CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Interchange Justification Report

Draft

SR 417 Sanford Airport Connector

Project Development and Environment Study

Proposed SR 417 and Connector Interchange Access Request

Seminole County, Florida

CFX Project Number: 417-246A

June 2025

CDM Smith

PROFESSIONAL ENGINEER CERTIFICATION
CDM SMITH, INC

I hereby certify that I am a registered Professional Engineer in the State of Florida, practicing with **CDM Smith, Inc.**, a Florida corporation authorized under Section 471.023 of the Florida Statutes to provide engineering services to the public. CDM Smith, Inc. is duly licensed under Chapter 471 of the Florida Statutes by the Florida Board of Professional Engineers. I have either prepared or reviewed and approved the evaluation, findings, opinions, conclusions, or technical recommendations presented herein for:

PROJECT: SR 417 Sanford Airport Connector PD&E Study
Proposed SR 417 and Connector Interchange Access Request
Interchange Justification Report

LOCATION: Seminole County, FL

CFX Project No.: 417-246A

This report presents a summary of the data collection efforts, traffic analysis, evaluation of the preferred alternative, and key conclusions. I acknowledge that the methodologies and references used to develop the findings in this report are consistent with standard practices in the field of transportation engineering and planning, and have been applied using professional judgment and experience.

Name: Cristina Torres, PE, RSP_1

Florida PE No.: 73713

Signature: _____

Date: _____

SYSTEMS IMPLEMENTATION OFFICE

QUALITY CONTROL CERTIFICATION FOR INTERCHANGE ACCESS REQUEST SUBMITTAL

Submittal Date: 7/XX/2025 (Pending)

CFX Project Number: 417-246A

Project Title: SR 417 Sanford Airport Connector PD&E Study
Proposed SR 417 and Connector Interchange Access Request
Interchange Justification Report (IJR)

Requestor: Glenn Pressimone - CFX

FDOT District IRC: Erin Sterk - FTE

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

Status of Document

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

Quality Control (QC) Statement

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

Requestor/CFX _____ Date: _____
Glenn Pressimone, PE

FTE DIRC _____ Date: _____
Erin Sterk, CPM

Interchange Justification Report (IJR)

SR 417 Sanford Airport Connector PD&E Study

CFX Project Number: 417-246A

Proposed SR 417 and Connector Interchange Access Request

Florida Department of Transportation

Determination of Engineering and Operational Acceptability

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

Requestor/CFX Interchange Review Coordinator	Glenn Pressimone, PE Chief of Infrastructure Central Florida Expressway Authority (CFX)	Date
FTE Interchange Review Coordinator	Erin Sterk, CPM Toll Studies & Forecasting Manager Florida's Turnpike Enterprise (FTE)	Date
Systems Management Administrator	Joshua Jester, PE Systems Implementation Office – FDOT Central Office	Date

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Executive Summary

The Central Florida Expressway Authority (CFX) completed the Concept, Feasibility and Mobility (CF&M) Study for the proposed Seminole Expressway (SR 417) Sanford Airport Connector ("Connector") in 2023. In 2024, CFX advanced the project to a Project Development and Environment (PD&E) Study, to further evaluate potential Connector alignments from a traffic, engineering, social, cultural, physical, natural environment and cost standpoint. The purpose of the proposed Connector is to provide a direct access to the Airport, enhance local connectivity, and improve traffic operations and safety. It will provide a shorter and faster route from SR 417 to the Airport, and to East Lake Mary Boulevard (Lake Mary Boulevard) east and northeast of the Airport, benefiting regional trips.

The proposed Connector will be a tolled facility, built and operated by CFX. It will extend from SR 417 northeastward to Lake Mary Boulevard as a new alignment, approximately 1.6 miles long. The proposed Connector will include a partial interchange at SR 417 with ramps to/from the south only, to be located just south of the existing Lake Jesup mainline toll plaza. Florida's Turnpike Enterprise (FTE) owns and operates the section of SR 417 within the study area. The Connector will not have intermediate access and the design and posted speed will be 45 mph. It will terminate at the existing Lake Mary Boulevard and Red Cleveland Boulevard intersection as a local Single Point Urban Interchange. The Connector will be elevated over Lake Mary Boulevard, a county road. This Interchange Justification Report (IJR) was prepared for the proposed SR 417 and Connector partial interchange access request, and to support the PD&E Study. The Methodology Letter of Understanding for the IJR was approved by CFX, the Requestor, FTE and Florida Department of Transportation (FDOT) Central Office Systems Implementation Office in January/February 2025.

The analysis was conducted for the 2024 existing, 2030 opening and 2050 design years. The SR 417 mainline within the analysis Area of Influence operated acceptably in the 2024 existing conditions and the interchange ramps had adequate capacity. However, field observations and the analysis showed long delays and queues during peak hours at the SR 417 and Ronald Reagan Boulevard (CR 427)/Lake Mary Boulevard interchange. The adjacent intersections on Lake Mary Boulevard at CR 427 and Sanford Avenue (CR 425) are also congested and impact the interchange operations. Further, historical crash data analysis showed that there is a high concentration of rear end and angle crashes at the interchange and adjacent intersections, which are typical at locations with stop-and-go traffic conditions. The congestion and safety at the CR 427/Lake Mary Boulevard interchange and adjacent intersections is expected to worsen as traffic increases in the future. The proposed Connector is expected to divert traffic from the existing interchange and Lake Mary Boulevard, thereby improving operations and safety.

The PD&E Study evaluated the No Build alternative, and six Build alignments to screen viable alternatives for the proposed Connector. Following extensive public and stakeholder engagement and based on the evaluation matrix prepared for screening purposes, the Preferred Alternative (Alignment 2A) was selected. Further, both full and partial interchanges at the SR 417 terminus were evaluated. However, the ramps to/from north were eliminated due to low projected traffic demand and potential weaving concerns with the existing CR 427/Lake Mary Boulevard interchange. It was determined that a partial interchange with ramps to/from the south only would be considered. The design speed for the proposed SR 417 Connector ramps is 50 mph. It should be noted that the design for the ramps to/from the south

does not preclude addition of ramps to/from north if needed in the future, in which case, a new study will be required.

Based on the analysis, the projected daily traffic for the proposed Connector is 20,900 in the 2050 design year, and two lanes would be sufficient. However, the typical section provided can accommodate four lanes if additional capacity is needed in the future. The analysis also showed that most of the traffic expected to use the proposed Connector would be diverted from the SR 417 and CR 427/Lake Mary Boulevard interchange ramps to/from the south, and the majority would be traveling east on Lake Mary Boulevard past the Airport, and farther northeast on SR 415 to Osteen. It is estimated that daily traffic at the CR 427 ramps would reduce by approximately 52 percent in the 2050 design year. Similarly, traffic would reduce along Lake Mary Boulevard between SR 417 and Red Cleveland Boulevard, by approximately 46 percent in the 2050 design year.

The analysis also showed that, in the future, traffic operations on the SR 417 mainline and ramps would be similar or better with the Build alternative compared to the No Build alternative, due to traffic diversion to the proposed Connector. For the intersections, the results showed that there would be a significant improvement in operations with the Build alternative at the CR 427/Lake Mary Boulevard interchange and along Lake Mary Boulevard. Cumulatively, the reduction in intersection delay is expected to be 37 and 42 percent in 2050 AM and PM peak hours, respectively. Further, the reduction in the individual intersection delay would be much higher. Of note, the Lake Mary Boulevard and CR 427/Sanford Avenue intersection delay in 2050 AM and PM No Build would reduce by 48 and 57 percent. Generally, the CR 427 ramp intersections and most of the intersections along Lake Mary Boulevard would experience a reduction in delay ranging from 36 percent to 85 percent in 2050 peak hours, with the Build alternative. When delays reduce, queue lengths and crashes would also reduce.

Future safety analysis showed that the Build alternative is expected to result in fewer potential crashes compared to the No Build alternative, due to diversion of traffic to the proposed Connector. Overall, the Build alternative is anticipated to reduce predicted crashes by 786 (-13.7 percent) within the 20-year analysis period. The corresponding crash cost savings would be approximately $58 Million, in 2025 present value, a 15.8 percent reduction. It is important to note that the predicted crashes for the No Build alternative would likely be higher than reported, if congestion queuing impacts and vehicle interactions can be fully accounted for in the future safety analysis tools. Consequently, the predicted crash reduction and cost savings associated with implementing the Build alternative would also be higher than reported.

1. Overview

1.1 Introduction

The Central Florida Expressway Authority (CFX) completed the Concept, Feasibility and Mobility (CF&M) Study for the proposed Seminole Expressway (SR 417) to the Orlando Sanford International Airport Connector ("Connector") in 2023. The goal for the project was to evaluate options for better connectivity in the area that would alleviate existing and anticipated future traffic congestion and provide a direct connection from SR 417 to the Airport and to East Lake Mary Boulevard (Lake Mary Boulevard). A regional map showing the project location is provided in **Figure 1-1**. In 2024, CFX advanced the project to a Project Development and Environment (PD&E) Study, to further evaluate potential Connector alignments from a traffic, engineering, social, cultural, physical, natural environment and cost standpoint. The PD&E Study area is shown in **Figure 1-2**. A No Build alternative, which does not consider the proposed Connector, was also evaluated during the PD&E Study.

The proposed Connector will be a tolled facility, built and operated by CFX. It will extend from SR 417 northeastward to Lake Mary Boulevard as a new alignment, approximately 1.6 miles long. The proposed Connector will include a partial interchange at SR 417 with ramps to/from the south only, to be located just south of the existing Lake Jesup mainline toll plaza. Florida's Turnpike Enterprise (FTE) owns and operates the section of SR 417 within the study area. The Connector will terminate at the existing Lake Mary Boulevard and Red Cleveland Boulevard intersection as a local Single Point Urban Interchange (SPUI). The Connector will be elevated over Lake Mary Boulevard, a county road.

This Interchange Justification Report (IJR) was prepared for the proposed SR 417 and Connector partial interchange access request, and to support the PD&E Study. The IJR has been developed in accordance with the Florida Department of Transportation (FDOT) *Policy No. 000-525-015-h, Approval of New or Modified Access to Limited Access Highways on the State Highway System (SHS)*; FDOT *2022 Interchange Access Request User's Guide (IARUG)*; FDOT *Procedure No. 525-030-160-i, New or Modified Interchanges*; and FDOT *Procedure No. 525-030-120-k, 2024 Project Traffic Forecasting Handbook*. The Methodology Letter of Understanding (MLOU) for the IJR was approved by CFX, the Requestor, FTE and FDOT Central Office Systems Implementation Office in January/February 2025. A copy of the executed MLOU is provided in **Appendix A**.

1.2 Project Purpose and Need

The purpose of the proposed Connector is to provide a direct access to the Airport, enhance local connectivity, and improve traffic operations and safety. Currently, the primary access to the Airport passenger terminal is along Lake Mary Boulevard via Red Cleveland Boulevard, and access to cargo and delivery areas is along Airport Boulevard. A review of 2024 existing conditions in the study area showed that motorists experience long delays and queues during peak periods at the SR 417 and Ronald Reagan Boulevard (CR 427)/Lake Mary Boulevard interchange. The adjacent intersections on Lake Mary Boulevard at CR 427 and Sanford Avenue (CR 425) are also congested and impact the interchange operations. The congestion mainly occurs along the northbound off-ramp, southbound frontage road, CR 427 and Lake Mary Boulevard, approaching and within the interchange area.

The localized intersection improvements proposed in the area by FTE and Seminole County may reduce congestion temporarily, but the interchange and adjacent intersections are still expected to be heavily

congested in the future, based on the No Build Connector conditions analysis conducted for this project. Traffic from SR 417 south of the interchange will still have to travel a longer route with congested intersections – through the interchange ramps, CR 427, and Lake Mary Boulevard – to access the Airport passenger terminal via Red Cleveland Boulevard or travel east on Lake Mary Boulevard. The proposed Connector will provide a shorter, direct, and faster route that would reduce travel time from SR 417 (to/from the south) to the Airport, and to Lake Mary Boulevard east and northeast of the Airport.

Figure 1-1. SR 417 Sanford Airport Connector Project Location

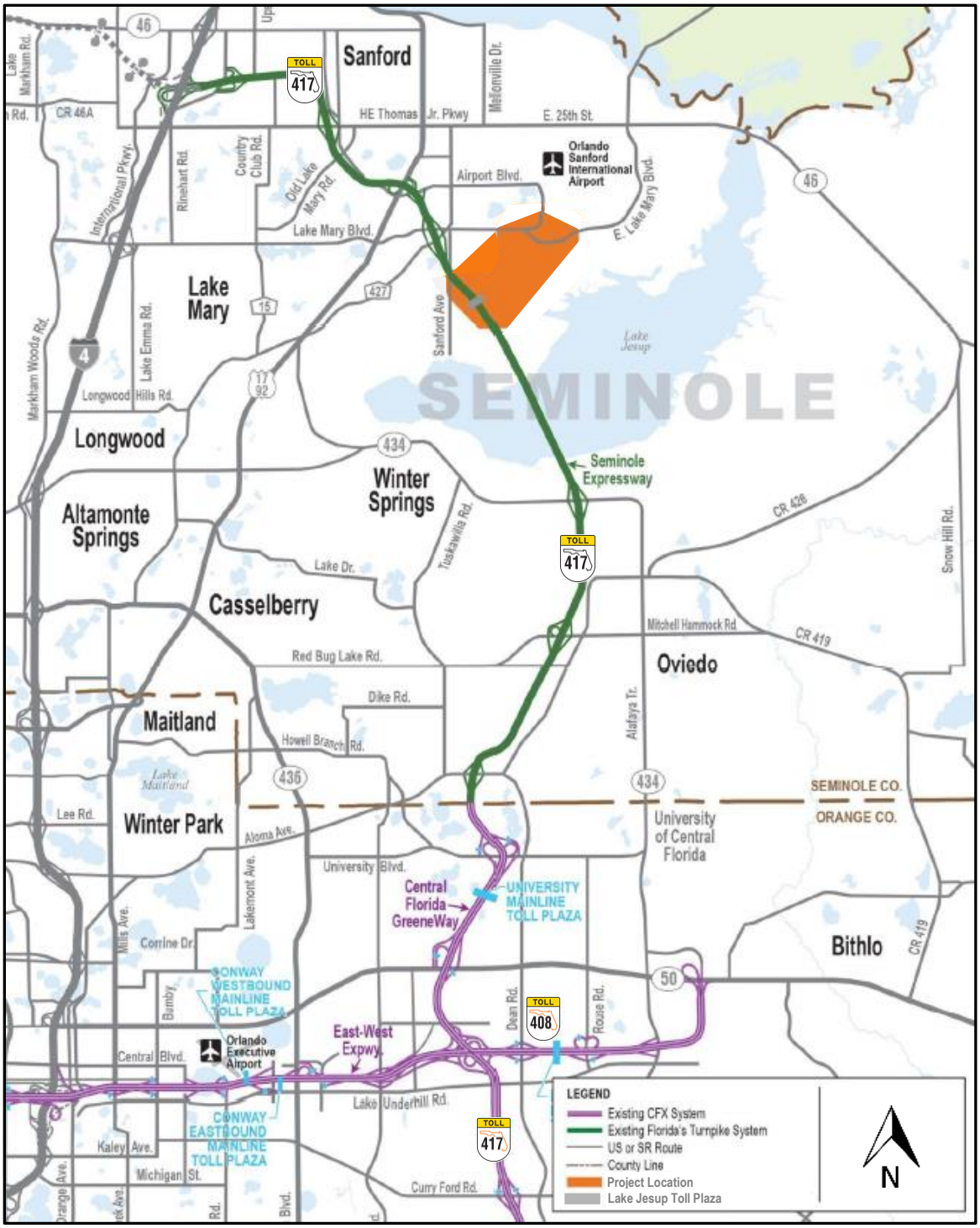
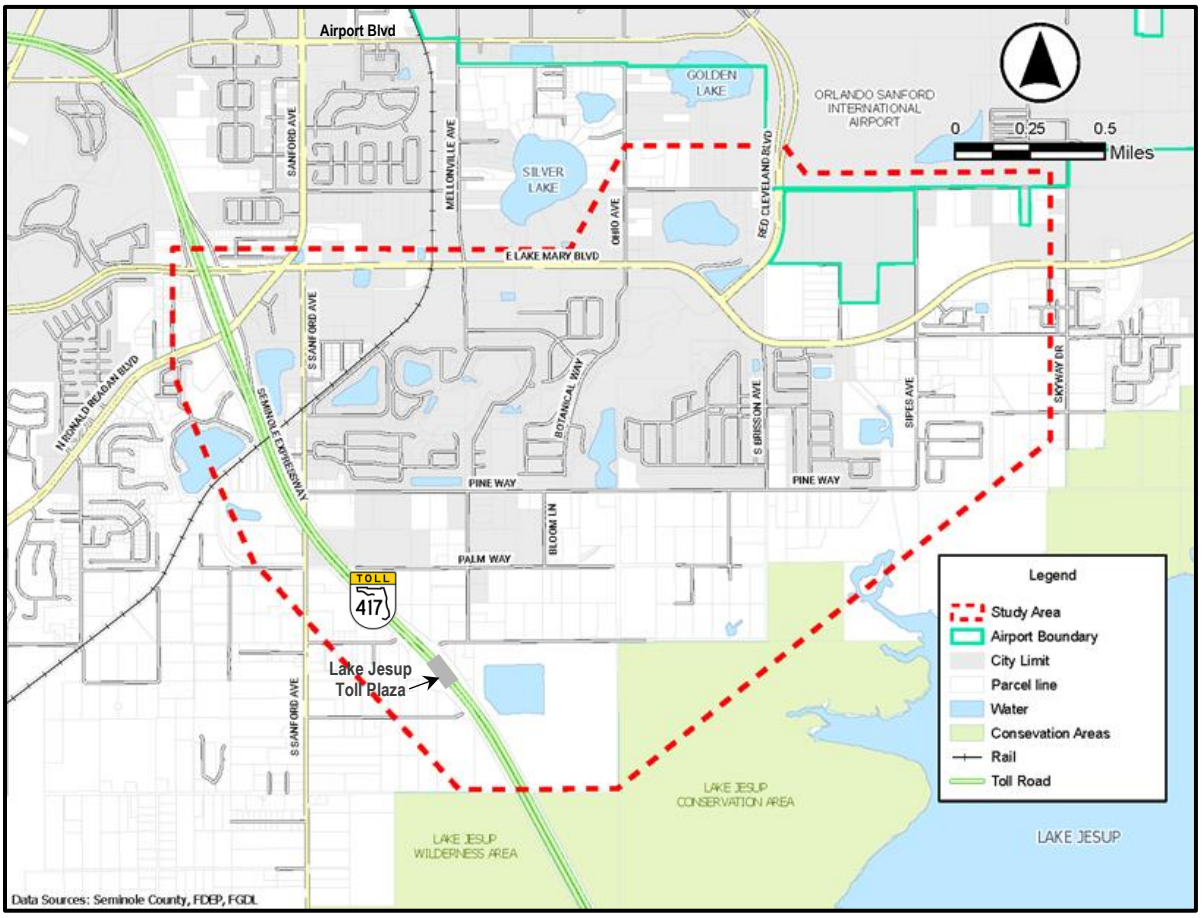


