals (predicted crashes reduced by approximately 6 percent)

The Build Alternative has several additional merge/diverge segments and new access points along the freeway and SW 328th Street/Lucy Street when compared to the No-Build Alternative, resulting in a higher number of potential crashes at the adjacent intersections and segments along Lucy Street. However, the Build Alternative will overall relieve congestion along US 1, Krome Avenue, and SW 312th Street/Campbell Drive.

Note that there are bike lanes and sidewalks which will be maintained for bicyclist and pedestrian safety, and there will not be any free-flow right-turn movements at the new interchange.

Based on these results, the Build Alternative is predicted to have a 21-year crash cost savings of approximately \$60 Million compared to the No-Build Alternative, in 2020 present value. Detailed analysis tables are provided in **Appendix M**.

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Table 5.18
2025 to 2045 Predicted Number of Crashes and Cost Saving

Site	No-Build		Build	
	N _{predicted} *	2020 Present Value	N _{predicted} *	2020 Present Value
Florida Turnpike Extension				
Freeway Segments	1,061.62	\$98,016,821	809.48	\$75,242,169.37
US 1 Ramp Segments	227.31	\$17,509,047	234.89	\$18,249,142.20
SW 328 th Street/Lucy Street Ramp Segments	-	-	28.31	\$2,144,520.88
Campbell Drive Ramp Segments	217.81	\$16,829,812	193.99	\$14,982,150.36
SW 328 th Street/Lucy Street Ramp Terminals	-	-	196.55	\$20,029,164.12
Campbell Drive Interchange Ramp Terminals	785.49	\$83,151,303.	700.58	\$74,079,152.84
SUBTOTAL	2,292.24	\$215,506,984	2,163.80	\$204,726,299.77
US 1 Intersections				
SW 328 th Street/Lucy Street	327.44	\$39,373,200	281.84	\$33,037,085
Florida's Turnpike Extension southbound off-ramp / Davis Parkway	267.74	\$31,507,879	226.90	\$26,640,047
Southbound US 1 to Turnpike northbound on-ramp	208.81	\$24,550,497	155.8	\$18,292,661
SW 344 th Street/Palm Drive	543.33	\$63,765,680	323.27	\$37,766,998
Krome Avenue	130.40	\$14,970,932	127.55	\$14,575,998
SUBTOTAL (Intersection)	1,477.71	\$174,168,188	1,115.36	\$130,312,790
US 1 Segments				
SW 33300 Block to SW 328 th Street/Lucy Street	54.23	\$6,597,986	43.28	\$5,169,599
Davis Parkway to SW33300 Block	25.44	\$2,997,961	22.44	\$2,639,381
Southbound US 1 northbound Turnpike on-ramp to Davis Parkway	7.26	\$856,441	13.08	\$1,540,793
Turnpike southbound off-ramp to southbound US 1 northbound Turnpike on-ramp	15.72	\$1,856,092	9.21	\$1,085,282
SW 344 th Street/Palm Drive to Turnpike southbound off-ramp	62.42	\$7,343,574	15.42	\$1,783,692
Krome Avenue to SW 344 th Street/Palm Drive	251.23	\$29,461,691	251.23	\$29,461,691
SUBTOTAL (Segment)	416.31	\$49,113,745	354.65	\$41,680,438
Krome Avenue Intersections				
Davis Parkway	120.36	\$13,772,262	109.22	\$12,343,125
SW 344 th Street/Palm Drive	233.65	\$26,990,123	221.94	\$25,545,991
SUBTOTAL (Intersection)	354.01	\$40,762,385	331.16	\$37,889,117

*Predicted Crashes

Sources:

FDOT 2022 Design Manual Crash Cost Table 122.6.2

HSM Crash Distribution for Florida Table 122.6.4

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Table 5.18 (continued)
2025 to 2045 Predicted Number of Crashes and Cost Saving