Figure 1-2. SR 417 Sanford Airport Connector PD&E Study Area

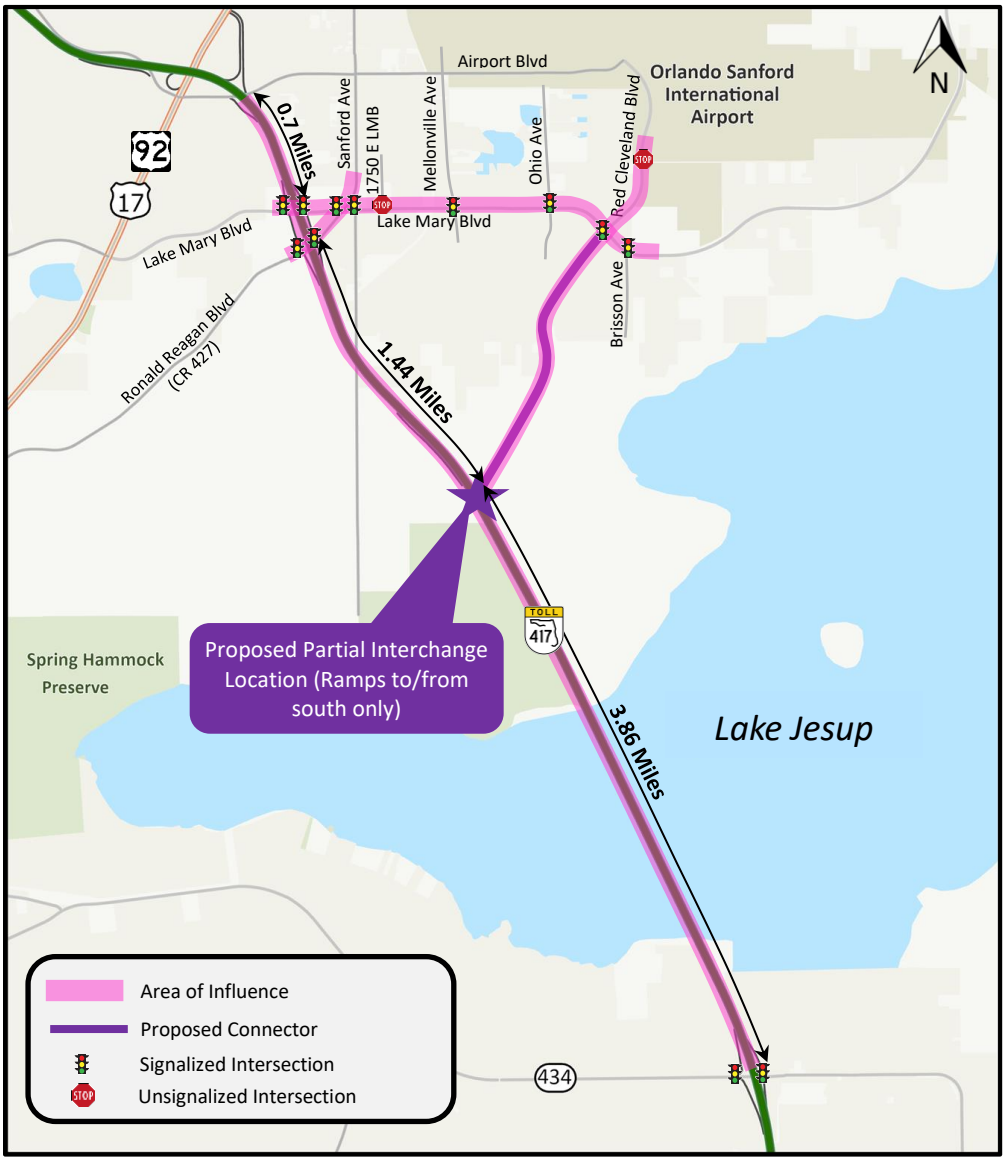


1.3 Analysis Area of Influence

The analysis Area of Influence (AOI) is depicted in **Figure 1-4**. The AOI along SR 417 began at the existing SR 434 interchange and extended north to the ramps to/from the south at Airport Boulevard/US 17-92. For Lake Mary Boulevard, the AOI was extended to Brisson Avenue, east of the proposed Connector terminus at Red Cleveland Boulevard, to capture potential impacts along Lake Mary Boulevard. For the proposed Connector, the analysis of future Build conditions included the partial interchange at SR 417 and the local interchange at Lake Mary Boulevard/Red Cleveland Boulevard. The AOI included the following:

- SR 417 – Existing, future No Build/Build
  - Mainline from SR 434 to Airport Boulevard/US 17-92
  - SR 434 interchange (ramps and ramp terminal intersections)
  - CR 427/Lake Mary Boulevard interchange (ramps and ramp terminal intersections)
  - Airport Boulevard/US 17-92 ramps to/from south
- Sanford Airport Connector – Future Build
  - Mainline from the proposed interchange at SR 417 to Lake Mary Boulevard/Red Cleveland Boulevard
  - SR 417 partial interchange ramps
  - Lake Mary Boulevard/Red Cleveland Boulevard interchange (ramps and ramp terminal intersections)

Figure 1-3. Analysis Area of Influence



- Lake Mary Boulevard – Existing, future No Build/Build
  - SR 417 Southbound Off-ramp/Frontage Road intersection
  - Frontage Road/SR 417 Northbound On-ramp intersection
  - CR 427/Sanford Avenue intersection
  - Sanford Avenue intersection (Existing only)
  - 1750 East Lake Mary Boulevard
  - Mellonville Avenue intersection
  - Ohio Avenue/Botanical Way intersection
  - Red Cleveland Boulevard intersection
  - Brisson Avenue intersection
- CR 427 – Existing, future No Build/Build
  - Frontage Road/SR 417 Southbound On-ramp intersection
  - SR 417 Northbound Off-ramp/Frontage Road intersection

- Red Cleveland Boulevard – Existing, future No Build/Build
  - Lake Mary Boulevard intersection
  - Marquette Avenue intersection

1.4 Operational Analysis Methodology

The traffic operational analysis years were 2024 (existing), 2030 (opening), and 2050 (design). Freeway segments were analyzed based on the Level of Service (LOS) D maximum service volumes published in the FDOT *2023 Multimodal Quality/LOS Handbook*. The FDOT maximum service volume targets were adjusted for local conditions such as speed, truck proportion, and Peak Hour Factor (PHF).

The Highway Capacity Software (HCS) Version 2023 was used to identify LOS along freeway segments, based on the adjusted capacity targets. The HCS is based on the Highway Capacity Manual (HCM) 7th Edition methodologies. The HCM estimates LOS 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 7th Edition LOS and density targets for freeway segments are listed in **Table 1-1**.

Table 1-1. Freeway Segments HCM 7th Edition Level of Service Criteria

LOS	Density (pcpmpl)		
	Basic	Merge and Diverge	Weaving
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	Demand exceeds capacity or density > 45	Demand exceeds capacity	Demand exceeds capacity or density > 43

The general parameters and assumptions used in the analysis of the SR 417 freeway segments in HCS are presented in **Table 1-2**. The posted speed on SR 417 is 70 mph within the project limits. For freeway merge and diverge areas, the HCM methodology also includes a capacity check for the influence area and the upstream or downstream ramp roadway. Capacity is dependent upon Free-Flow Speed (FFS) and number of lanes.

The analysis for ramp roadways was based on the LOS E targets from the HCM 7th Edition shown in **Table 1-3**. Similar to freeway segment maximum service volume targets, the HCM ramp roadway targets were also adjusted for local conditions.

Table 1-2. Freeway Segments HCS Analysis Inputs and Assumptions

Parameter	Input/Assumption
Free-Flow Speed (FFS)	75 mph
Peak Hour Truck Percentage	8%
Lane Width	12 feet
Right Shoulder Clearance	10 feet
Driver Population	Mostly familiar
Weather Type	Non-severe weather
Incident Type	No incident
Demand Adjustment Factor	1.000
Capacity and Speed Adjustment Factor	0.999

Table 1-3. Ramp Roadway Capacity HCM 7th Edition

Ramp FFS (mph)	Single-Lane Ramps Capacity (pc/h)	Two-Lane Ramps Capacity (pc/h)
>50	2,200	4,400
>40–50	2,100	4,200
>30–40	2,000	4,000
≥20–30	1,900	3,800
<20	1,800	3,600

Intersections were evaluated using Synchro Version 11, based on the HCM 7th Edition LOS and the delay targets presented in **Tables 1-4** and **1-5**. Unlike the HCM, Synchro 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 is expected to yield more accurate results than HCM because of these additional refinements. In addition, SimTraffic, the microsimulation companion of Synchro, was used to ensure that there were no fatal flaws in the analysis and to verify queue lengths and lane needs. SimTraffic simulation was reviewed for each scenario for correctness to ensure that traffic flow was realistic, and the simulation settings were adjusted where necessary.

Table 1-4. Signalized Intersection HCM 7th Edition Level of Service Criteria

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio*	
	≤1.0	>1.0
≤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, LOS is defined solely by control delay.*

Table 1-5. Unsignalized Intersection HCM 7th Edition Level of Service Criteria

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	≤1.0	>1.0
0–10	A	F
>10–15	B	F
>15–25	C	F
>25–35	D	F
>35–50	E	F
>50	F	F

The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

The LOS target for state roads during peak travel hours is D in urbanized areas and C outside urbanized areas, per the *State Highway System Policy No. 000-525-006c*, effective April 19, 2017. Since the study area is expected to be fully urbanized by the 2050 design year, a LOS D target was adopted for the project.

2. Existing Conditions

Existing conditions such as regional population, employment, land use, roadway facilities, traffic data collection, field observations, and crash data are described in this section.

2.1 Regional Population and Employment

The proposed Connector will be located in Seminole County, Florida. The PD&E Study for the Connector started in 2024. According to the University of Florida's Bureau of Economic and Business Research (BEBR), Seminole County was the thirteenth largest county by population in Florida in 2024. The Seminole County population grew by 4.8 percent from 2020 to 2024, slightly below the state's increase of 6.9 percent over the same period. **Table 2-1** summarizes the 2020 and 2024 population and growth.

Table 2-1. Historical Population and Growth

Area	US Census	BEBR Estimate	Change	% Change
	2020	2024	2020 - 2024	2020 - 2024
Seminole County	470,856	493,282	22,426	4.8%
Florida	21,538,187	23,014,551	1,476,364	6.9%

Source: 2020 Census and Bureau of Economic and Business Research (BEBR)

The historical employment and growth are summarized in **Table 2-2**. Employment in Seminole County increased by 10.6 percent from 2020 to 2023. Employment in the state of Florida grew at a higher rate of 16.0 percent during the same period.

Table 2-2. Historical Employment and Growth

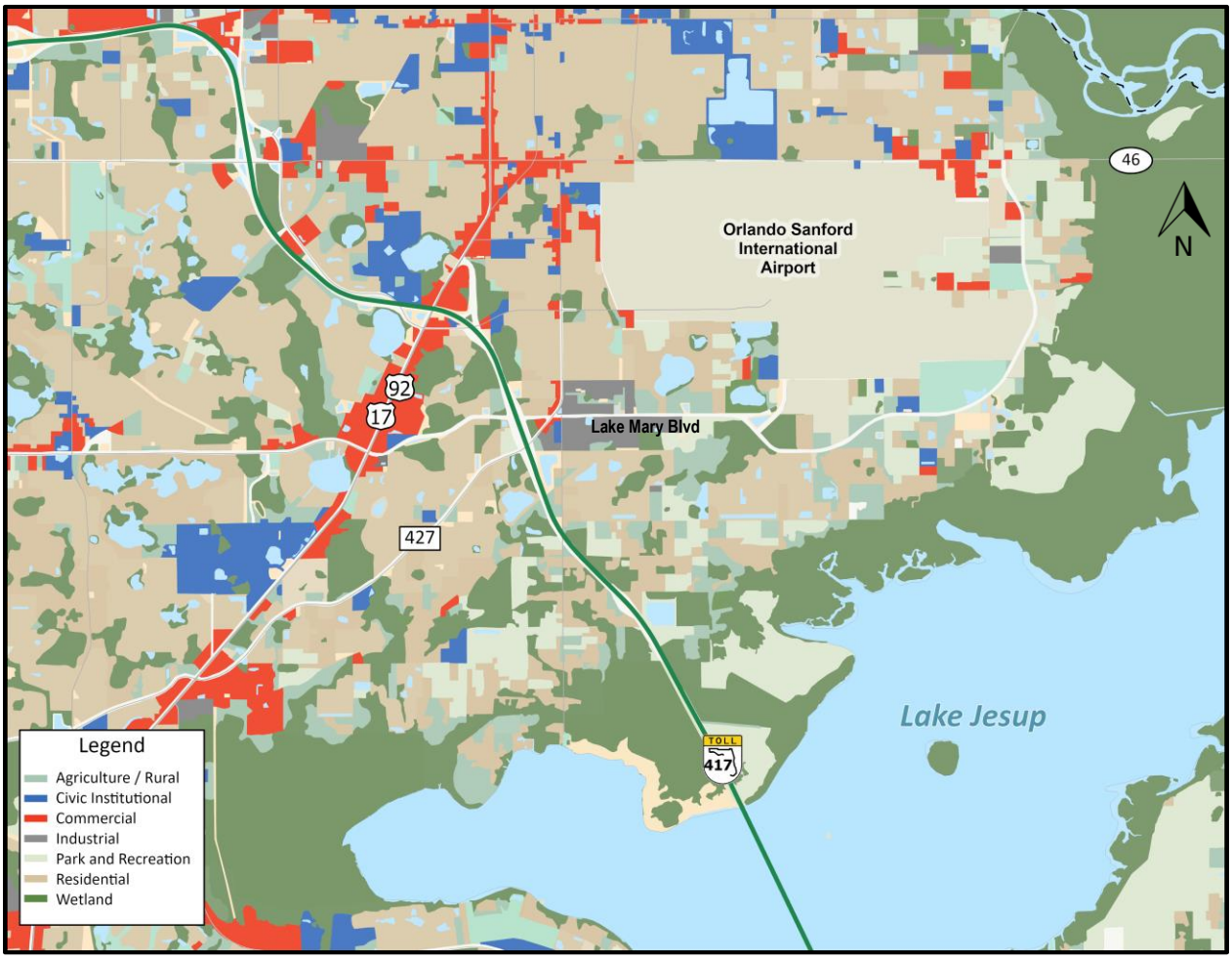
Area	BEA Estimate		Change	% Change
	2020	2023	2020 - 2023	2020 - 2023
Seminole County	288,044	318,601	30,557	10.6%
Florida	12,718,985	14,756,561	2,037,576	16.0%

Source: US Bureau of Economic Analysis (BEA)

2.2 Land Use

The existing land use map is provided in **Figure 2-1**. There are large residential developments in the area but regions close to Lake Jesup are mainly wetlands. The heaviest concentration of commercial development is along US 17-92. Land use along Lake Mary Boulevard includes industrial, commercial, residential, park and recreation, and agriculture/rural. The area between SR 417 and Lake Mary Boulevard where the proposed Connector will be located is characterized by residential developments, wetlands and agriculture/rural lands. However, the area is rapidly growing, and several developments are under construction including residential, commercial and institutional entities. It is expected that all developable land in the area will be fully developed and urbanized in the future.

Figure 2-1. Existing Land Use Map



2.3 Roadway Facilities

The following is a description of the major existing roadways within the study limits in 2024.

SR 417 is a limited access facility that forms a portion of the belt route system around the Orlando metro area. It is a 55-mile-long toll road operated by CFX and FTE, traversing three counties (Osceola, Orange and Seminole). It begins at I-4 to the south in Celebration, veers east and then north, terminating at I-4 in Sanford. SR 417 is classified as an urban principal arterial (expressway), and a Strategic Intermodal System corridor. It is also part of the FDOT State Highway System and is a hurricane evacuation route. The segment of SR 417 within the study area has a north-south orientation and is owned and operated by FTE. The existing typical section of SR 417 is a four-lane divided roadway with a median width of 64 feet. The northbound direction consists of two 12-foot-wide travel lanes and an 8-foot-wide inside shoulder (4 feet unpaved). In the southbound direction, there are two 12-foot-wide travel lanes, a 10-foot-wide inside shoulder (4 feet of which are paved with double-faced guardrail), an 8-foot-wide outside shoulder with gutter, and 4 feet of miscellaneous pavement with guardrail. The posted speed limit on SR 417 within the study area is 70 mph. Adjacent interchanges include SR 434 at Milepost (MP) 44 to the south, and CR 427/Lake Mary Boulevard at MP 49 and Airport Boulevard/US 17-92 at MP 50 to the north. SR 417 forms a diamond interchange with SR 434, a split diamond interchange with CR 427/Lake Mary Boulevard, and a partial cloverleaf interchange with Airport Boulevard/US 17-92, all with signalized ramp terminal

intersections. There are closely spaced signalized intersections along Lake Mary Boulevard at CR 427 and Sanford Avenue.

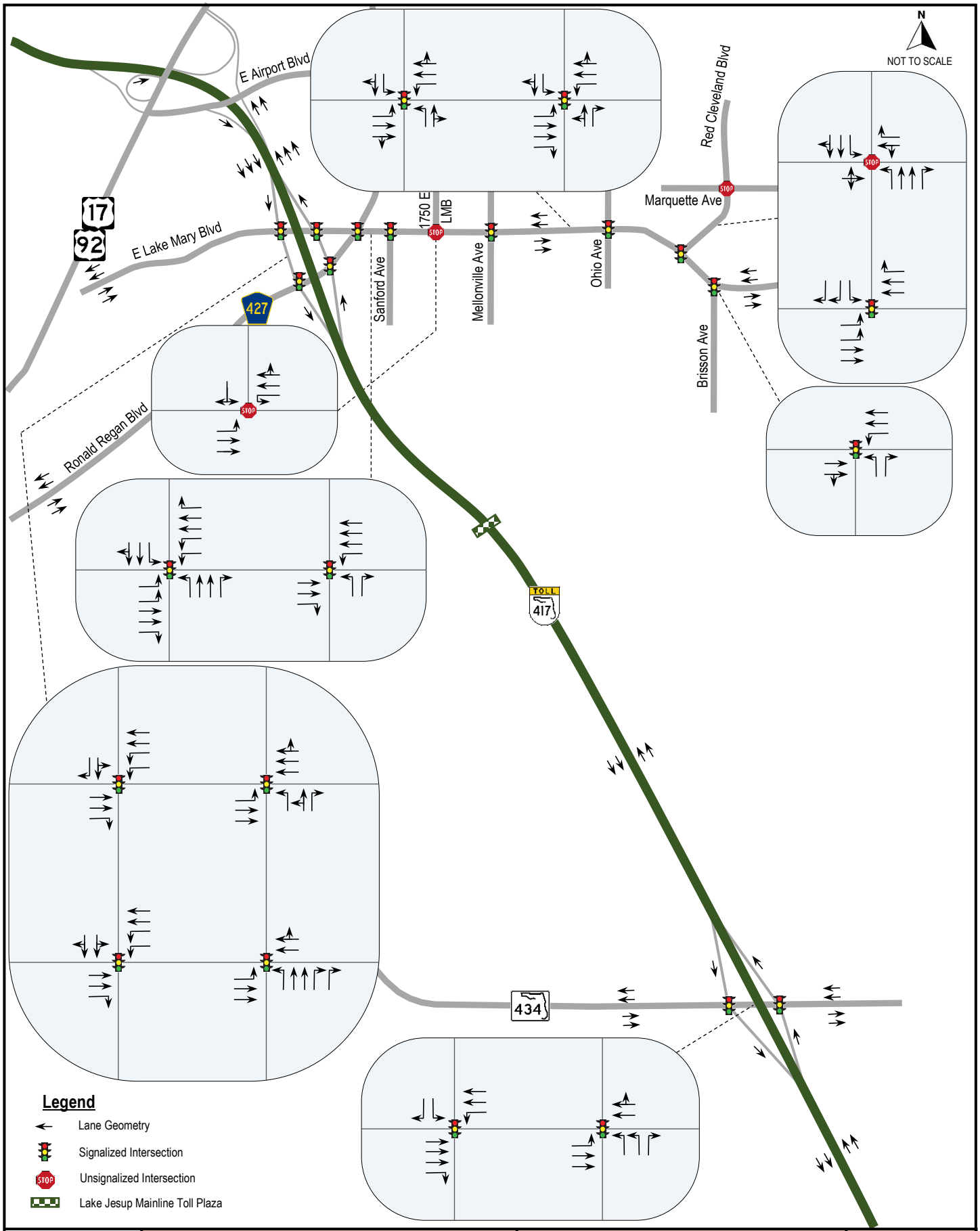
Lake Mary Boulevard is a four-lane divided major arterial running east-west within the project limits. It has two 12-foot-wide travel lanes with a 4-foot-wide designated bike lane in each direction. Sidewalks are present along both sides of the roadway. Along the south side of the roadway, the sidewalk width varies between 5 and 8 feet, while the sidewalk width along the north side is consistently 5 feet. The raised median width varies between 22 and 29.5 feet. The posted speed limit within the study area is 45 mph west of CR 427 and 50 mph to the east.

Red Cleveland Boulevard is a north-south, four-lane divided minor collector with two 12-foot-wide travel lanes in each direction. Adjacent to the outside lanes are 4-foot-wide undesignated bike lanes. Both sides of the roadway include 5-foot-wide sidewalks. There is a raised median width that varies between 35 and 44 feet. The posted speed limit within the study area is 40 mph.

Sanford Avenue is a two-lane undivided minor collector, with one 10-foot-wide travel lane in each direction and unpaved shoulders. There are no pedestrian or bicycle facilities along the roadway within the study area. The posted speed limit is 35 mph.

CR 427 is a north/south, four-lane divided major arterial with two 12-foot-wide travel lanes in each direction. Sidewalks are present along both sides of the roadway. The posted speed limit is 45 mph within the SR 417 interchange area and 40 mph approaching the Lake Mary Boulevard intersection.

A graphical depiction of the 2024 existing lane geometry and intersection control type is provided in **Figure 2-2**. Lane geometry information was obtained from high resolution aerial maps and field reviews.



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SR 417 Sanford Connector PD&E Study	2024 Existing Lane Geometry	Figure 2-2

2.4 Data Collection and Field Observations

Traffic data collection for the project included daily hourly hose and Turn Movement Counts (TMC) for the locations listed in **Tables 2-3** and **2-4**, respectively. The counts were collected in accordance with the procedures from the FDOT 2021 *Manual on Uniform Traffic Studies*, *Manual Number 750-020-007*. The data was collected during the week of February 26th, 2024, a non-holiday week, under fair weather and dry pavement conditions. The TMC were collected for six hours between 6-9 AM and 4-7 PM. Traffic volumes for SR 417 at the Lake Jesup mainline toll plaza and tolled ramps within the AOI were obtained from FTE's transactions data for the same week the hose and TMC data were collected, week of February 26th, 2024. The locations for the FTE's toll data are listed in **Table 2-5**. The raw hourly and intersection count data are provided in **Appendix B.** Supplemental traffic data was obtained from the FDOT Florida Traffic Online (FTO) database and Seminole County traffic count program for verification purposes.

Table 2-3. Hose Count Locations

Hose Count Location	Count Period and Type
Red Cleveland Boulevard, north of Lake Mary Boulevard	7-Day Hose Directional Volume Count
Lake Mary Boulevard, west of Red Cleveland Boulevard	72-Hour Hose Directional Class Count
SR 417 Southbound Off-ramp to SR 434	72-Hour Hose Directional Volume Count
SR 417 Northbound On-ramp from SR 434	72-Hour Hose Directional Volume Count
SR 417 Southbound On-ramp from CR 427	72-Hour Hose Directional Volume Count
SR 417 Northbound Off-ramp to CR 427	72-Hour Hose Directional Volume Count
SR 417 Southbound On-ramp from Airport Boulevard/US 17-92	72-Hour Hose Directional Volume Count
SR 417 Northbound Off-ramp to Airport Boulevard/US 17-92	72-Hour Hose Directional Volume Count
CR 427/Ronald Reagan Boulevard, west of SR 417	72-Hour Hose Directional Volume Count
CR 427/Ronald Reagan Boulevard, east of SR 417	72-Hour Hose Directional Volume Count
CR 427/Ronald Reagan Boulevard, north of Lake Mary Boulevard	72-Hour Hose Directional Volume Count
Lake Mary Boulevard, west of SR 417	72-Hour Hose Directional Volume Count
Lake Mary Boulevard, east of SR 417	72-Hour Hose Directional Volume Count
Lake Mary Boulevard, east of Red Cleveland Boulevard	72-Hour Hose Directional Volume Count
Airport Boulevard, east of Sanford Avenue	72-Hour Hose Directional Volume Count

Table 2-4. Intersection TMC Locations

Intersection TMC – 6 Hours (6-9 AM and 4-7 PM)	Control Type
SR 417 Southbound Ramps at SR 434	Signalized
SR 417 Northbound Ramps at SR 434	Signalized
SR 417 Southbound Ramps/Frontage Road at CR 427/Ronald Reagan Boulevard	Signalized
SR 417 Northbound Ramps/Frontage Road at CR 427/Ronald Reagan Boulevard	Signalized
SR 417 Southbound Ramps/Frontage Road at Lake Mary Boulevard	Signalized
SR 417 Northbound Ramps/Frontage Road at Lake Mary Boulevard	Signalized
Lake Mary Boulevard at CR 427/Ronald Reagan Boulevard	Signalized
Lake Mary Boulevard at Sanford Avenue	Signalized
Lake Mary Boulevard at Mellonville Avenue	Signalized
Lake Mary Boulevard at Ohio Avenue	Signalized
Lake Mary Boulevard at Red Cleveland Boulevard	Signalized
Lake Mary Boulevard at Brisson Avenue	Signalized
Red Cleveland Boulevard at Marquette Avenue	Unsignalized

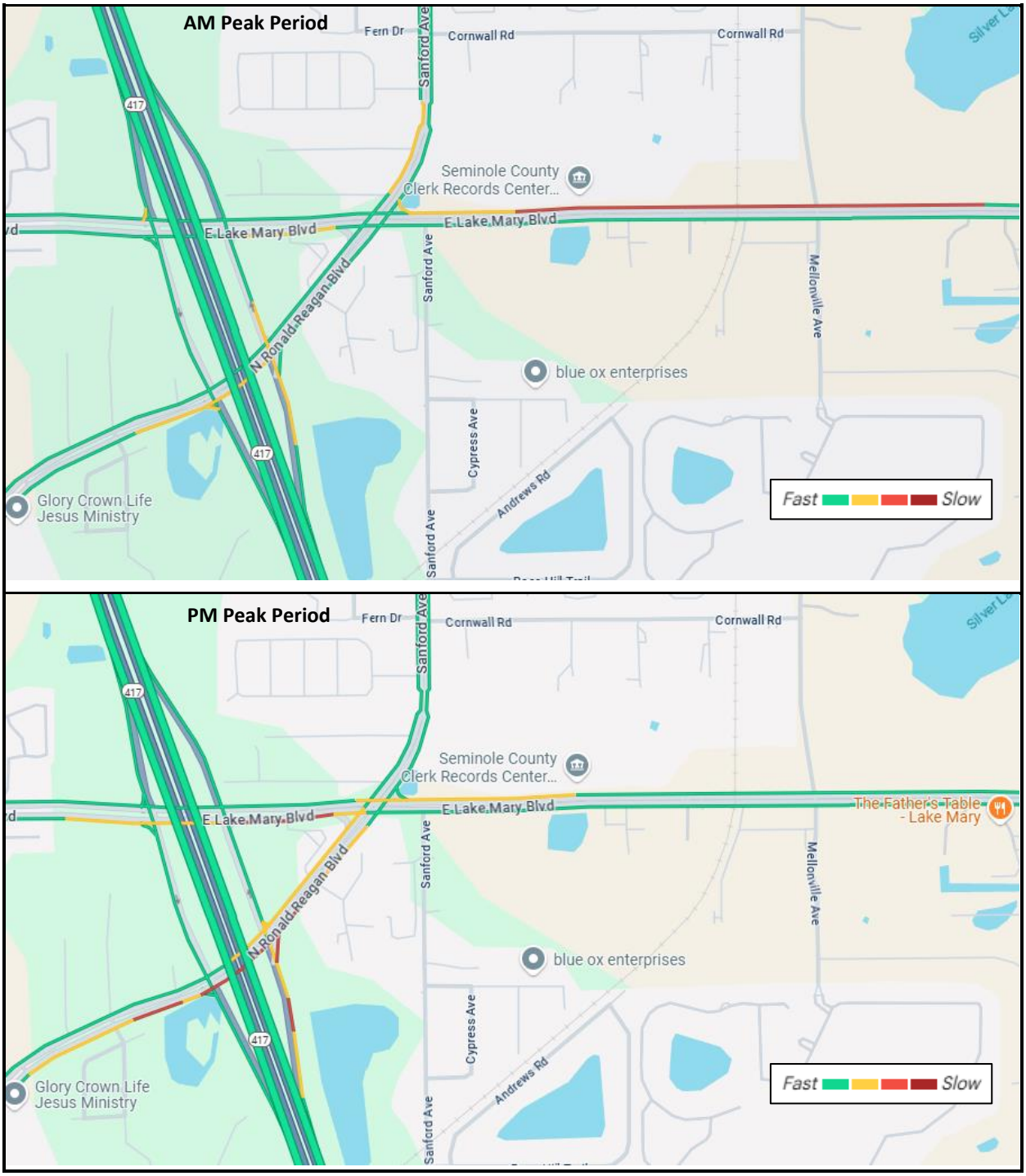
Table 2-5. FTE Toll Transactions Data Locations

Toll Transactions Data	Count Period
SR 417 at the Lake Jesup Mainline Toll Plaza	7 Days
SR 417 Southbound On-ramp from SR 434	7 Days
SR 417 Northbound Off-ramp to SR 434	7 Days
SR 417 Southbound Off-ramp to Lake Mary Boulevard	7 Days
SR 417 Northbound On-ramp from Lake Mary Boulevard	7 Days

Signal timing plans for signalized intersections were obtained from Seminole County and verified in the field. The signal timing data is provided in **Appendix B.**

Field observations and a desktop review of existing traffic conditions was conducted within the study area. As **Figures 2-3** and **2-4** show, there is congestion within the SR 417 and CR 427/Lake Mary Boulevard interchange footprint. The adjacent intersections on Lake Mary Boulevard at CR 427 and Sanford Avenue also operate unacceptably and impact operations at the interchange. During the morning commute, the congestion is mainly along Lake Mary Boulevard in the westbound direction approaching the interchange. In the evening, the main congestion is at the SR 417 northbound off-ramp, where queues sporadically back up to the freeway mainline. The queues are primarily caused by unacceptable operations at the off-ramp terminal and downstream intersections on Lake Mary Boulevard at CR 427 and Sanford Avenue.

Figure 2-3. 2024 Peak Period Typical Speed



Source: Google Maps

2.5 Historical Crash Data

2.5.1 SR 417 Historical Crash Data

Crash data for the SR 417 mainline within the study area were obtained from the Signal Four Analytics database for the period between 2019 and 2024. The data was reviewed for accuracy and updated where applicable. Detailed crash data tables are provided in **Appendix B**.

As shown in **Figure 2-4**, there was a decrease in the number of crashes on SR 417 from 2019 to 2020, followed by an increase from 2020 to 2022, and a slight decline in 2023 and 2024. The reduction in crashes from 2019 to 2020 can be attributed to COVID-19 pandemic impacts. In total, 520 crashes were reported on SR 417 within the study limits over the six-year period. On average, 87 crashes occurred per year between 2019 and 2024.

Figure 2-4. Number of Crashes by Year on SR 417

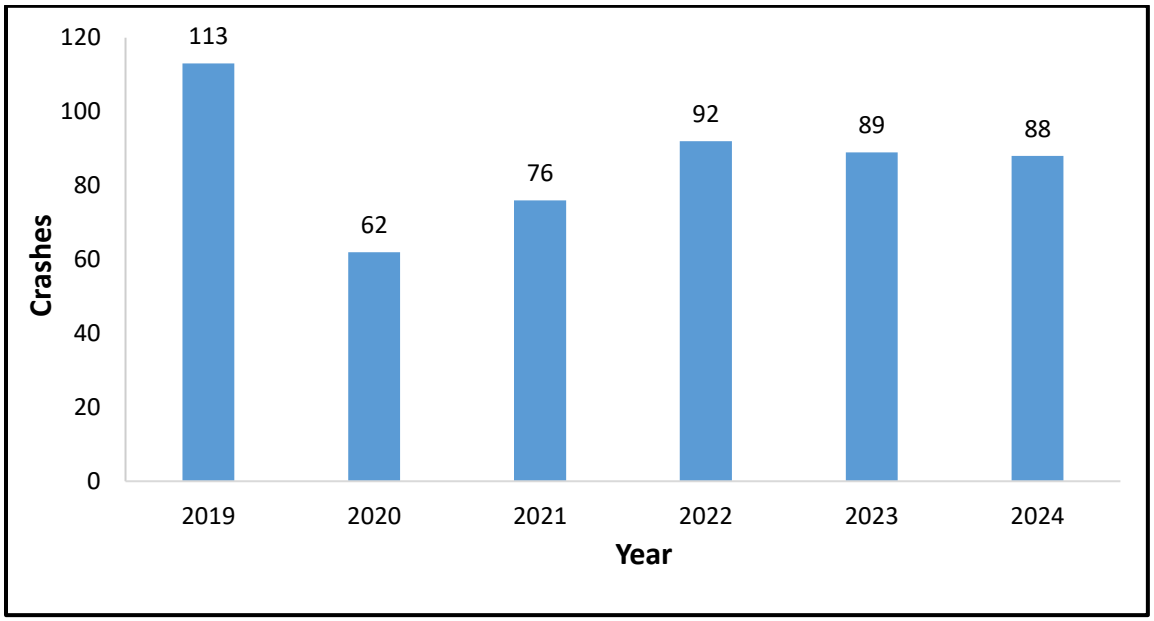


Figure 2-5 shows the crash distribution and density along SR 417 over the six-year study period. The figure indicates that the highest concentration of SR 417 mainline crashes occurred just north of SR 434 and just south of CR 427. This is mainly due to diverging and merging impacts near the ramp gores during peak periods.

Figure 2-6 summarizes the crashes by type, severity, road surface and light conditions on SR 417 within the study area. The data shows that most of the crash types were rear end (41.0 percent), off road (25.2 percent) and sideswipe (22.0 percent). The reports indicate that the high percentage of rear-end crashes is largely due to congestion during peak hours, sudden speed changes near merges or lane drops, and driver inattention. Most of the crashes resulted in property damage only (71.9 percent) and injury (25.0 percent) but there were a few serious injuries (2.5 percent) and three fatalities (0.6 percent). The three fatalities included two rear-end crashes and one off-road crash. The first rear end crash occurred on SR 417 southbound at milepost (MP) 47, just south of the Lake Jesup toll plaza, on October 14, 2020, at 2:20 PM, when a vehicle changed lanes and failed to stop in time for a slower-moving vehicle ahead, resulting in a rear-end collision. The second, attributed to driver negligence, happened on SR 417 southbound at MP 45, north of SR 434, on April 3, 2022, at 1:18 AM. The third fatality resulted from an off-road crash on SR 417 northbound at MP 49, north of CR 427, on a wet surface, where roadway conditions were a contributing factor, on April 16, 2022, at 2:23 AM. Most of the crashes occurred under dry pavement conditions during the day.

Figure 2-5. Crash Distribution and Density on SR 417 (2019 – 2024)

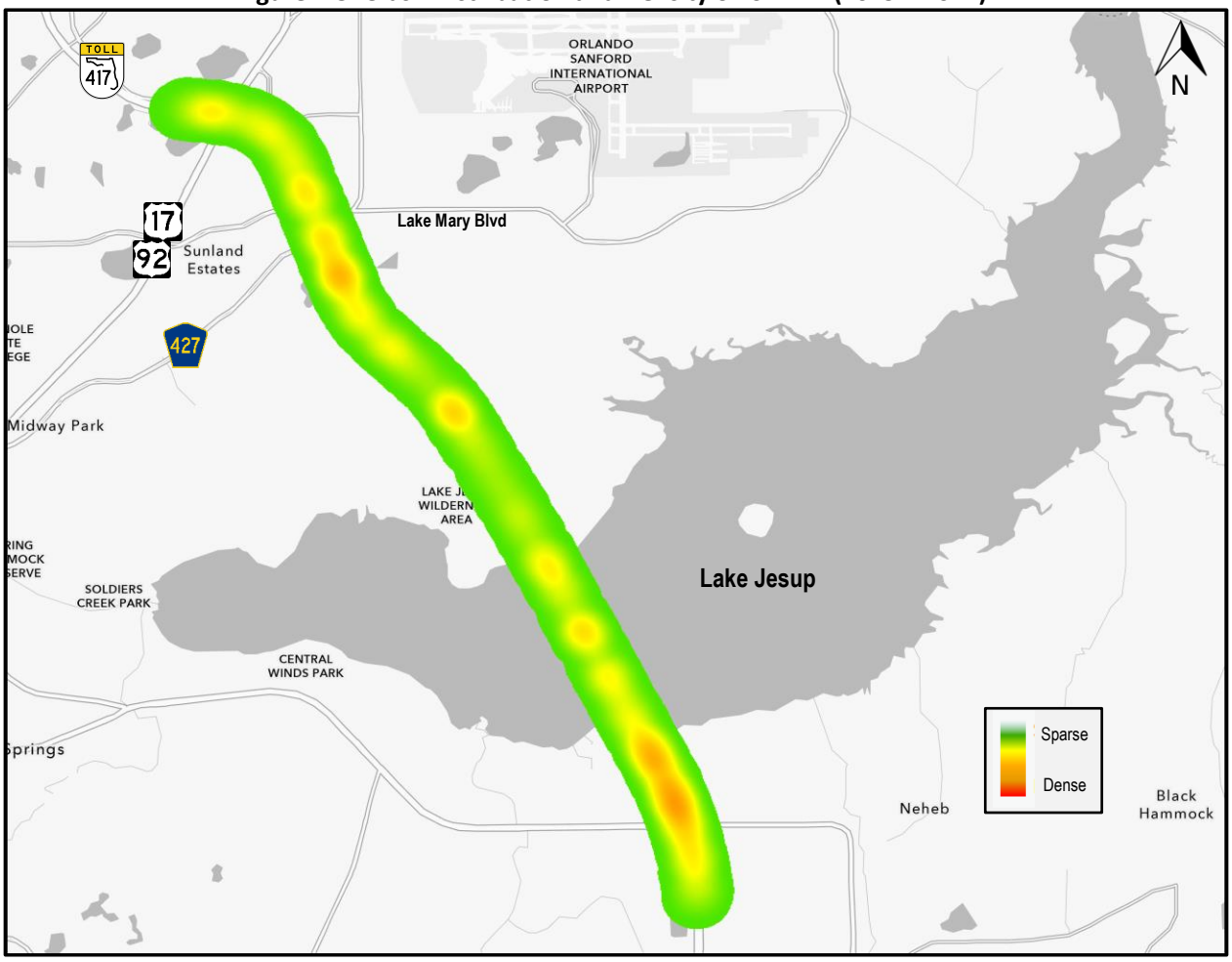
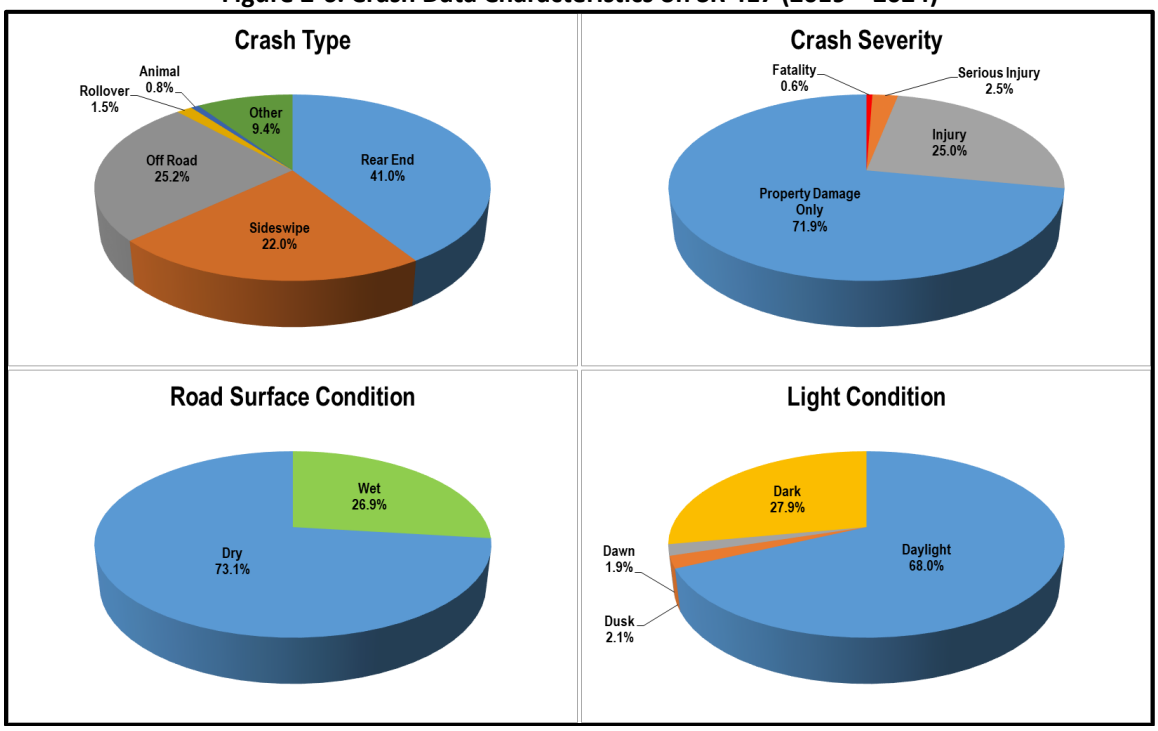


Figure 2-6. Crash Data Characteristics on SR 417 (2019 – 2024)



The actual crash rate for SR 417 within the study area was computed and compared with the average crash rate for similar facilities within Seminole County to assess the safety condition within the analysis limits. The critical crash rate and safety ratio were also estimated. The crash rate for SR 417 was calculated as crashes per Million Vehicle Miles Travelled. 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. As shown in **Table 2-6**, the safety ratio for SR 417 was 0.65 from 2019 to 2024, indicating that this is not a high crash location.