Site	No-Build		Build	
	N _{predicted} *	2020 Present Value	N _{predicted} *	2020 Present Value
SW 328th Street/Lucy Street Intersections				
SE 6 th Avenue	118.01	\$13,511,621	208.02	\$23,912,185
SW 167 th Avenue**	113.69	\$12,859,370	-	-
SW 162 nd Avenue	212.41	\$24,078,540	281.65	\$34,290,733
SUBTOTAL (Intersection)	444.11	\$50,449,531	489.67	\$58,202,918
SW 328th Street/Lucy Street Segments				
US 1 to SE 6 th Avenue	35.82	\$4,083,843	50.69	\$5,768,749
SE 6 th Avenue to SW 167 th Avenue	44.24	\$5,049,808	46.79	\$5,333,474
SW 167 th Avenue to SW 162 nd Avenue	51.55	\$5,876,919	64.68	\$7,382,277
SUBTOTAL (Segment)	131.61	\$15,010,570	162.16	\$18,484,500
SW 312th Street/Campbell Drive Intersections				
Kingman Road	210.66	\$25,431,624	193.53	\$23,324,650
SW 152 nd Avenue	202.85	\$24,600,559	173.06	\$20,915,287
SUBTOTAL (Intersection)	413.51	\$50,032,184	366.59	\$44,239,936
SW 312th Street/Campbell Drive Segments				
Kingman Road to west Northbound Ramps	32.42	\$3,912,306	27.80	\$3,376,828
Total	5,561.91	\$598,955,893	5,011.29	\$538,912,8264
Crash Cost Savings	\$60,043,066.83			

*Predicted Crashes

** Included under Ramp Terminal.

Sources:

FDOT 2022 Design Manual Crash Cost Table 122.6.2

HSM Crash Distribution for Florida Table 122.6.4

SECTION SIX

Design Exceptions and Variations

6.1 POTENTIAL DESIGN EXCEPTIONS AND VARIATIONS

The design criteria and standards are based on design parameters outlined in A Policy on Geometric Design of Highways and Streets (AASHTO, 2011), FDOT Design Manual (FDM) (FDOT, 2020), Turnpike Design Handbook (TDH) (FTE, 2020), Load Rating Manual (FDOT, 2020), Roadside Design Guide (AASHTO, 2011) Load and Resistance Factor Design (LRFD) Bridge Design Specifications (AASHTO, Eighth Edition and 2018 Interims), Turnpike Supplemental to the FDOT Structures Manual (FTE, 2020), Turnpike Supplemental to the FDOT Drainage Manual (FTE, 2020) and General Tolling Requirements (GTR) (FTE 2019).

The mainline widening, modifications of the US 1 interchange and the new proposed Lucy Street interchange require design variations and exceptions due to the constrained right-of-way. The sign master plan and the concept for the Build Alternative are included in **Appendix N**. Auxiliary lanes are needed along the Turnpike Mainline for acceleration and deceleration. The exceptions/variations identified are listed below:

- **Interchange Spacing** – the proposed Lucy Street interchange is a mile from both US 1 and Campbell Drive, which is shorter than a 2-mile interchange spacing standard.
- **Curve Length** – some of the proposed interchange ramp curve lengths are less than the FDOT standard minimum required length of 15 times the design speed (15V).

SECTION SEVEN

Project Justification

The Florida's Turnpike Extension (SR 821) is a tolled limited-access facility, under the operation and management of the FTE. This section discusses the proposed Build alternative with respect to the Federal Highway Administration's (FHWA) two policy points. A discussion of the access modifications with respect to conformance with the FHWA policy points related to access is provided below.

7.1 FHWA'S POLICY POINTS

Although the Florida's Turnpike is not part of the interstate system, FDOT IAR approval process outlines addressing FHWA's two policy points in documentation related to requests for new or revised access points to the state's limited access facilities. The FHWA's two policy points are addressed below:

- 1. 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, and 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 (Title 23, Code of Federal Regulations (CFR), paragraphs 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 should 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 crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request should also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).*

The traffic analysis includes the evaluation of the proposed additional mainline capacity, safety, and operational and engineering (SO&E) acceptability for the proposed Lucy Street interchange and the modifications to the US 1 interchange.

Since the study area is classified as urban, the analysis area of influence (AOI) includes the Campbell Drive interchange on the north side of the two study interchanges at US 1 and Lucy Street. The local street network around the study area is extended to include several intersections for safety and operational analysis. The AOI along cross streets includes the US 1 intersections at Davis Parkway, Palm Drive, and Krome Avenue; and Krome Avenue intersections at Davis Parkway and Palm Drive; intersections along Lucy Street at US 1, SE 6th Avenue, SW 167th Avenue and SW 162nd Avenue. Along Campbell Drive, intersections at the southbound and northbound ramp terminals, SW 157th Avenue, Kingman Road, and SW 152nd Avenue are included.

The proposed Build alternative includes modifications at US 1 interchange, a new interchange at Lucy Street, providing access to/from north. The modifications at US 1 provide a new southbound off and northbound on ramps over US 1 and Palm Drive intersection, with an additional diversion for the US 1 southbound right-turn traffic to the westbound Palm Drive. A single-lane westbound diversion is provided just south of US 1/West Davis Parkway intersection, looping around west of the existing

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Project Justification

southbound off-ramp. The provided diversion becomes a two-lane segment after the loop, to provide a connection for the southbound off-ramp traffic to westbound Palm Drive. This modification not only removes the concentration of ramp traffic at one intersection, but also eliminates the weaving movements from the US 1 and the off-ramp traffic. Consequently, it improves the safety and flow of traffic at the US 1 interchange, the benefits of which cannot be quantified by the available safety evaluation tools such as the Highway Safety Manual (HSM).

Ultimate improvement needs at the Campbell Drive Interchange were evaluated and determined during a PD&E study [FPN 423372-1] for the Turnpike Extension corridor from Campbell Drive (MP 2) north to the Government Center area (MP 12) which was completed in 2013. An Interchange Modification Report (IMR) to support the access modification proposed at the Turnpike Extension and Campbell Drive interchange was completed in 2014, followed by a Design Traffic Report (DTR), which was completed in 2015.

The Build alternative is projected to reduce the average vehicle delay at the US 1/Palm Drive intersection by more than 80 seconds/vehicle (approximately 70 percent reduction) during the 2045 AM design hour, and by more than 200 seconds/vehicle (approximately 83 percent reduction) during the 2045 PM design hour compared to the 2045 No-Build intersection delays. At US 1/Davis Parkway intersection, there are no changes in level of service despite a 36 percent increase in vehicle delays during the 2045 AM design hour compared to the No-Build 2045 AM design hour. For the 2045 PM design hour, the Build alternative is projected to reduce the average vehicle delay by 80 percent at US 1/Davis Parkway intersection.

At the Campbell Drive interchange, the Build alternative is projected to reduce the average vehicle delay at the southbound ramp terminal intersection by more than 135 seconds/vehicle (approximately 77 percent reduction) during the 2045 AM design hour, and by more than 215 seconds/vehicle (approximately 84 percent reduction) during the 2045 PM design hour compared with the 2045 No-Build intersection delays. At the new Lucy Street interchange, the ramp intersections are projected to operate at LOS D or better. Overall, under Build alternative, all mainline freeway segments and interchange ramp terminals are projected to operate at LOS D or better, with significant operational improvements to the local network compared to No-Build conditions.

Under the Build alternative, there are no anticipated adverse impacts to the traffic operations at other intersections along Campbell Drive, Lucy Street and around US 1 study area.

The projected failing conditions under the No-Build alternative are expected to increase future crash risk within the project corridor. This potential for increased crash risk is alleviated by the capacity improvements proposed in the Build alternatives. Due to the introduction of new Lucy Street interchange in the Build condition, the HSM safety analysis predicts an increased number of crashes for some intersections under the Build conditions. However, it is important to note that the HSM evaluation tool is limited in its ability to quantify the benefits of many operational improvements proposed under the Build conditions. Overall, the Build condition will not only divert traffic from the congested Campbell Drive and US 1 interchanges but will also enhance safety, add capacity, increase mobility, accommodate future traffic demands, and reduce evacuation travel times within the study region.