Table 2-6. SR 417 Crash Rate and Safety Ratio (2019 through 2024)

Total Crashes	Actual Crash Rate	Average Crash Rate*	Critical Crash Rate	Safety Ratio
520	0.46	0.58	0.71	0.65

**FDOT 5-year Average Crash Rate, Seminole County Urban Toll Road*

2.5.2 Lake Mary Boulevard and CR 427 Historical Crash Data

Crash data for Lake Mary Boulevard and CR 427 within the study area were obtained from the Signal Four Analytics database for the period between 2019 and 2024. The data was reviewed for accuracy and updated where applicable. Detailed crash data tables are provided in **Appendix B**.

As shown in **Figure 2-7**, there was a decrease in crashes from 2019 to 2020, followed by an increase from 2020 to 2023, and a reduction in 2024. The reduction in crashes from 2019 to 2020 can be attributed to COVID-19 pandemic impacts. In total, 568 crashes were reported on Lake Mary Boulevard and CR 427 within the study limits over the six-year period. On average, 95 crashes occurred per year between 2019 and 2024.

Figure 2-7. Number of Crashes by Year on Lake Mary Boulevard and CR 427

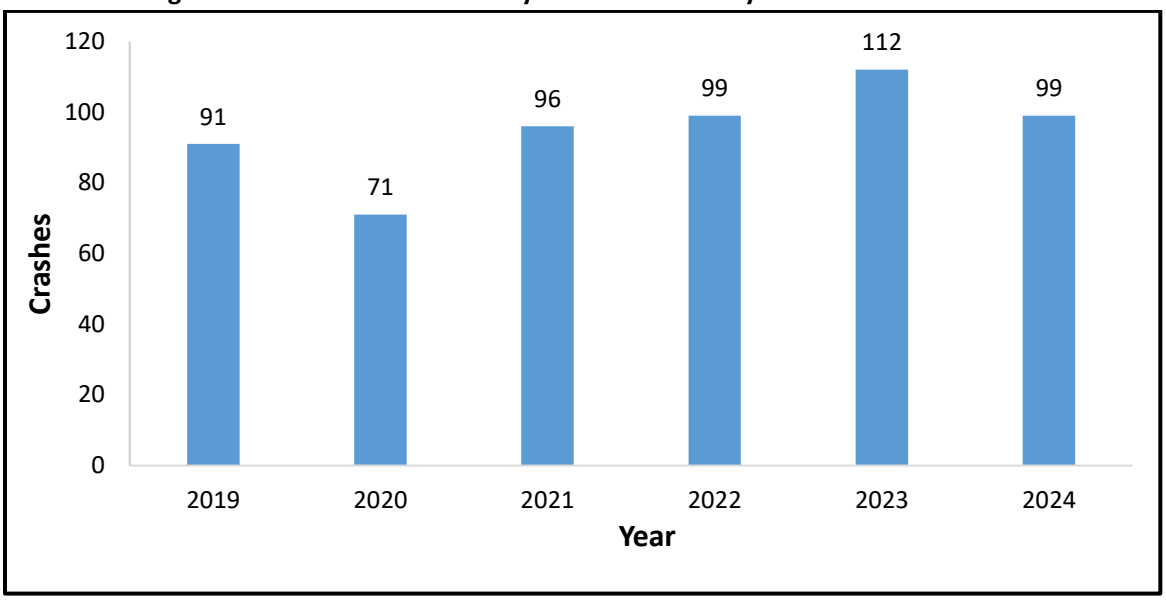
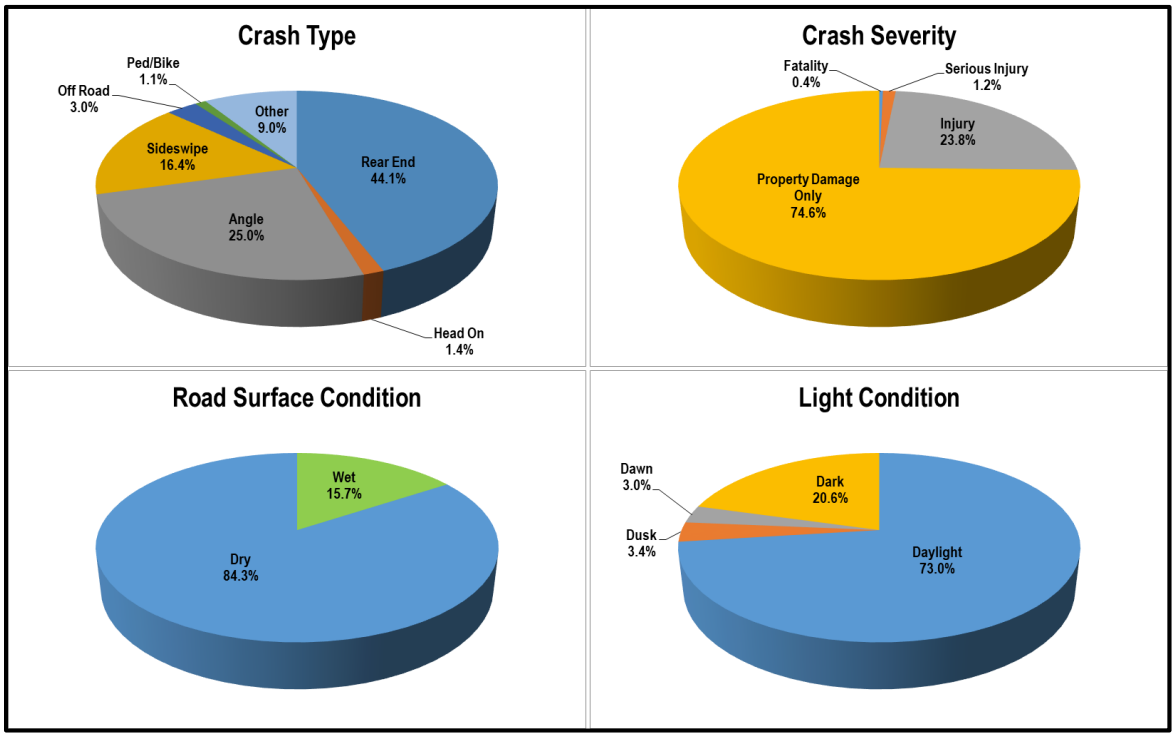


Figure 2-8 shows the crash distribution and density along Lake Mary Boulevard and CR 427 over the six-year study period. The figure indicates that the highest concentration of crashes occurred at the CR 427 ramp terminal intersections, as well as at the adjacent intersections of Lake Mary Boulevard with CR 427 and Sanford Avenue. These intersections experience heavy congestion during peak hours, which likely contributes to the high crash frequency.

Figure 2-8. Crash Distribution and Density on Lake Mary Boulevard and CR 427 (2019 – 2024)

Figure 2-9 summarizes the crashes by type, severity, road surface and light conditions on Lake Mary Boulevard and CR 427 within the study area.

Figure 2-9. Crash Data Characteristics on Lake Mary Boulevard and CR 427 (2019 – 2024)



The data shows that most of the crash types were rear end (44.1 percent), angle (25.0 percent) and sideswipe (16.4 percent). The high percentage of rear end and angle crashes is typical of congested arterial segments with stop-and-go conditions, such as the section of Lake Mary Boulevard and CR 427 within and adjacent to the SR 417 interchange. Most of the crashes resulted in property damage only (74.6 percent) and injury (23.8 percent) but there were a few serious injuries (1.2 percent) and two fatalities (0.6 percent). One fatality occurred in a left-turn crash at the intersection of CR 427 and Lake Mary Boulevard on November 27, 2019, at 3:00 PM. The crash was caused by a failure to yield the right-of-way and did not involve alcohol or drugs. The second fatality occurred in an angle crash at the intersection of Lake Mary Boulevard and the SR 417 southbound exit ramp on March 6, 2022, at 9:31 AM. This crash was attributed to red light running and also did not involve alcohol or drugs. Most of the crashes occurred under dry pavement conditions during the day.

The actual crash rate for Lake Mary Boulevard and CR 427 within the study area was computed and compared with the average crash rate for similar facilities within Seminole County to assess the safety condition within the analysis limits. The critical crash rate and safety ratio were also estimated. The crash rate was calculated as crashes per Million Vehicle Miles Travelled. 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. As shown in **Table 2-7**, the safety ratio for Lake Mary Boulevard and CR 427 was 1.94 from 2019 to 2024, indicating that this is a high crash location, mainly within and adjacent to the SR 417 interchange.

Table 2-7. Lake Mary Boulevard and CR 427 Crash Rate and Safety Ratio (2019 through 2024)

Total Crashes	Actual Crash Rate	Average Crash Rate*	Critical Crash Rate	Safety Ratio
568	2.55	0.93	1.31	1.94

**FDOT 5-year Average Crash Rate, Seminole County Urban 4-Lane Divided*

3. 2024 Existing Conditions Traffic Analysis

Existing conditions traffic data and traffic operational analyses are provided in this section.

3.1 2024 Traffic Data

To develop the 2024 existing Annual Average Daily Traffic (AADT) and peak hour volumes, an analysis was conducted using the raw daily hourly data collected for roadway segments and the 15-minute period data for intersections, to understand traffic patterns within the study limits. Since traffic patterns to/from the Airport are unique, an initial analysis was conducted using the seven-day count at Red Cleveland Boulevard to identify peak days. The data showed that the peak days to the Airport were Sunday, Monday, Thursday and Friday. The Thursday and Friday volumes were generally higher and were used as the basis for calculating AADT at all roadway segment locations, to be conservative. For intersections, the peak hour volumes were calculated using data for the four highest consecutive 15-minute periods in the morning and evening at each count location. The Red Cleveland Boulevard count showed peak hours between 10:30-11:30 AM and 3:45-4:45 PM. The data for the other locations showed peak hours generally between 7:30-8:30 AM and 4:30-5:30 PM. Peak hour data at each location was used to account for worst case conditions to the Airport and within the study area. Seasonal and axle adjustment factors were applied to the data where applicable. The data were then aggregated and balanced to ensure continuity of flow and consistency. The final 2024 AADT for the SR 417 mainline, ramps and arterial segments is provided in **Table 3-1**.

Table 3-1. 2024 Existing AADT for Roadway Segments

Location	SR 417	AADT
Airport Boulevard/US 17-92		9,300
		57,950
CR 427/Lake Mary Boulevard		8,350 18,500
Lake Jesup Mainline Toll Plaza		**68,100**
SR 434		9,250 12,700
		71,550

Arterials	
Lake Mary Boulevard - West of Red Cleveland Boulevard	25,400
Lake Mary Boulevard - East of Red Cleveland Boulevard	24,550
Lake Mary Boulevard - West of SR 417	19,100
Red Cleveland Boulevard - North of Lake Mary Boulevard	5,800
Airport Boulevard - East of Sanford Avenue	8,450
CR 427 - South of Lake Mary Boulevard	28,800
CR 427 - West of SR 417	25,800

The data shows that the CR 427/Lake Mary Boulevard interchange ramps to/from south carry the highest daily traffic, while the ramps to/from north carry the lowest traffic within the study area. Along Lake Mary Boulevard, daily traffic volumes east and west of Red Cleveland Boulevard (which provides Airport access) are similar. The data also shows that daily traffic on Red Cleveland Boulevard is low. **Figure 3-1** provides the final 2024 AM and PM peak hour volumes within the AOI. Raw hourly and intersection count data are provided in **Appendix B**.

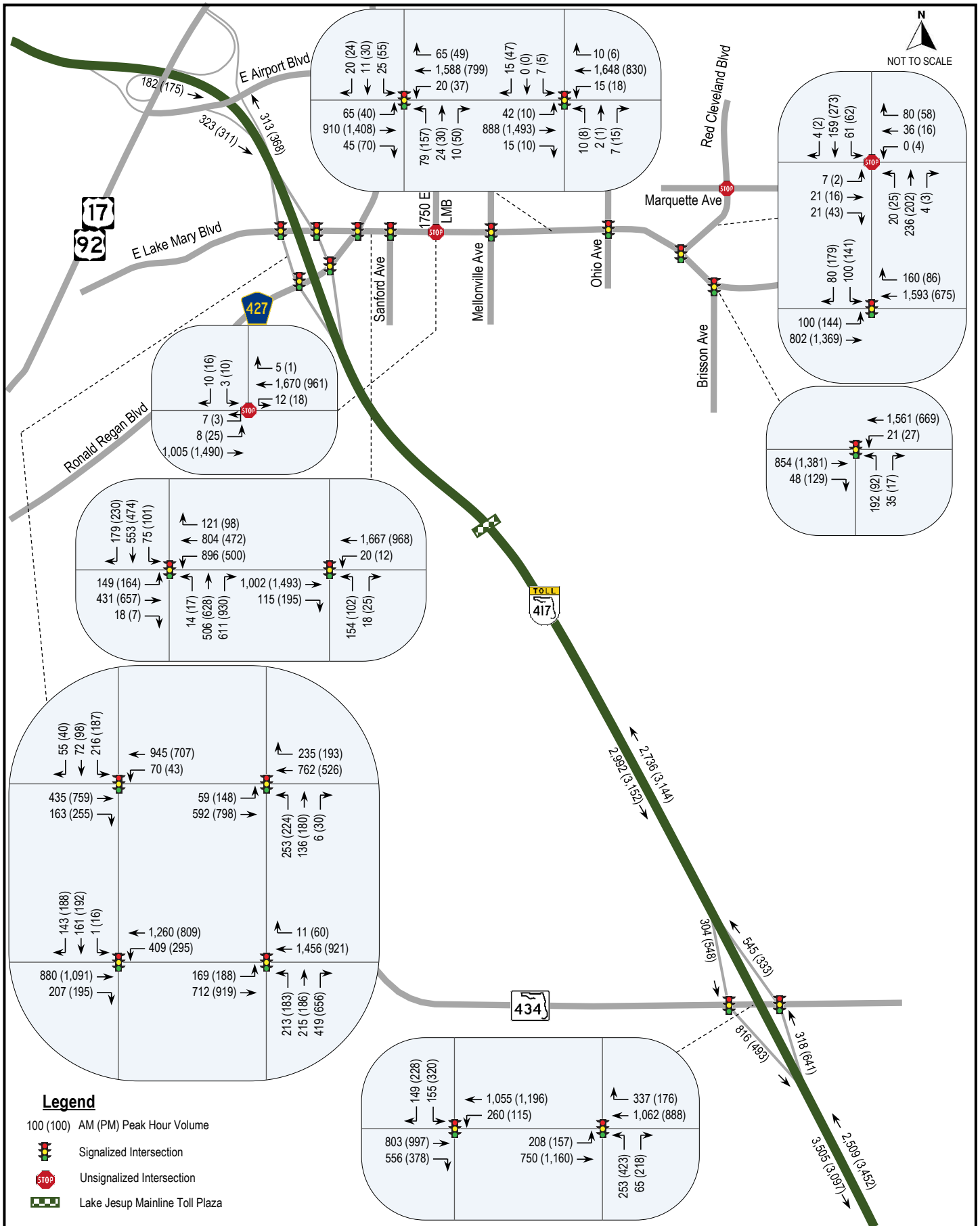
3.1.1 2024 Traffic Factors

The 2024 existing conditions traffic factors are summarized in **Table 3-2**. The K Factor is the proportion of the AADT that occurred during the peak hour. The Directional Distribution Factor (D) is the proportion of traffic traveling in the peak direction during the peak hour. For existing conditions, the K and D factors represent the worst directional traffic conditions for the roadway. The PHF is the ratio of total peak hour volume to the peak rate of flow within the hour, typically based on the highest 15-minute period. The PHF accounts for the variability of traffic within the peak hour. The K and D factors, along with the PHFs presented in **Table 3-2**, were calculated using the final 2024 existing conditions data.

As the data shows, the existing AM and PM K factors of 8.4 and 9.2 percent, respectively, for the SR 417 mainline are lower than the design (standard) K factor of 10.5 percent for the toll facility. However, the K factors for the ramps are generally higher, ranging between 8.8 and 10.1 percent. For the arterials, the existing K factors are generally within the recommended range of 7.5-9.5 percent for suburban/urbanized areas, per the 2024 FDOT *Project Traffic Forecasting Handbook*. The exception is the AM K factor of 10.1 and 9.7 percent for Lake Mary Boulevard and CR 427, respectively. The daily truck factors (T_{24}) for SR 417, Airport Boulevard and CR 427 were obtained from the FTO Portable Traffic Monitoring Sites (PTMS) 972320, 777026 and 778077, respectively. The T_{24} for Lake Mary Boulevard and Red Cleveland Boulevard were obtained from count data. The Peak Hour Truck (PHT) factor is the proportion of trucks during the peak hour and was assumed to be half of the T_{24} factor rounded up to the nearest whole number.

Table 3-2. 2024 Existing Traffic Factors

Facility/Segment	K Factor		D Factor		PHF	PHT	T_{24}
	AM	PM	AM	PM	AM/PM	AM/PM	
SR 417 Freeway Mainline	8.4%	9.2%	52.2%	50.1%	0.94	8.0%	15.5%
SR 417 & Airport Boulevard/US 17-92 Interchange Ramps							
Southbound On-ramp and Northbound Off-ramp	8.8%	9.2%	61.7%	56.9%	0.91	8.0%	15.5%
SR 417 & CR 427/Lake Mary Boulevard Interchange Ramps							
Southbound Off-ramp and Northbound On-ramp	9.3%	10.1%	55.6%	61.6%	0.93	8.0%	15.5%
Southbound On-ramp and Northbound Off-ramp	8.8%	9.2%	52.2%	60.0%	0.95	8.0%	15.5%
SR 417 & SR 434 Interchange Ramps							
Southbound Off-ramp and Northbound On-ramp	9.2%	9.5%	64.2%	62.2%	0.93	8.0%	15.5%
Southbound On-ramp and Northbound Off-ramp	8.9%	8.9%	72.0%	56.5%	0.93	8.0%	15.5%
Arterials							
Lake Mary Boulevard	10.1%	9.3%	65.0%	63.9%	0.93	5.0%	8.7%
Red Cleveland Boulevard	7.6%	9.5%	59.1%	58.2%	0.92	5.0%	8.7%
Airport Boulevard	7.7%	7.8%	50.2%	57.4%	0.94	2.0%	2.3%
CR 427	9.7%	8.8%	56.4%	56.3%	0.95	5.0%	8.5%



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SR 417 Sanford Connector PD&E Study	2024 Existing Peak Hour Volumes	Figure 3-1

3.2 2024 Operational Performance

This section provides a summary of traffic performance analysis and results for 2024 existing conditions. Detailed output reports and analysis files are provided in **Appendix A**.

3.2.1 Freeway Segment Analysis

The 2024 AM and PM peak hour traffic conditions along the SR 417 freeway segments within the AOI were evaluated in each direction using the HCS 2023 software. The HCS results are summarized in **Table 3-3**. Most of the SR 417 freeway segments within the AOI operated at an acceptable LOS D or better in 2024. The only exception is the northbound diverge section upstream of the SR 434 off-ramp which is reported with a LOS E, due to the tapered exit. The density of 37 pcpmpl is just slightly above the LOS D threshold of 35 pcpmpl. FTE's ongoing widening project for this section of SR 417 will add lanes to the mainline and a parallel exit.

3.2.2 Ramp Capacity Analysis

Capacity on the ramp roadways was assessed by comparing it with existing demand. The ramp Volume-to-Capacity (V/C) analysis is summarized in **Table 3-4**. The results show that ramp roadways within the study area were under capacity (V/C < 1.0) in 2024. The highest V/C ratio was 0.6.

3.2.3 Intersection Analysis

Existing intersection operations were analyzed using Synchro Version 11. A summary of the Synchro analysis output is presented in **Table 3-5**. The results indicate that most of the intersections operated at an acceptable LOS D or better overall in 2024. However, the intersection of Lake Mary Boulevard at CR 427/Sanford Avenue, adjacent to the interchange, was reported with an unacceptable LOS F. Additionally, the unsignalized intersection at 1750 East Lake Mary Boulevard operated at an unacceptable LOS E. Several individual movements also experienced an unacceptable LOS F, mainly at the interchange ramp terminals and adjacent intersections.

A review of Synchro 95th-percentile queue lengths revealed that the queues were not consistent with observed field operations. This was mainly the case at the interchange ramp terminals and adjacent intersections where long queues occur during peak hours. Synchro is not able to correctly capture vehicle interactions at closely spaced intersections or unique configurations due to its deterministic nature. Therefore, SimTraffic was used for queue determination. Each simulation scenario was reviewed for accuracy, and simulation settings (mandatory and positioning distances) were adjusted as necessary to ensure realistic traffic flow that reflects field operations. For instance, during the AM peak, westbound traffic on Lake Mary Boulevard backs up at the closely spaced CR 427 and Sanford Avenue intersections. This is primarily due to heavy westbound left-turn volumes at the CR 427 intersection, which cause queues to extend beyond Sanford Avenue and spill into the westbound through lanes. Synchro reported a 95th-percentile queue of 387 feet for the westbound through movement at the Sanford Avenue intersection, significantly shorter than the field-observed queue length of approximately 1,100 to 1,200 feet. After calibration, SimTraffic produced a queue length of 1,143 feet for this movement, as reported in **Table 3.5**.

Table 3-3. 2024 Peak Hour Freeway Operations

Segment	Segment Type	Lanes	Volume (vph)		LOS/Density	
			AM	PM	AM	PM
SR 417 Southbound						
Upstream US 17/92 on-ramp (loop)	Basic	2	2,053	2,309	B/16	B/18
US 17/92 on-ramp (loop) to on-ramp (diagonal)	Merge	2	2,235	2,484	B/16	B/18
US 17/92 on-ramp (loop) to on-ramp (diagonal)	Basic	2	2,235	2,484	B/17	C/20
US 17/92 on-ramp (diagonal) to Lake Mary Boulevard off-ramp	Weave	3	2,558	2,795	B/15	B/16
Lake Mary Boulevard off-ramp to CR 427 on-ramp	Basic	2	2,215	2,470	B/17	C/19
CR 427 on-ramp to SR 434 off-ramp	Merge	2	2,992	3,152	C/25	C/26
CR 427 on-ramp to SR 434 off-ramp	Basic	2	2,992	3,152	C/25	D/27
CR 427 on-ramp to SR 434 off-ramp	Diverge	2	2,992	3,152	D/32	D/34
SR 434 off-ramp to on-ramp	Basic	2	2,689	2,604	C/22	C/21
Downstream SR 434 on-ramp	Merge	2	3,505	3,097	D/32	D/29
Downstream SR 434 on-ramp	Basic	2	3,505	3,097	D/32	D/26
SR 417 Northbound						
Upstream SR 434 off-ramp	Basic	2	2,509	3,452	C/20	D/31
Upstream SR 434 off-ramp	Diverge	2	2,509	3,452	C/27	**E/37**
SR 434 off-ramp to on-ramp	Basic	2	2,191	2,811	B/17	C/23
SR 434 on-ramp to CR 427 off-ramp	Merge	2	2,736	3,144	C/26	D/30
SR 434 on-ramp to CR 427 off-ramp	Basic	2	2,736	3,144	C/22	D/27
SR 434 on-ramp to CR 427 off-ramp	Diverge	2	2,736	3,144	D/30	D/34
CR 427 off-ramp to Lake Mary Boulevard on-ramp	Basic	2	1,889	2,120	B/15	B/16
Lake Mary Boulevard on-ramp to US 17/92 off-ramp	Weave	2 + 1 Aux	2,319	2,641	B/13	B/16
Downstream US 17/92 off-ramp	Basic	2	2,006	2,273	B/15	B/18

***Bold Font**: Unacceptable LOS*

Table 3-4. 2024 Peak Hour Ramp Roadway Capacity Analysis

SR 417 Interchange	Ramp	Lanes	Volume (vph)		Capacity (vph)	V/C	
			AM	PM		AM	PM
Airport Boulevard/ US 17-92	Northbound off-ramp	2	313	368	3,700	0.1	0.1
	Southbound on-ramp (loop)	1	182	175	1,800	0.1	0.1
	Southbound on-ramp (diagonal)	1	323	311	1,850	0.2	0.2
CR 427/ Lake Mary Boulevard	Southbound off-ramp	1	343	325	1,850	0.2	0.2
	Northbound on-ramp	1	430	521	1,850	0.2	0.3
	Northbound off-ramp	1	847	1,025	1,850	0.5	0.6
	Southbound on-ramp	1	777	682	1,850	0.4	0.4
SR 434	Southbound off-ramp	1	304	548	1,850	0.2	0.3
	Northbound on-ramp	1	545	333	1,850	0.3	0.2
	Northbound off-ramp	1	318	641	1,850	0.2	0.3
	Southbound on-ramp	1	816	493	1,850	0.4	0.3

Table 3-5. 2024 Peak Hour Intersection Operations

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (B)	20.6 (18.4)	214 (275)	-
		Right	A (A)	4.5 (3.4)	-	1/325
	Westbound	Left	B (E)	19.6 (57.7)	284 (263)	1/330 1/480
		Through	A (A)	6.7 (2.6)	132 (82)	-
		Right	-	-	-	-
	Southbound	Left	D (D)	40.5 (39.1)	308 (329)	1/1,265
		Through	D (D)	40.5 (39.1)	308 (329)	
		Right	A (A)	0.5 (0.3)	-	1/600
	Overall Intersection		B (B)	14.9 (14.5)	-	-
Lake Mary Boulevard and SR 417 Northbound Ramps	Eastbound	Left	C (C)	27.5 (29)	108 (149)	1/320
		Through	A (A)	5.7 (6.6)	100 (137)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	C (C)	28.1 (24.1)	384 (287)	-
		Right	C (C)	28.1 (24.1)	384 (287)	-
	Northbound	Left	C (C)	30.6 (32.8)	175 (128)	-
		Through	C (C)	29.9 (32.6)	256 (256)	-
		Right	A (A)	0 (1.3)	-	1/250
	Overall Intersection		C (B)	21.9 (19.1)	-	-
CR 427 and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	D (C)	43.1 (27.1)	481 (1691)	-
		Right	B (A)	14.8 (8.8)	**250 (250)**	1/200
	Westbound	Left	B (E)	19.5 (58.3)	224 (289)	1/200 1/340
		Through	A (A)	3.4 (6.3)	153 (203)	-
		Right	-	-	-	-
	Southbound	Left	D (E)	54.8 (67.3)	257 (370)	-
		Through	D (E)	54.8 (67.3)	257 (370)	-
		Right	D (E)	54.8 (67.3)	257 (370)	-
	Overall Intersection		C (C)	22.9 (28.8)	-	-
CR 427 and SR 417 Northbound Ramps	Eastbound	Left	**F** (C)	**81** (31.8)	**241 (250)**	1/200
		Through	A (A)	0.4 (0.9)	257 (466)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	B (C)	10.3 (22.3)	365 (430)	-
		Right	B (C)	10.3 (22.3)	365 (430)	-
	Northbound	Left	E (D)	75.7 (52.9)	306 (275)	1/560
		Through	E (D)	58.4 (47.5)	221 (450)	1/560 1/1,605
		Right	A (D)	6.9 (53.9)	203 (535)	2/560
	Overall Intersection		B (C)	19 (26.5)	-	-
SR 434 and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (C)	22.4 (24.3)	300 (419)	-
		Right	A (A)	4.5 (3.7)	-	1/1,000
	Westbound	Left	E **(F)**	79.5 **(97.9)**	370 (198)	1/420
		Through	A (B)	0.7 (11)	40 (236)	-
		Right	-	-	-	-
	Southbound	Left	E (E)	59.1 (58.3)	258 (386)	1/850
		Through	-	-	-	-
		Right	B (C)	17.5 (29.5)	-	1/1,715
	Overall Intersection		B (C)	18.1 (23.4)	-	-
SR 434 and SR 417 Northbound Ramps	Eastbound	Left	D (D)	40.2 (54.5)	521 (624)	1/845
		Through	A (A)	3 (8.8)	234 (507)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	D (C)	39.7 (23.3)	464 (334)	1/560 1/1,320
		Right	D (C)	39.7 (23.3)	464 (334)	-
	Northbound	Left	D (E)	54.9 (58.8)	212 (295)	1/1,000 1/1,860
		Through	-	-	-	-
		Right	A (D)	4.8 (35.8)	16 (313)	1/425
	Overall Intersection		C (C)	30.1 (25.2)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 3-5. 2024 Peak Hour Intersection Operations (Cont'd)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and CR 427/Sanford Avenue	Eastbound	Left	**F (F)**	**96.3 (99.5)**	158 **(370)**	2/270
		Through	D (D)	54.9 (47.6)	254 (431)	-
		Right	A (A)	0.2 (0)	-	1/350
	Westbound	Left	D (E)	52 (74.2)	**501 (496)**	1/140 1/360
		Through	C (C)	20.4 (33.8)	282 (272)	-
		Right	A (A)	3.1 (5.3)	117 (0)	1/375
	Northbound	Left	E (C)	64.6 (31.2)	191 **(399)**	1/350
		Through	**F** (E)	**104.1** (61.6)	518 (1,248)	-
		Right	B **(F)**	12.8 **(174.3)**	**300 (300)**	1/200
	Southbound	Left	D (D)	53.5 (53.5)	**300 (300)**	1/250
		Through	E (E)	73 (56.8)	624 (431)	-
		Right	E (E)	73 (56.8)	624 (431)	-
	Overall Intersection		D **(F)**	50.5 **(81.3)**	-	-
Lake Mary Boulevard and Sanford Avenue	Eastbound	Left	-	-	-	-
		Through	A (A)	5.6 (8.9)	258 (195)	-
		Right	A (A)	2.2 (2.5)	**168 (163)**	1/120
	Westbound	Left	A (A)	3.2 (3.2)	**169 (169)**	1/120
		Through	A (A)	6.8 (3)	**1,143 (530)**	-
		Right	-	-	-	-
	Northbound	Left	**F (F)**	**84.1 (91.5)**	287 (247)	-
		Through	-	-	-	-
		Right	C (C)	21.4 (22.8)	**175** (70)	1/170
	Overall Intersection		B (A)	10.3 (9.5)	-	-
Lake Mary Boulevard and 1750 East Lake Mary Boulevard**	Eastbound	U-Turn	C (B)	16.4 (10.8)	70 (49)	1/215
		Left	C (B)	16.4 (10.8)	70 (49)	
		Through	A (A)	0 (0)	-	-
	Westbound	U-Turn	A (A)	0 (0)	**223** (69)	1/215
		Through	A (A)	0 (0)	**1,242** (0)	-
		Right	A (A)	0 (0)	1,242 (0)	-
	Southbound	Left	E (D)	49.1 (34.1)	81 (53)	-
		Through	-	-	-	-
		Right	E (D)	49.1 (34.1)	81 (53)	-
	Overall Intersection		**E** (D)	**49.1** (34.1)	-	-
Lake Mary Boulevard and Mellonville Avenue	Eastbound	Left	B (A)	10.8 (4.7)	102 (56)	1/380
		Through	A (A)	5.9 (9.4)	162 (212)	-
		Right	A (A)	5.9 (9.4)	162 (212)	-
	Westbound	Left	B (A)	12.1 (8)	**339** (96)	1/290
		Through	C (B)	28.1 (12.1)	**1,238** (260)	-
		Right	C (B)	28.1 (12.1)	1,238 (260)	-
	Northbound	Left	D **(F)**	43.6 **(105.3)**	138 (373)	-
		Through	C (D)	25.4 (35.1)	91 **(240)**	1/190
		Right	C (D)	25.4 (35.1)	91 **(240)**	
	Southbound	Left	C (E)	32.9 (67.7)	67 (170)	-
		Through	B (D)	18.8 (42.3)	86 (125)	1/220
		Right	B (D)	18.8 (42.3)	86 (125)	
	Overall Intersection		C (B)	20.5 (18.2)	-	-
Lake Mary Boulevard and Ohio Avenue/Botanical Way	Eastbound	Left	A (A)	4.4 (3)	73 (69)	1/440
		Through	A (A)	5.3 (9.8)	164 (360)	-
		Right	A (A)	0 (0)	31 (26)	1/370
	Westbound	Left	A (A)	2.9 (3.4)	36 (45)	1/440
		Through	B (A)	12.4 (5.3)	339 (227)	-
		Right	B (A)	12.4 (5.3)	339 (227)	-
	Northbound	Left	E (D)	55.2 (49.7)	47 (41)	-
		Through	E (D)	55.2 (49.7)	47 (41)	-
		Right	A (A)	0.4 (0.5)	24 (42)	1/630
	Southbound	Left	D (D)	54.3 (49.2)	39 (32)	1/265
		Through	A (A)	0.2 (0.5)	54 (75)	-
		Right	A (A)	0.2 (0.5)	54 (75)	-
	Overall Intersection		A (A)	10 (8.1)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 3-5. 2024 Peak Hour Intersection Operations (Cont'd)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and Red Cleveland Boulevard	Eastbound	Left	D (D)	35.3 (42)	103 (128)	2/340
		Through	A (A)	5.8 (9.2)	173 (276)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	D (B)	50.4 (16.2)	715 (243)	-
		Right	A (A)	4.8 (3.3)	**395** (79)	1/345
	Southbound	Left	D (D)	38.7 (46.8)	134 (206)	-
		Through	-	-	-	-
		Right	B (B)	17.4 (11.7)	62 (127)	1/315 1/Lane Drop
	Overall Intersection		C (B)	33.3 (14.9)	-	-
Lake Mary Boulevard and Brisson Avenue	Eastbound	Left	-	-	-	-
		Through	B (B)	13.3 (17.3)	261 (466)	-
		Right	B (B)	13.3 (17.3)	261 (466)	-
	Westbound	Left	A (A)	6.9 (5.9)	57 (53)	1/280
		Through	B (A)	14.2 (5.5)	319 (143)	-
		Right	-	-	-	-
	Northbound	Left	D (C)	45 (33.2)	**188** (104)	1/140
		Through	-	-	-	-
		Right	B (B)	11.7 (14.2)	203 (65)	-
	Overall Intersection		B (B)	16 (14.4)	-	-
Red Cleveland Boulevard and Marquette Avenue**	Eastbound	Left	B (B)	13.1 (11.9)	61 (55)	-
		Through	B (B)	13.1 (11.9)	61 (55)	-
		Right	B (B)	13.1 (11.9)	61 (55)	-
	Westbound	Left	B (B)	11.4 (11.1)	66 (54)	-
		Through	B (B)	11.4 (11.1)	66 (54)	-
		Right	B (B)	11.4 (11.1)	11 (0)	1/190
	Northbound	Left	A (A)	7.7 (8)	31 (31)	1/280
		Through	A (A)	0 (0)	2 (0)	-
		Right	A (A)	0 (0)	-	1/265
	Southbound	Left	A (A)	8 (7.9)	60 (65)	1/230
		Through	A (A)	0 (0)	2 (0)	-
		Right	A (A)	0 (0)	2 (0)	-
	Overall Intersection		B (B)	13.1 (11.9)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

3.3 Travel Time Evaluation

A desktop analysis was performed to compare travel times between the existing route from SR 417 northbound to Sanford Airport via Lake Mary Boulevard and the proposed Connector. The goal was to identify potential travel time savings with the proposed Connector. Both routes began at the SR 417 Lake Jesup mainline toll plaza and ended at the Sanford Airport terminal. Route #1 (existing) included SR 417, CR 427, Lake Mary Boulevard, and Red Cleveland Boulevard. Route #2 (proposed) included the proposed Connector and Red Cleveland Boulevard. For Route #1, typical travel times were estimated using Google Maps during peak periods when field traffic data was collected. Since Route #2 does not exist in its entirety today, travel time for the proposed Connector was calculated using distance and the proposed posted speed of 45 mph and added to the Google Maps travel time for the Red Cleveland Boulevard segment.

The two routes and their estimated travel times are shown in **Figure 3-2** and **Table 3-6**. Detailed analysis data can be found in **Appendix A**. The results indicate that Route #2 (proposed) would reduce the distance by 33 percent compared to Route #1 (existing). Additionally, the data shows that Route #2 would reduce peak travel time by approximately 41 to 50 percent in 2024, compared to Route #1. The travel time reduction for Route #2 is expected to be greater in the future as traffic demand increases and congestion worsens at the interchange and adjacent intersections on Lake Mary Boulevard, leading to longer travel times for Route #1.