SECTION SEVEN

Project Justification

2. *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 or high occupancy vehicle and high occupancy toll lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (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.*

The new Lucy Street interchange, connecting to a public road was requested and is supported by the local stakeholders. The proposed Lucy Street access is provided as an ancillary interchange to both Campbell Drive and US 1 interchanges to serve the heaviest area movements to/from the north for typical commuter and emergency scenarios. Since this project is at the end section of the facility, lack of demand and design constraints did not warrant provision for the traffic movements to/from the south. The proximity of the access to the existing adjacent interchanges at US 1 and Campbell Drive is not anticipated to create operational or safety concerns and planned advancement will include enhanced way finding signage and turn restrictions to avoid wrong-way movements on ramps. A new Lucy Street access would not divert a sufficient level of traffic to negate the need for the proposed improvements at the US 1 terminal interchange. There are a few changes to business accesses along US 1 associated with the proposed interchange modifications. These access changes were assessed, and U-turns are being provided in both directions to accommodate the impacted traffic on the local street network.

The modifications of the US 1 interchange, and the new proposed access at Lucy Street will be designed to conform to the American Association of State Highway and Transportation Officials (AASHTO) design standards, Florida's Design Manual (FDM) and Turnpike Design Handbook (TDH). The mainline widening, modifications of the US 1 interchange and the new proposed Lucy Street interchange require design variations and exceptions due to the constrained right-of-way. Auxiliary lanes are needed along the Turnpike Mainline for acceleration and deceleration. The exceptions/variations identified are listed below:

- **Interchange Spacing** – the proposed Lucy Street interchange is a mile from both US 1 and Campbell Drive, which is shorter than a 2-mile interchange spacing standard.
- **Curve Length** – some of the proposed interchange ramp curve lengths are less than the FDOT standard minimum required length of 15 times the design speed (15V).

If other design exceptions or variations arises, they will be processed per FHWA and FDOT standards.

The sign master plan and the concept for the Build Alternative are included in **Appendix N**. Auxiliary lanes are needed along the Turnpike Mainline for acceleration and deceleration.

SECTION EIGHT

Conceptual Funding

This SIJR is concurrent with the ongoing PD&E study, which was completed in 2021. The adopted FTE Fiscal Year (FY) 2022 to 2026 five-year work program has \$8.2 Million of Design funding in FY 2025 and \$9 Million of Right-of-Way funding in FY 2026. Construction funding is outside of the work program. It is anticipated that Design and Right-of-Way funding will be deferred in the upcoming period FY 23 to FY 27 due to a lack of local stakeholder support for the Turnpike ramp over the Palm Drive and US 1 intersection.

SECTION NINE

Access Management

There are a few changes to business accesses along US 1 associated with the proposed interchange modifications. These access changes were assessed, and U-turns are being provided in both directions to accommodate the impacted traffic on the local street network. There were coordination meetings with the locals and business owners regarding access changes and efforts to develop access management agreement with all necessary parties. The access management plans were communicated to FDOT, the local government, and individual property owners. The access plans were developed to include properties located within the AOI, and consistent with the access classification of the crossroads. The access management plan in this project provides reasonable access to the public road system and maintains the long-term safety and operation of the interchange areas. All planned access to the SHS, within the interchange area, conform to Rules 14-96 and 14-97 F.A.C., and are consistent with the criteria outlined in the FDOT Access Management Handbook. Provision of driveway connections and median openings in interchange areas are consolidated and provided to preserve the integrity of interchanges.

SECTION TEN

Environmental Considerations

Based on the PD&E study, the recommended Build Alternative for the Florida's Turnpike between US 1 (MP 0) and Campbell Drive (MP 3), including a portion of US 1 to the south of Palm Drive in will not impact any wetlands along the project corridor. Most proposed interchange modifications and construction activities will be contained within the existing right-of-way.

The Wetland and Surface Water evaluation performed for this project identified three natural wetland areas and two types of surface waters, i.e., stormwater swales and other surface waters. The potential impacts are to the eleven stormwater swales and two other surface waters. Under the current design plan, the impacts consist of approximately 9.78 acres impacts of re-grading in the stormwater swales, approximately 2.0 acres of dredge and fill, and 0.32 acres of fill in other surface waters.