3.4 Origin-Destination Evaluation

StreetLight data was used to identify travel patterns for trips originating from SR 417, both south and north of the CR 427/Lake Mary Boulevard interchange, to the Airport passenger terminal and Lake Mary Boulevard east of Red Cleveland Boulevard. The analysis aimed to estimate the amount of traffic that would potentially divert to the proposed Connector. **Figure 3-3** illustrates the distribution of SR 417 northbound and southbound 2024 one-way AADT to the specified destinations. The SR 417 northbound data indicates that 1,040 (three percent) and 1,380 (four percent) daily trips access the Airport terminal via Airport Boulevard and Red Cleveland Boulevard, respectively. An estimated 3,110 trips (nine percent) continue on Lake Mary Boulevard east of Red Cleveland Boulevard. In total, 5,530 one-way (11,060 two-way) daily trips would be eligible to use the proposed Connector if it was in place by 2024. However, some of the eligible trips would not divert to the proposed Connector and would continue using Lake Mary Boulevard and Airport Boulevard as congestion decreases due to traffic shifts.

The StreetLight data did not indicate that any SR 417 southbound trips access the Airport via Red Cleveland Boulevard. There were 860 (three percent) daily trips from SR 417 southbound exiting at the Lake Mary Boulevard interchange and traveling east past Red Cleveland Boulevard. It is anticipated that most of the SR 417 southbound trips north of the Airport Boulevard/US 17-92 interchange would continue to use Airport Boulevard to access the Airport as the proposed Connector would be located approximately two and a half miles to the south and would be tolled.

Figure 3-2. 2024 Travel Time from SR 417 to Sanford Airport

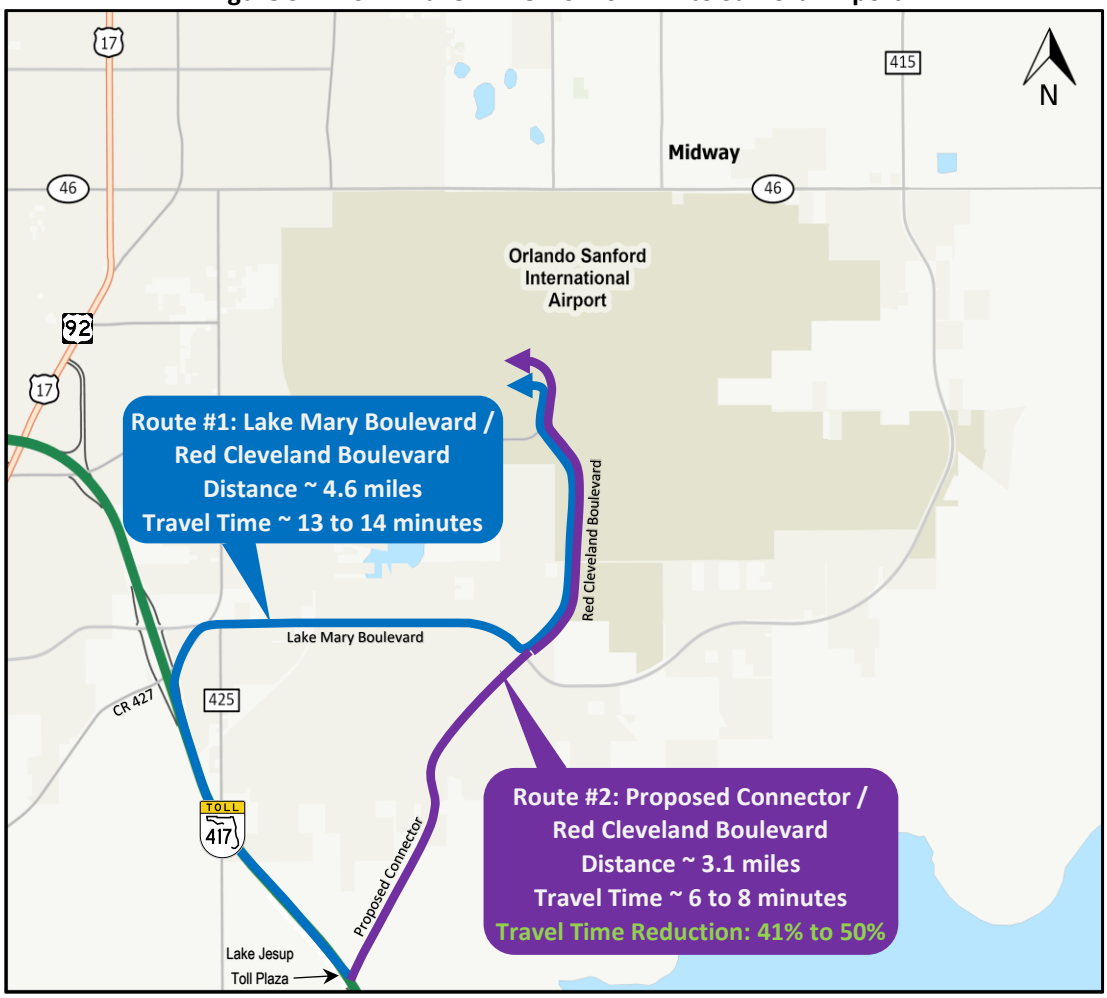
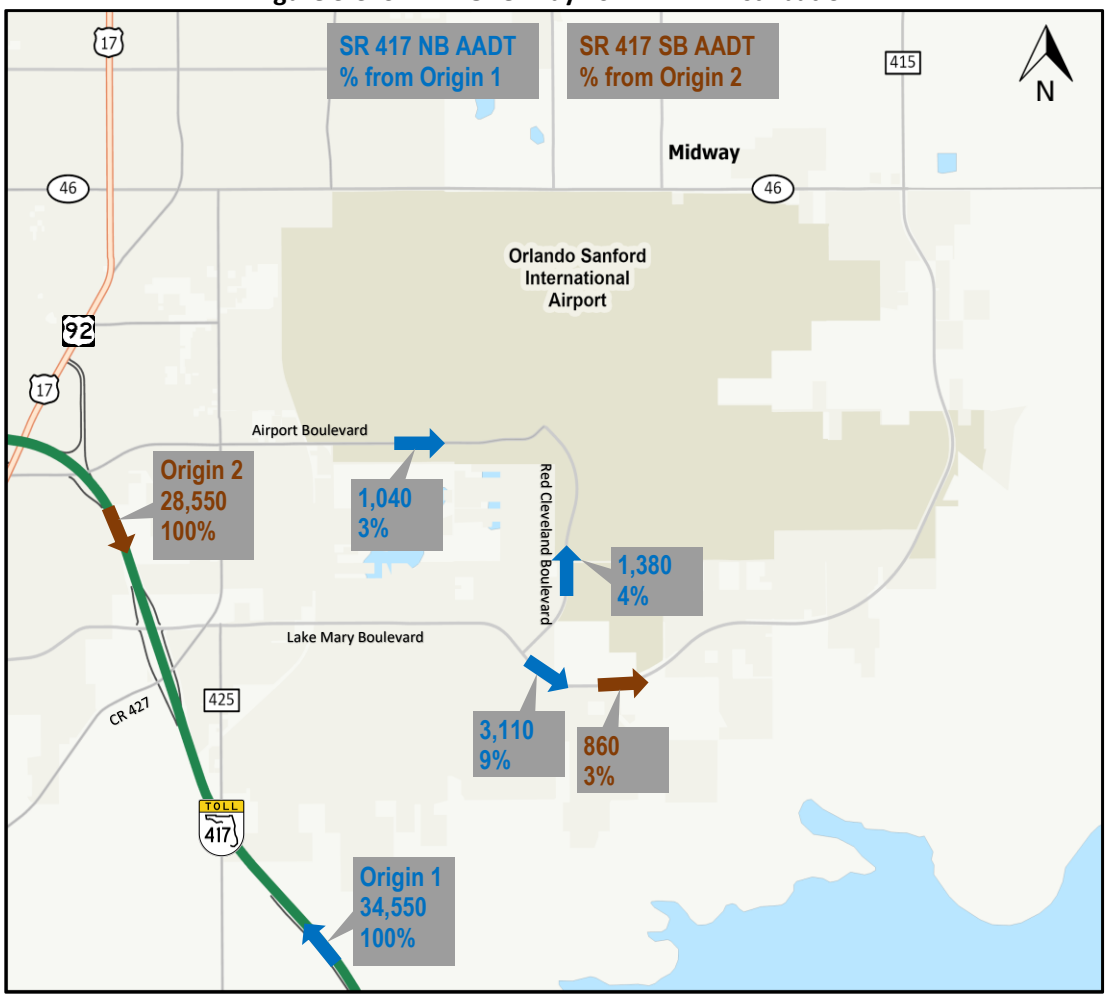


Table 3-6. Distance and 2024 Travel Time Comparison

Performance Measure	AM Peak Hour		PM Peak Hour		Percent Difference	
	Route #1	Route #2	Route #1	Route #2	AM Peak Hour	PM Peak Hour
Distance (Miles)	4.6	3.1	4.6	3.1	-33%	-33%
Peak Travel Time (Minutes)	13	6	14	8	-50%	-41%

Route #1: Lake Mary Boulevard/Red Cleveland Boulevard
Route #2: Proposed Connector/Red Cleveland Boulevard

Figure 3-3. SR 417 One-Way 2024 AADT Distribution

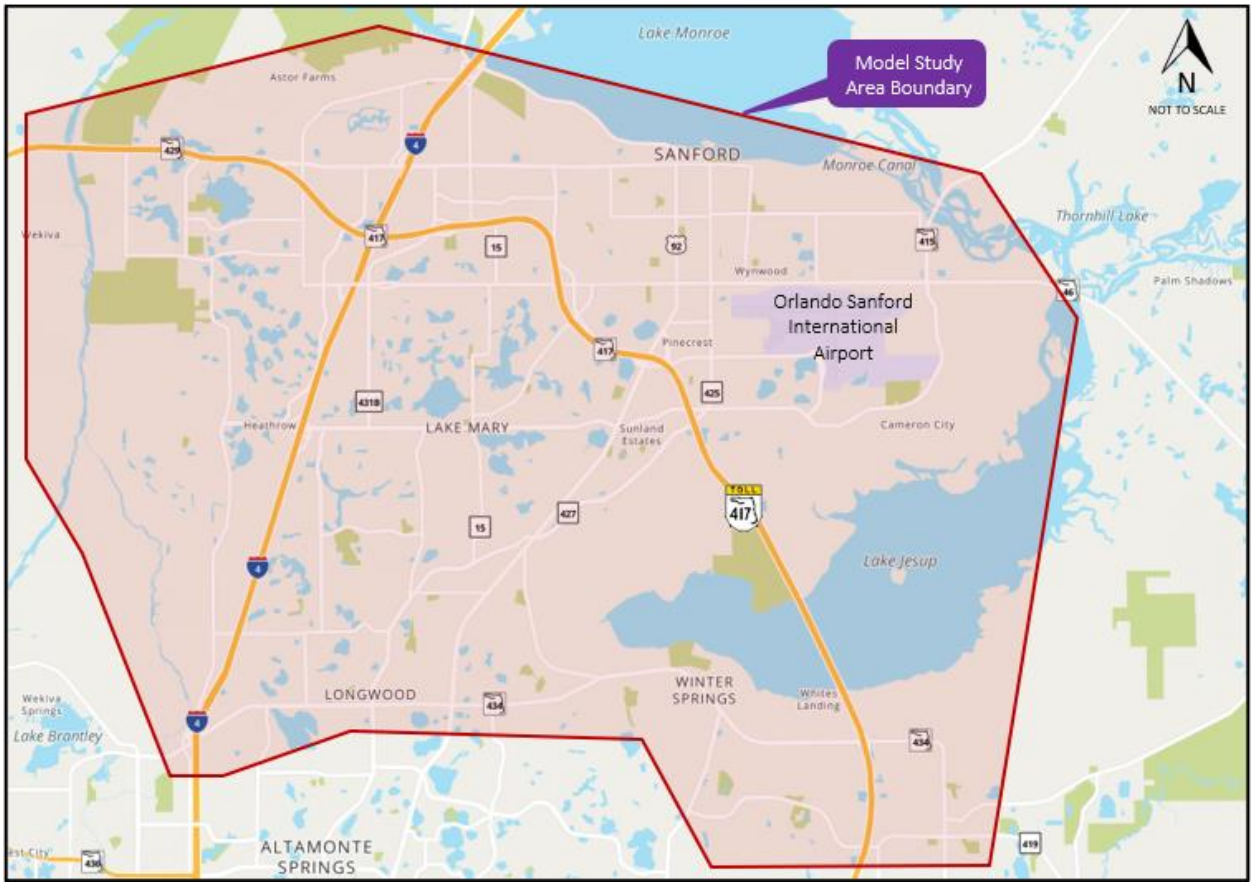


4. Regional Travel Demand Model

The travel demand model is used to simulate base year traffic conditions and to estimate future travel demand at a regional level, for planning and design purposes. A summary of the modeling process followed to forecast design traffic for the proposed Connector is provided in this section. Additional details are documented in the travel demand model development report provided in **Appendix C**.

The latest version of the FDOT District 5 Central Florida Regional Planning Model (CFRPM) - version 7 - was used as the basis for this study. The CFRPM v7 has a base year of 2015 and a horizon year of 2045 with interim years of 2020, 2025, 2030, 2035, and 2040. The full model covers the nine counties in District 5 (Orange, Seminole, Osceola, Lake, Sumter, Marion, Volusia, Flagler, and Brevard Counties), as well as connected portions of Polk and Indian River Counties. A review of the entire model was conducted, and updates and revisions were made in the CFRPM v7 within the study area shown in **Figure 4-1**, to further refine inputs and parameters, and enhance the accuracy of the traffic forecasts.

Figure 4-1. Travel Demand Model Study Area



The travel demand model development years for this study were determined to be 2021 (base), 2030 (opening) and 2045 (horizon). It should be noted that the CFRPM v7 has a 2045 horizon year and therefore, traffic forecast for the 2050 design year for the PD&E Study operational analysis was developed through extrapolation. It is also important to note that traffic forecasts produced from the CFRPM v7 are Peak Season Weekday Average Daily Traffic (PSWADT) and were converted to AADT by applying a Model Output Conversion Factor (MOCF) of 0.97.

4.1 2021 Base Year Model Validation

To validate the 2021 base year model, the highway network, Traffic Analysis Zone (TAZ) structure, socioeconomic (SE) data and land use within the study area were reviewed and updated where applicable. The 2020 highway network in the CFRPM V7 was used as a starting point in developing the 2021 base year model. Highway network reviews and updates included checking network connectivity, area and facility types, number of lanes on roadway segments, speeds, and capacities for facilities within the study area, to ensure that the network was properly coded to match 2021 conditions. Review of the TAZ structure within the model study area did not show a need for additional splits, although minor adjustments were made to centroid connections to enhance loading of trips. The 2021 SE data (i.e., population, employment) was created by interpolating 2020 and 2025 data sets. The 2021 SE data were reviewed using aerial photography from November 2021 and appeared reasonable compared to the existing land uses.

Further, several steps were taken to enhance validation of the model for the study area and ensure it was replicating observed data in the base year. Model link volumes were compared with observed counts and updates made where applicable. The Volume Delay Function curves in the model were reviewed, specifically for network links 90-99 (tolled expressways). Adjustments were made along SR 417 mainline from SR 434 to north of Lake Mary Boulevard and at the SR 434 and Lake Mary Boulevard ramps. With these adjustments, the 2021 model volumes more reasonably reflected observed data. Overall, the model reviews and updates were completed to improve trip generation, distribution and assignment and ensure better loading of traffic to the network, especially along SR 417, Lake Mary Boulevard, CR 427, Red Cleveland Boulevard, Airport Boulevard, SR 46 and SR 415, among others.

4.1.1 2021 Base Year Model Validation Results

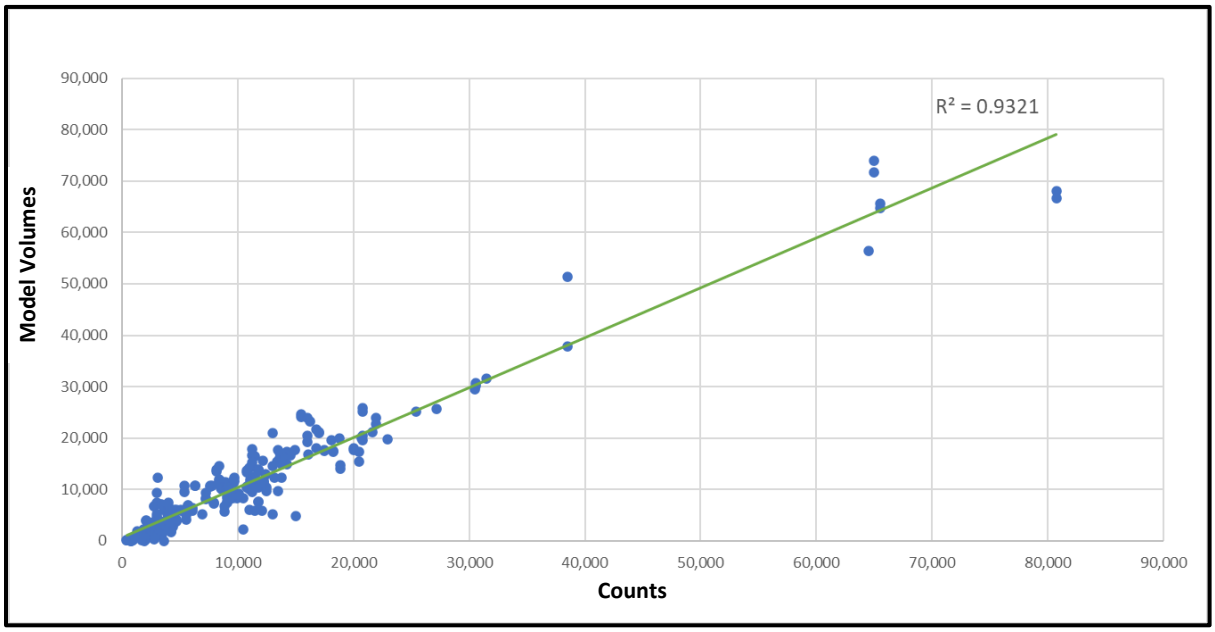
The final volume to count ratios by facility type are shown in **Table 4-1**. The overall volume to count ratio by facility type is 1.01 for the study area, with a deviation of 0.5 percent. Most of the facility type groups' deviations are within the preferrable deviation range and all are within the acceptable range.

Table 4-1. 2021 Base Year Model Volume to Count Ratio by Facility Type

Facility Type	Number of Links	Model Volume	Count	Volume to Count Ratio	Deviation	Preferable	Acceptable
Freeway	9	556,223	564,051	0.99	-1.4%	+/- 6%	+/- 7%
Divided Arterial	88	1,230,208	1,118,875	1.10	10.0%	+/- 10%	+/- 15%
Undivided Arterial	30	288,976	268,907	1.07	7.5%	+/- 10%	+/- 15%
Local Divided Roads	10	100,636	80,500	1.25	25%	+/- 20%	+/- 25%
Local Undivided Roads	70	170,264	206,600	0.82	-17.6%	+/- 20%	+/- 25%
Non-Toll Ramps	45	335,546	303,250	1.11	10.6%	+/- 20%	+/- 25%
Toll Road-Freeway	14	303,498	321,300	0.94	-5.5%	+/- 6%	+/- 7%
Toll Ramp	8	21,043	25,000	0.84	-16%	+/- 20%	+/- 25%
Study Area	**274**	**3,006,394**	**2,888,483**	**1.04**	**4.1%**	**+/- 16%**	**+/- 12%**

The variance between base year model volumes and counts was calculated at a R-squared value of 0.932, which is a very close fit. The base year model scatter plot is shown in **Figure 4-2**.