During the interagency meeting with the South Florida Water Management (SFWMD) and US Army Corps of Engineers (USACE), it was determined that mitigation will not be required for the impacts to stormwater swales, but permits are anticipated from the USACE and SFWMD for other surface waters. Therefore, the Uniform Mitigation Assessment Method (UMAM) is not required to assess the impacts for these surface waters.

Indirect impacts to hydrological and water quality are not anticipated as result of the project because the proposed improvements are to an existing facility. Furthermore, stormwater management standards have increased since the roadway facility was constructed. The project will result in overall water quality improvements in the project corridor to meet the new standards. There will be no direct impacts to the natural wetlands (emergent and forested wetlands). Cumulative impacts are defined as the direct and indirect effects of the proposed project under consideration. There are no jurisdictional wetlands that will be impacted within the study area. The stormwater swales will be replaced, and the other surface waters will not be cumulatively impacted. Therefore, no cumulative impacts are associated with this project.

Canal right-of-way occupancy permits will be needed for any work proposed in, on, or over a canal. Most of the proposed improvements are within the right-of-way (ROW). The recommended Build Alternative will require ROW for the proposed improvements. Relocation potentials due to Build Alternative are identified on the eastside of US 1 south of Palm Drive. To minimize the unavoidable effects of ROW acquisition and displacement of businesses and/or people, the Florida Department of Transportation will carry out a ROW and Relocation Assistance Program in accordance with Florida Statute 421.55, Relocation of Displaced Persons. No acquisition of residential parcels will be required. There is one business and one landlord business relocation due to the proposed improvements at the US 1 interchange. There are no relocations at the Lucy Street partial interchange, but five parcels will be affected. No acquisition of public parcels will be required.

The viewshed along the Turnpike is not expected to be affected by the addition of travel lanes on an existing main highway corridor. The viewshed at the US 1 interchange will be modified to include a new proposed ramp bridge over Palm Drive for the new on- and off-ramps. The viewshed at Lucy Street will be modified to include the new on- and off-ramps on both sides of Turnpike that will be on a Mechanically Stabilized Earth (MSE) wall and embankment. The widening of the existing Turnpike from four lanes to six, addition of the ramp bridges and partial interchange is not expected to be perceived as inconsistent with the character of the community.

SECTION TEN

Environmental Considerations

Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the cities of Florida City and Homestead, Miami Dade County, community panel number (s) 12086C0730L and 12086C0727L, dated September 2009, base flood elevations have been determined for the project. The major waterways crossing the project limits include the C-103 Canal (Mowry Canal). In addition, there are two culverts that carry stormwater runoff through the project. These include a 7-foot x 3-foot box culvert north of Palm Drive and a 60-foot culvert north of Lucy Street. There are no regulated floodway(s) within the project limits and there are no flooding issues of the existing facilities.

SECTION ELEVEN

Conclusions and Recommendations

The purpose of this SIJR is to satisfy requirements of FDOT Procedure 525-030-160-I regarding new or modified interchanges, to document the operational acceptability and safety and gain approval of access improvements identified in the US 1 to Campbell Drive PD&E. The proposed Lucy Street interchange and the modifications to the US 1 interchange will enhance capacity to accommodate both current and planned future traffic projections without deteriorating the safety and operation of the mainline Turnpike or the local street network in the study area.

The proposed Lucy Street interchange, connecting to a public road was requested and is supported by the local stakeholders. The access will serve the high level of regional movements to/from north to the Turnpike for typical commuter and emergency scenarios. The access provides some relief to the adjacent interchanges. The proximity of the access to the existing adjacent interchanges at US 1 and Campbell Drive is not anticipated to create operational or safety concerns and planned advancement will include enhanced signage and turn restrictions to avoid wrong-way movements on ramps.

The Build alternative is projected to reduce the average vehicle delay at the US 1/Palm Drive intersection by more than 80 seconds/vehicle (approximately 70 percent reduction) during the 2045 AM design hour, and by more than 200 seconds/vehicle (approximately 83 percent reduction) during the 2045 PM design hour compared to the 2045 No-Build intersection delays. At US 1/Davis Parkway intersection, there are no changes in level of service despite a 36 percent increase in vehicle delays during the 2045 AM design hour compared to the No-Build 2045 AM design hour. For the 2045 PM design hour, the Build alternative is projected to reduce the average vehicle delay by 80 percent at US 1/Davis Parkway intersection.

At the Campbell Drive interchange, the Build alternative is projected to reduce the average vehicle delay at the southbound ramp terminal intersection by more than 135 seconds/vehicle (approximately 77 percent reduction) during the 2045 AM design hour, and by more than 215 seconds/vehicle (approximately 84 percent reduction) during the 2045 PM design hour compared with the 2045 No-Build intersection delays. At the new Lucy Street interchange, the ramp intersections are projected to operate at LOS D or better. Overall, under Build alternative, all mainline freeway segments and interchange ramp terminals are projected to operate at LOS D or better, with significant operational improvements to the local network compared to No-Build conditions.

Under the Build alternative, there are no anticipated adverse impacts to the traffic operations at other intersections along Campbell Drive, Lucy Street and around US 1 study area.

The projected failing conditions under the No-Build alternative are expected to increase future crash risk within the project corridor. This potential for increased crash risk is alleviated by the capacity improvements proposed in the Build alternatives. Due to the introduction of new Lucy Street interchange in the Build condition, the HSM safety analysis predicts an increased number of crashes for some intersections under the Build conditions. However, it is important to note that the HSM evaluation tool is limited in its ability to quantify the benefits of many operational improvements proposed under the Build conditions. Overall, the Build condition will not only divert traffic from the congested Campbell Drive and US 1 interchanges but will also enhance safety, add capacity, increase mobility, accommodate future traffic demands, and reduce evacuation travel times within the study region.

SECTION ELEVEN

Conclusions and Recommendations

The Public Hearing for the project was held on July 20, 2021. The preferred Build Alternative included and presented at the Public Hearing was designed to: alleviate traffic congestion by giving motorists more options for travel; enhance safety; improve accessibility; and enhance emergency evacuation and response time in the study region. The analysis results show that the Build Alternative meets the future area needs. Due to local stakeholders concerns regarding the proposed Turnpike ramp over the US 1 and Palm Drive intersection, the Department has suspended advancing the inclusion of the grade separated Turnpike ramp over the US 1 and Palm Drive intersection to work further with the community to develop refinements that address these concerns. The locals were concerned that the ramp would reduce visibility and have a negative economic impact to the businesses along US 1. Several measures were taken within the project development to increase signage and more visual elements will be addressed in later design phases, if advanced. Surveys revealed that, 9 out of 10 travelers to the Keys are repeat visitors and familiar with the area. Patrons to the local businesses are provided with the same local interchange movements to access the businesses.

This SIJR is seeking an approval of all elements of the project. Only those project elements endorsed by local stakeholders will advance to Design.

Appendix A

Methodology Letter of Understanding (MLOU)

Appendix B

Travel Demand Model Development Report

Appendix C

Summarized HCS and Synchro Operations Analysis Results

Appendix D

Raw Traffic Data and Signal Timing Data

Appendix E

2016 Existing Freeway HCS and Synchro Analysis Worksheets

Appendix F

VISSIM Model Development and Calibration Report

Appendix G

2013 – 2017 Existing Crash Data

Appendix H
Evaluated Alternatives

Appendix I

2025 and 2045 No-Build HCS and Synchro Analysis Results

Appendix J

2025 and 2045 No-Build HCS and Synchro Analysis Worksheets

Appendix K

2025 and 2045 Build Alternative HCS and Synchro Analysis Results

Appendix L

2025 and 2045 Build Alternative HCS and Synchro Worksheets

Appendix M

Safety Benefits Analysis

Appendix N

Build Alternative Conceptual and Signing Plan

Appendix O

Freeway HCS Analysis Files

Appendix P

Synchro Intersection Analysis Files

Appendix Q

VISSIM Analysis Files