Figure 4-2. 2017 Base Year Model R^2 Scatter Plot



Percent Root Mean Squared Error (%RMSE) was calculated for model links by volume group. RMSE is a standard model validation check that measures the average error between the model estimated volumes and the actual traffic counts. The lower the value, the less the error between the model estimated volumes and the counts. The %RMSE stratified by volume groups is shown in **Table 4-2**. The overall %RSME of 30 percent is better than the target of 35-45 percent. All volume groups fall within the acceptable %RSME range, with most performing better than the acceptable range.

Table 4-2. 2021 Base Year Model %RMSE by Volume Group

Volume Group (Vehicles per Day)	Number of Links	Model Volume	Count	%RMSE	Acceptable Range
< 5,000	92	192,049	267,750	61%	45% - 100%
5,000-9,999	57	419,740	423,198	37%	35% - 45%
10,000-14,999	61	735,830	638,784	27%	27% - 35%
15,000-19,999	32	549,291	508,775	18%	25% - 30%
20,000-29,999	20	460,797	393,275	25%	15% - 27%
30,000-49,999	4	130,236	131,150	1%	15% - 25%
50,000+ 59,999	2	107,838	103,051	21%	10% - 20%
=<60,000	6	410,613	422,500	13%	10% - 19%
Study Area	**274**	**3,006,394**	**2,888,483**	**30%**	**35% - 45%**

4.2 2030 Opening and 2045 Horizon Year Models

The opening and horizon model traffic forecast years were 2030 and 2045, respectively. The future year models retained the updates and enhancements from the 2021 base year model with additional adjustments to SE data and highway network to reflect future improvements in the study area.

4.2.1 SE Data Forecasts

Future SE data (population and employment) forecasts for each county within the CFRPM v7 were reviewed and compared for reasonableness with forecasts from the BEBR, Woods & Poole Economics, Inc. and the previous version of the model (CFRPM v6.1) developed for CFX projects. Overall, the CFRPM v7 county control totals for population and employment were within reason, specifically for the counties within and around the study area (Orange, Seminole and Volusia).

Further, the future SE data forecasts within the CFRPM v7 model study area previously shown in **Figure 4-1** were thoroughly reviewed for correctness and updated where applicable in the TAZs based on geographic area, existing level of development and vacant developable land. The detailed review was conducted to ensure proper allocation in the TAZs that would directly impact the project. The SE data forecasts were reviewed for potential future development based on acreage and land uses. The review was supplemented with an assessment of active developments within the City of Sanford and Seminole County, including the indoor sports complex planned on Lake Mary Boulevard. In addition to the study area, a cursory review of SE data in the surrounding area including Seminole and Volusia Counties was conducted, and the data appeared to be reasonable as compared to county comprehensive plans, vested development and vacant lands.

4.2.2 Future Year Highway Networks

The 2030 and 2045 future year highway networks in the study area were also reviewed for connectivity, area and facility types, speeds, number of lanes and capacities. The network changes in the base year network were carried over to the future year networks for consistency. The future highway networks were updated where applicable to reflect the following planned and programmed improvements in the surrounding area that were not included in the model:

- CFX widening of SR 417 from SR 528 to SR 408 (PD&E Study completed)
- CFX widening of SR 417 from International Drive to SR 528 (under construction)
- CFX widening of SR 408 from Kirkman Road to I-4 (under design)
- FTE widening of SR 429 from I-4 to Seidel Road (under design)
- CFX widening of SR 429 from Seidel Road to Tilden Road (PD&E Study completed)
- CFX extension of Poinciana Parkway from south of US 17/92 to CR 532 (under design)
- FTE extension of Poinciana Parkway from CR 532 to I-4 (under design)

The following sources were referenced to identify planned and programmed improvements:

- MetroPlan Orlando 2045 Metropolitan Transportation Plan Cost Feasible Plan
- CFX 2045 Master Plan
- Seminole County Comprehensive Plan
- Seminole County 2045 Transportation Mobility Plan (TMP)
- Other applicable transportation plans (e.g., LYNX)

4.3 Tolls

Toll rates for existing toll facilities within the study area were reviewed and updated where applicable in the base year model. Since the proposed Connector is a future CFX toll facility, tolling was modeled in accordance with established CFX toll policies and consistent with recent CFX's expansion projects. The

"base year" toll rate for the proposed Connector was established to be $0.18 per mile in 2018 dollars and the "Customer First" toll policy was applied to calculate toll rate inputs for 2030 and 2045. This policy requires annual adjustments of the toll rate according to the change in the Consumer Price Index, or a floor of 1.5 percent. An annual adjustment of 1.5 percent was applied to the Passenger Car (2-axle) toll rates for all CFX existing and expansion facilities in the future year models.

The proposed Connector will be approximately 1.6 miles long, from SR 417 to Lake Mary Boulevard, and there will be one tolling point only. Considering the 1.6-mile length for the proposed Connector and escalating $0.18 per mile in 2018 dollars at an annual compound growth rate of 1.5 percent yields a toll of $0.34 in 2030 and $0.43 in 2045 for passenger cars. However, the minimum toll in the opening year is $0.50 for CFX's expansion projects. Therefore, a toll of $0.50 would be the base toll amount for the 2030 opening year for the proposed Connector. For modeling purposes, the toll point on the SR 417 mainline at Lake Jesup was assumed to be south of the proposed Connector, to ensure that all SR 417 traffic was tolled and to provide a reasonable estimate of the traffic that would potentially divert to the proposed Connector. A two percent annual adjustment was applied to FTE facilities, per FTE guidelines.

To assess the impact of the proposed Connector as a future toll facility, a Coefficient of Toll (CTOLL) analysis was applied during the traffic assignment step of the model. CTOLL is a factor used to convert monetary cost into time, based on the average income within the study area. It is the inverse of the Value of Time (VOT). The product of CTOLL and the toll amount represents the time penalty applied to toll facilities. The CTOLL-based approach was applied to all tolled facilities, including the proposed Connector, in the development of design traffic.

5. Future Conditions

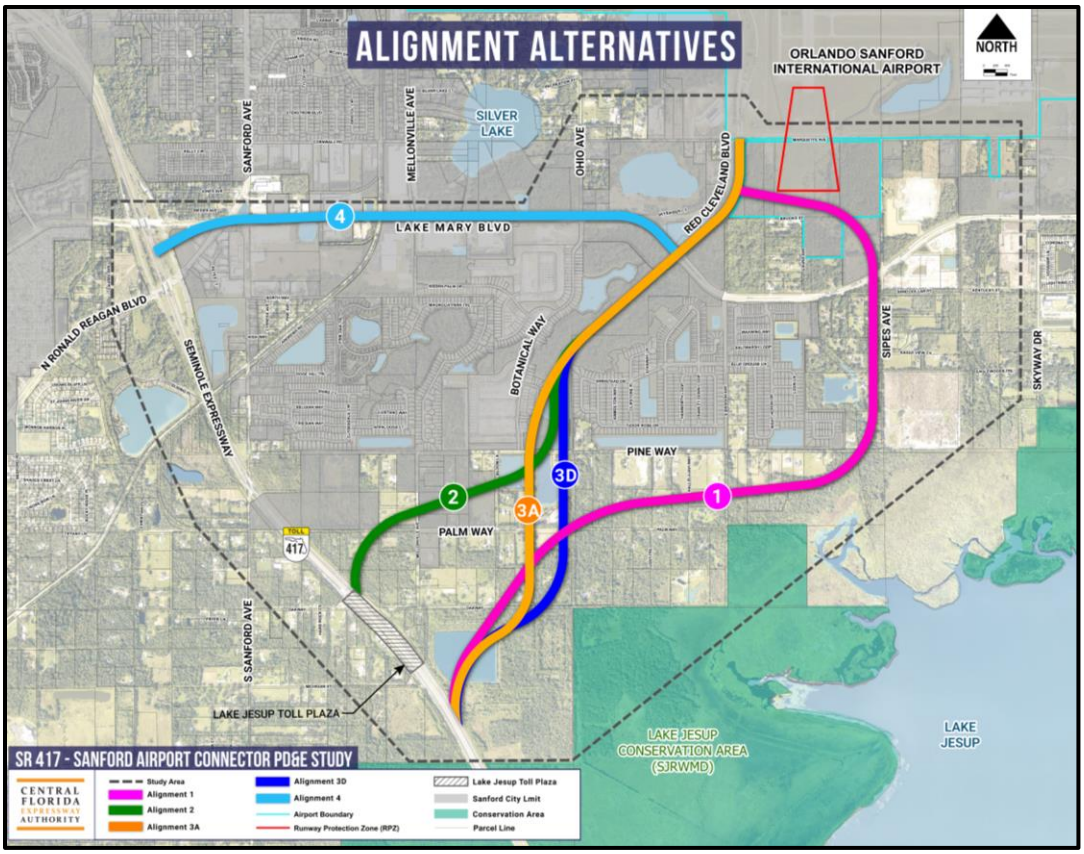
Future conditions including alternatives screening, traffic forecasts, operational analysis and future safety evaluation are documented in this section.

5.1 Alternatives Screening and Selection

5.1.1 Proposed Connector Alignments

The PD&E Study evaluated the No Build alternative, and the Build alignments presented in **Figure 5-1** to screen viable alternatives for the proposed Connector. The alignments were evaluated from a traffic, engineering, social, cultural, physical, natural environment and cost standpoint. The comprehensive evaluation and the screening matrix used to assess the alternatives are documented in the Preliminary Engineering Report prepared for the PD&E Study. A summary is provided herein.

Figure 5-1. PD&E Study Initial Alignments



Alignments 1, 2, 3A and 3D were carried over from the CF&M Study for further evaluation in the PD&E Study. Alignment 4 (Viaduct), however, was proposed by the CFX Environmental Stewardship Committee toward the end of the CF&M Study. The alignments are described as follows:

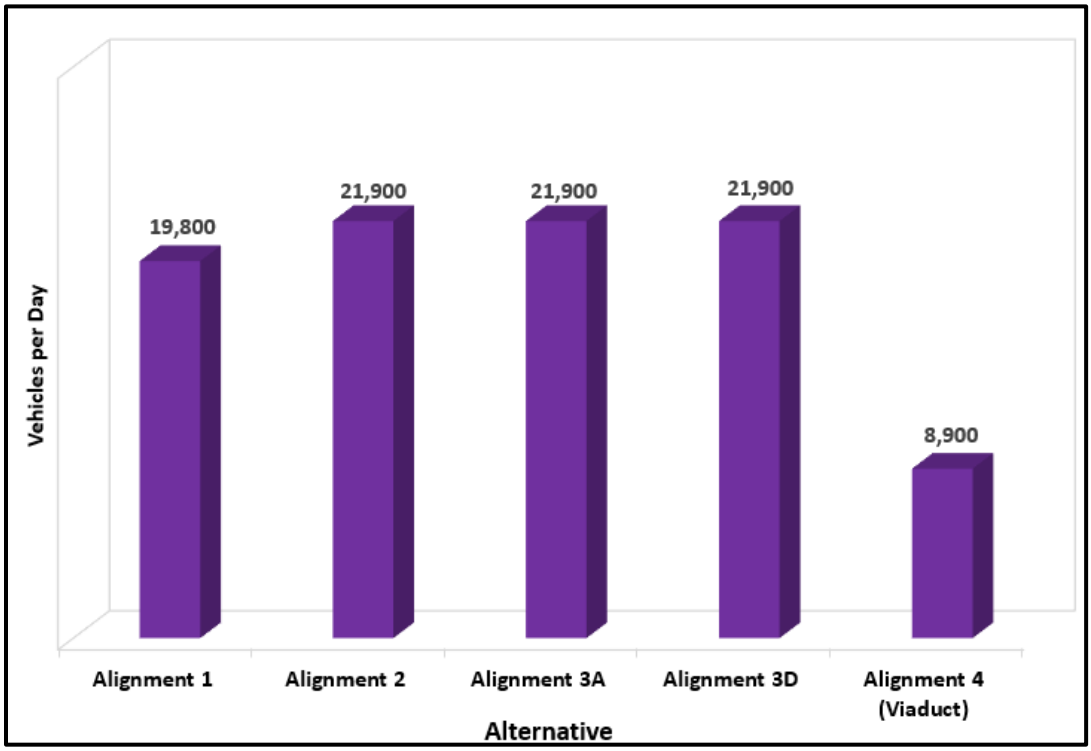
- Alignment 1 aimed to minimize direct impacts to residential and non-residential parcels.
- Alignment 2 had the least potential for environmental impacts.
- Alignments 3A and 3D sought to balance direct impacts to residential development and environmentally sensitive lands.

- Alignment 4 was proposed to utilize the existing Lake Mary Boulevard corridor to minimize impacts on the environment and nearby residences.

All alignments included a partial interchange at SR 417, with ramps to/from the south only. Additionally, Alignment 1 featured a partial interchange at Lake Mary Boulevard, also with ramps to/from the south, and terminated at a T-intersection with Red Cleveland Boulevard. Alignments 2, 3A and 3D terminated at a full local interchange providing access to both Lake Mary Boulevard and Red Cleveland Boulevard. The eastern terminus of Alignment 4 also included ramp access to Lake Mary Boulevard and Red Cleveland Boulevard.

The 2050 projected AADT for the proposed Connector alignments is provided in **Figure 5-2**. The process used to develop future traffic projections is documented in **Sections 4** and **5.2**. As shown in **Figure 5-2**, the highest projected daily traffic in 2050 is for Alignments 2, 3A and 3D, at 21,900 vehicles. Alignment 1 is slightly lower at 19,800, while Alignment 4 (Viaduct) has the lowest projection at 8,900. These differences are mainly due to the travel distance between a common origin and destination—alignments offering shorter paths are expected to attract more traffic, and vice versa.

Figure 5-2. 2050 AADT for Proposed Connector Alignments



The distance travelled from the same origin on SR 417, south of the Lake Jesup toll plaza—where Alignments 1, 3A and 3D converge—to the intersection of Red Cleveland Boulevard and Marquette Avenue is provided in **Table 5-1**. As shown in the table, Alignment 4 (Viaduct) has the longest travel distance, followed by Alignment 1. Alignments 3A and 3D have the shortest and nearly identical distances, while Alignment 2 is slightly longer, though the difference is negligible from a traffic modeling perspective. As a result, Alignments 2, 3A and 3D are expected to attract the highest traffic demand due to their shorter travel paths. In contrast, Alignment 4 (Viaduct), with the longest path, is projected to have the lowest

traffic. In addition, since the Viaduct will be tolled and would share its access point on SR 417 with CR 427/Lake Mary Boulevard, the majority of motorists are expected to continue using the non-tolled Lake Mary Boulevard—especially as congestion decreases due to traffic diversion.

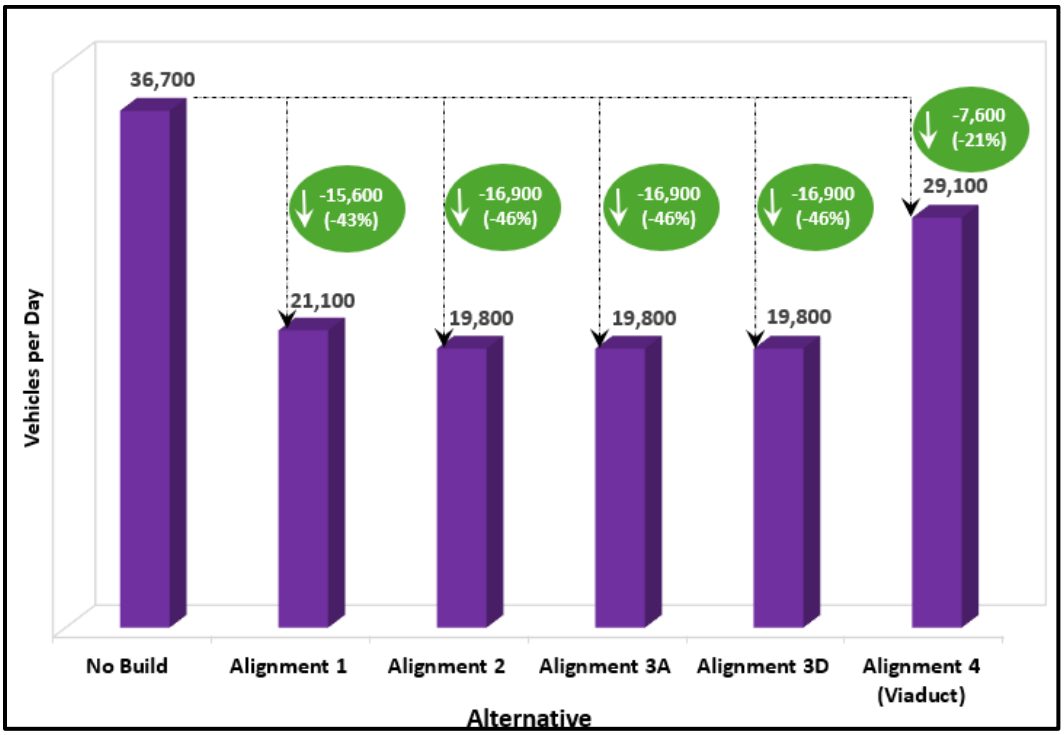
Table 5-1. Distance Travelled from South of Lake Jesup Toll Plaza to Red Cleveland Boulevard

Alignment	1	2	3A	3D	4
Distance Travelled (Miles)	3.1	2.9	2.5	2.5	3.7

Destination: Red Cleveland and Marquette Avenue intersection

The 2050 projected AADT for Lake Mary Boulevard, from SR 417 to Red Cleveland Boulevard, and the corresponding reduction in traffic due to diversion to the proposed Connector are presented in **Figure 5-2**. Alignments 2, 3A and 3D are expected to result in the highest traffic reduction on Lake Mary Boulevard, of 46 percent, while Alignment 4 (Viaduct) is projected to have the lowest reduction, of 21 percent.

Figure 5-3. 2050 AADT for Lake Mary Boulevard West of Red Cleveland Boulevard



Following the Alternatives Public Meeting held on January 14, 2025, and based on the evaluation matrix, Alignments 1, 3A, 3D and 4 (Viaduct) were eliminated from further consideration for the following reasons:

- Alignment 1
  - Second longest travel distance
  - Second highest overall cost and highest right-of-way costs
  - Highest number or residential and non-residential parcels impacted
  - Proximity to the Airport's Runway Protection Zone
- Alignment 3A
  - Second highest number of residential parcels impacted

  - Direct impact on new homes in the Concorde development
  - Higher cost than Alignment 2
  - Connection to SR 417 is closer to the Lake Jesup Conservation Area than Alignment 2
- Alignment 3D
  - Higher cost than Alignment 2
  - Requires more bridges over private retention ponds than Alignment 3A
  - Connection to SR 417 is closer to the Lake Jesup Conservation Area than Alignment 2
- Alignment 4 (Viaduct)
  - Longest travel distance
  - Significantly higher cost than all other alternatives (approximately 2-2.5 times more)
  - Significantly lower projected traffic volumes than other alternatives
  - Requires reconstruction of eastbound Lake Mary Boulevard to widen the median for viaduct piers
  - Requires substantial utility relocations

Alignment 2 was proposed for further evaluation due to the following advantages:

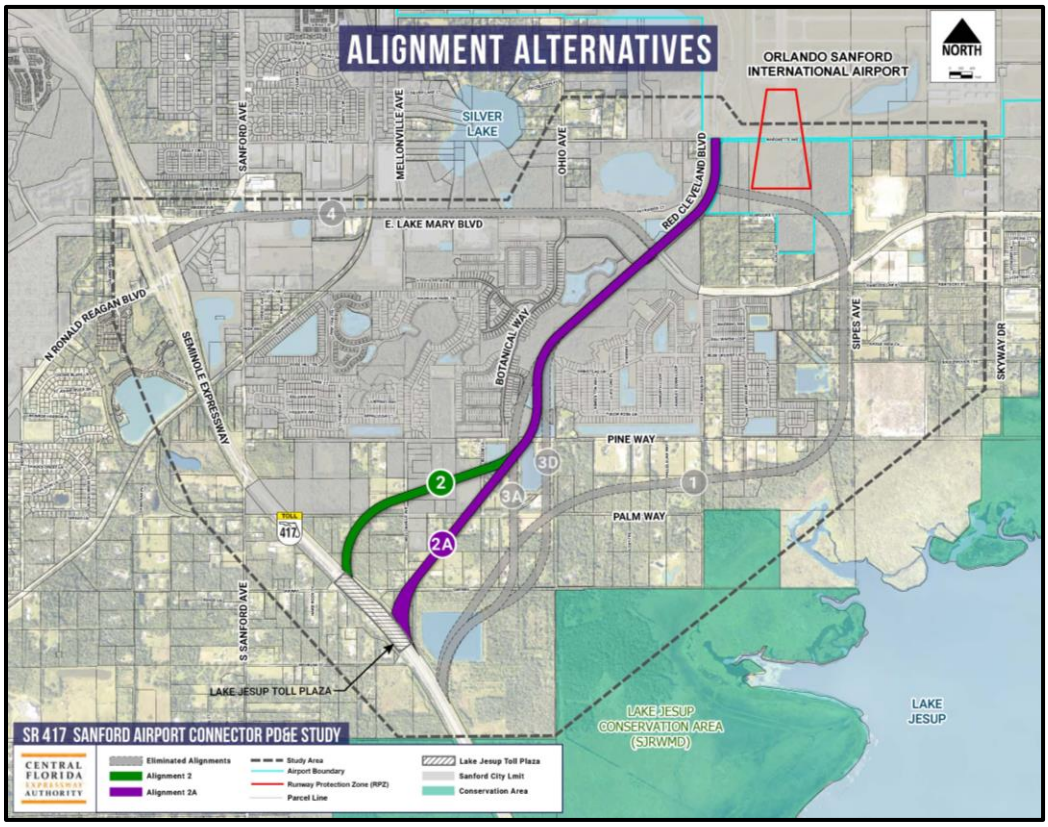
- Shortest and most direct route
- Lowest overall cost
- Second lowest number of residential parcels impacted
- Connection to SR 417 is farther from the Lake Jesup Conservation Area than other alignments

A refinement of Alignment 2 was made to shift the interchange with SR 417 farther south, while still remaining north of the Lake Jesup Conservation Area. This refinement was considered significant enough to be evaluated as a new alternative (Alignment 2A), as shown in **Figure 5-4**. A Refined Alternatives Public meeting was held on April 2, 2025, where the evaluations of Alignments 2 and 2A were presented. The traffic projections and social, cultural, and physical impacts were similar between the two. However, Alignment 2A had slightly lower wetland impacts and a slightly higher cost.

Following the Refined Alternatives Public Meeting, and based on the evaluation matrix and stakeholder coordination, Alignment 2A was selected as the Preferred Alternative for the following reasons:

- Shortest and most direct route
- Greater spacing from the existing CR 427/Lake Mary Boulevard interchange
- Lowest direct wetland impacts
- Superior roadway geometry and safety (eliminates S curves)
- Support from stakeholders

Figure 5-4. PD&E Study Refined Alignment 2A



5.1.2 Proposed Connector Typical Sections

Two typical sections were considered for the length of the project, as shown in **Figures 5-5** and **5.6**. The at-grade typical section features one 15-foot travel lane in each direction, 4-foot paved outside shoulders and a 32-foot inside median. The bridge typical section features one 15-foot travel lane in each direction flanked by a 6-foot 6-inch outside shoulder and a 7-foot 6-inch inside shoulder. This bridge typical section is for local road crossings under 500 feet in length. Both typical sections have a design and posted speed of 45 mph and can accommodate four lanes if additional capacity is needed in the future.

Figure 5-5. Proposed Connector At Grade Typical Section

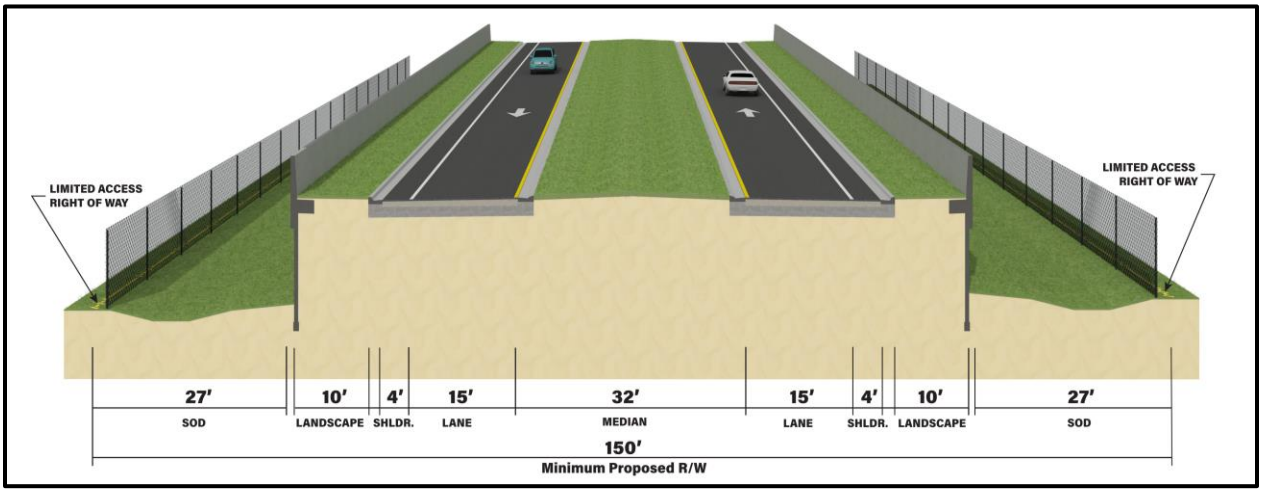
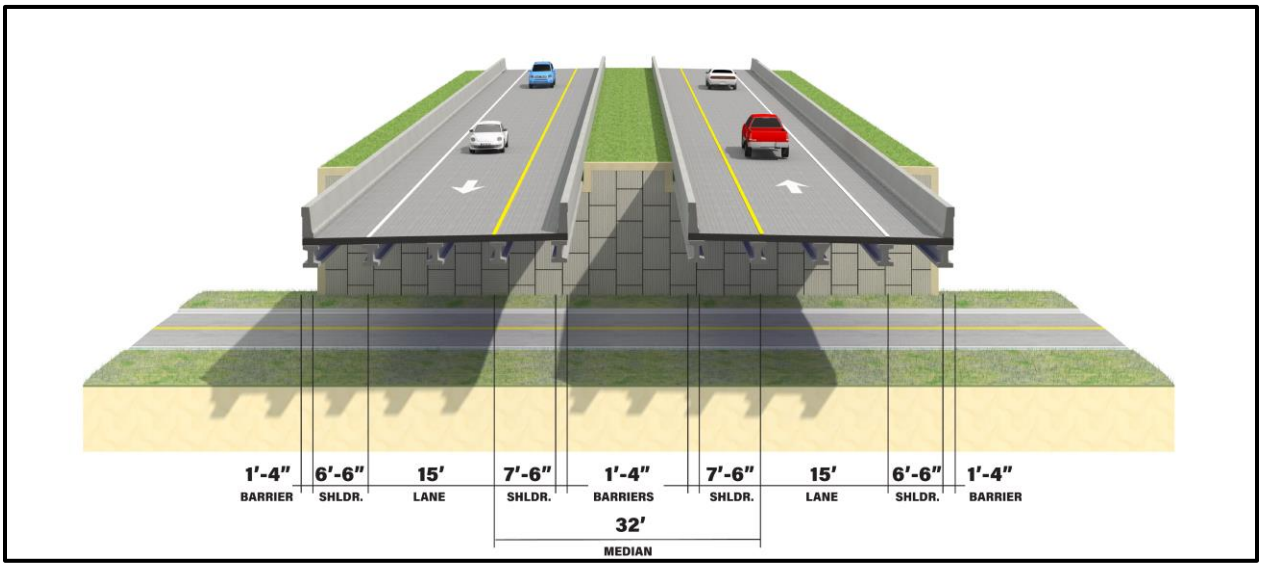


Figure 5-6. Proposed Connector Bridge Typical Section



5.1.3 Proposed Connector Interchanges at SR 417 and Lake Mary Boulevard

During the CF&M Study, interchange alternatives at the proposed Connector termini at SR 417 and Lake Mary Boulevard were evaluated. Both full and partial interchanges at the SR 417 terminus were considered. However, the ramps to/from the north at SR 417 were eliminated due to two key factors: (1) low projected traffic demand of approximately 1,700 AADT for both ramps in 2050, and (2) potential weaving concerns with the existing CR 427/Lake Mary Boulevard interchange. As a result, a partial interchange with ramps to/from the south only was selected for further evaluation in the PD&E Study. This proposed partial interchange at SR 417, which forms the basis for the SR 417 access request, is depicted in **Figure 5-7**, and is based on the preferred alignment (2A).

The design speed for the proposed SR 417 and Connector ramps is 50 mph. It should be noted that the design of the ramps to/from the south does not preclude the addition of ramps to/from the north, if needed in the future. In such a case, a new study would be required, along with the preparation of an Interchange Modification Report (IMR).

At the proposed Connector terminus at Lake Mary Boulevard/Red Cleveland Boulevard, alternatives with and without an interchange were evaluated. With an interchange, all traffic movements would be accommodated. Without one, the Connector would only serve traffic to the Airport. The analysis showed that the projected Connector traffic would significantly reduce, by approximately 75 percent, if an interchange is not provided at Lake Mary Boulevard. This indicated that most of the traffic expected to use the Connector would be trips bypassing the CR 427/Lake Mary Boulevard interchange to travel east on Lake Mary Boulevard past the Airport. Therefore, two alternatives were considered viable for the local interchange and were evaluated during the CF&M Study: a Tight Urban Diamond Interchange (TUDI) and a Single Point Urban Interchange (SPUI). Both options were found to provide similar and acceptable operations for the 2050 design year. However, the SPUI was selected as the preferred configuration for further evaluation in the PD&E Study due to the following advantages: (1) maximizes spacing with adjacent intersections, (2) better accommodates major traffic movements, and (3) offers opportunities to enhance access management.

Figure 5-7. Proposed SR 417 Sanford Airport Connector Partial Interchange

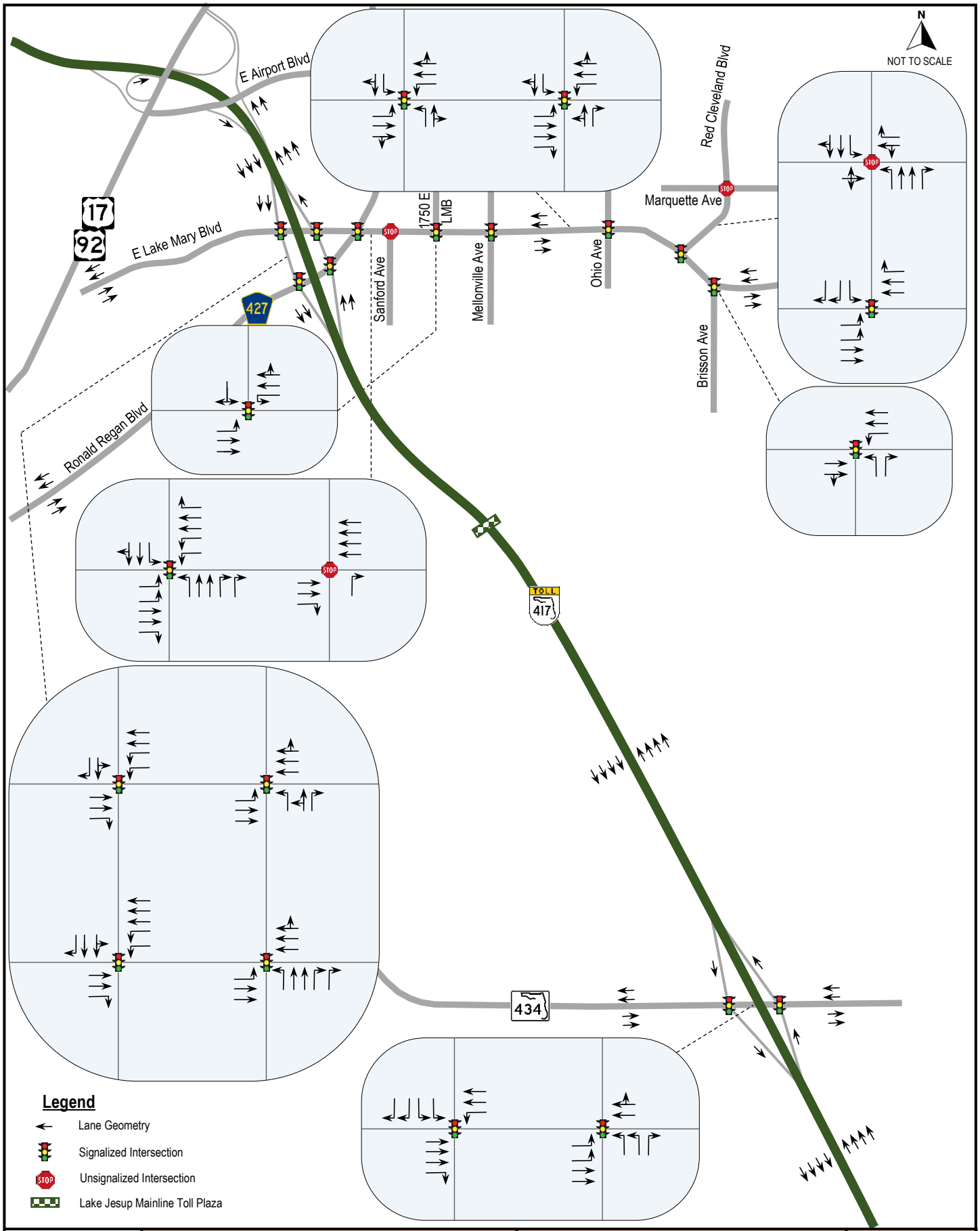
5.2 Analysis Alternatives

The detailed future conditions operations and safety analysis documented in this IJR was conducted for the following alternatives:

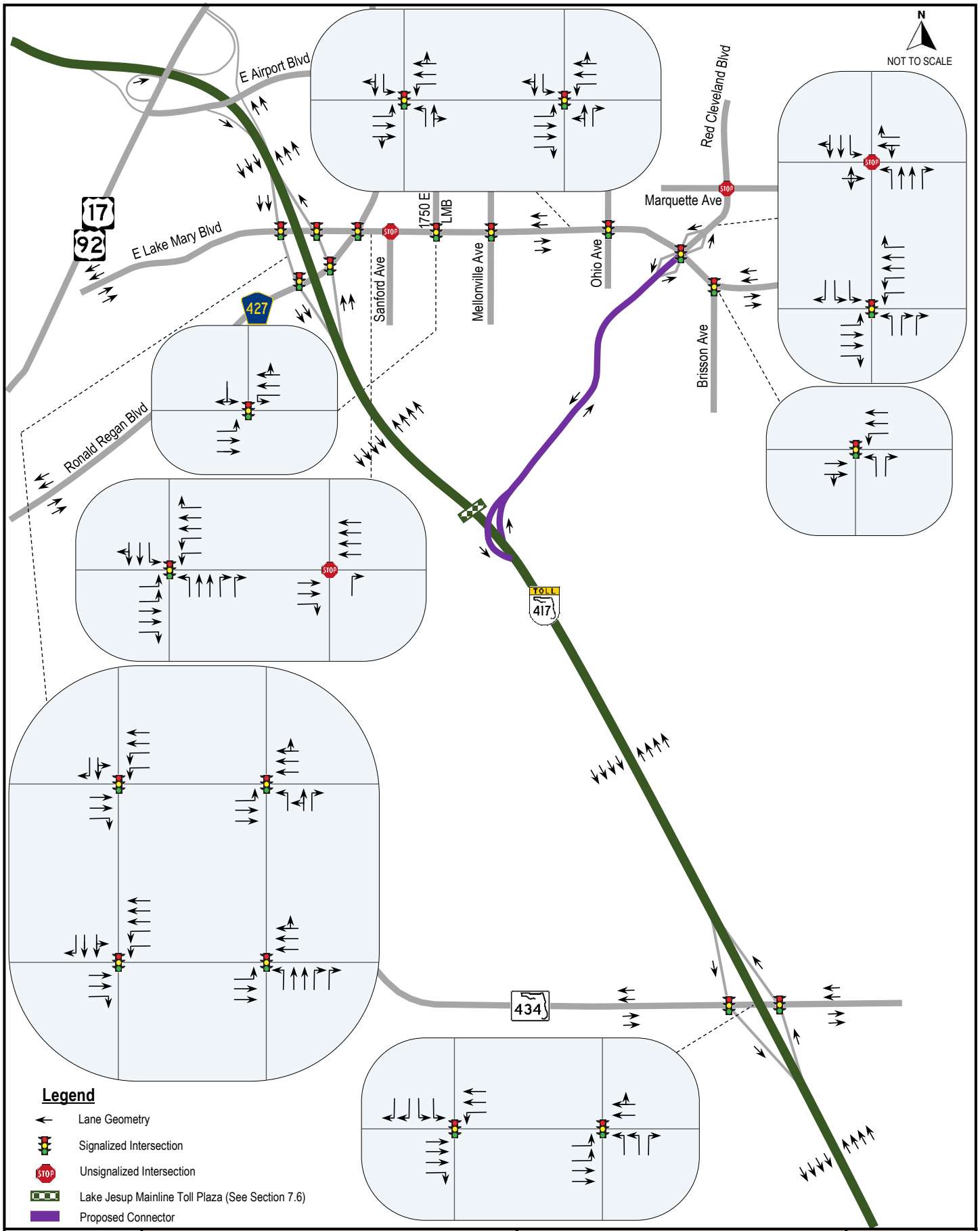
- **No Build Alternative** – Included the existing lane geometry along with the following planned or programmed improvements within the AOI:
  - FTE's design project (FPID: 437952-1)
    - Widen SR 417 mainline to eight lanes from SR 434 to Lake Mary Boulevard
    - CR 427/Lake Mary Boulevard interchange
      - Widen the southbound off-ramp, northbound off-ramp, and southbound on-ramp to two lanes
      - Add a southbound right turn lane at the intersection of the southbound frontage road/on-ramp and CR 427
      - Add a third westbound through lane on CR 427 from east of the northbound frontage road/CR 427 off-ramp to west of the southbound frontage road/on-ramp
  - Seminole County proposed intersection improvements at the Lake Mary Boulevard and CR 427 and Sanford Avenue intersections
    - Add a second northbound right turn lane at the Lake Mary Boulevard and CR 427/Sanford Avenue intersection
    - Convert the Sanford Avenue intersection at Lake Mary Boulevard into a right-in/right-out (T-intersection)
    - Extend the storage length for dual westbound left turn lanes
    - Extend the storage length for the eastbound left turn lane at 1750 East Lake Mary Boulevard and signalize the intersection

  Conceptual layouts of the FTE and Seminole County proposed improvements are provided in **Appendix D**. The lane geometry for the No Build alternative is presented in **Figure 5-8**.

- **Build Alternative** – Included all improvements from the No Build alternative, plus the proposed Connector (Alignment 2A), featuring a partial interchange at SR 417 with ramps to/from the south only, and a SPUI at Lake Mary Boulevard/Red Cleveland Boulevard. The lane geometry for the full Build alternative is depicted in **Figure 5-9**. The geometry for the proposed Connector and interchanges was developed based on traffic analysis. The proposed lane configuration for the SPUI is depicted in **Figure 5-10**, and the overall Build alternative concept is provided in **Appendix E**.

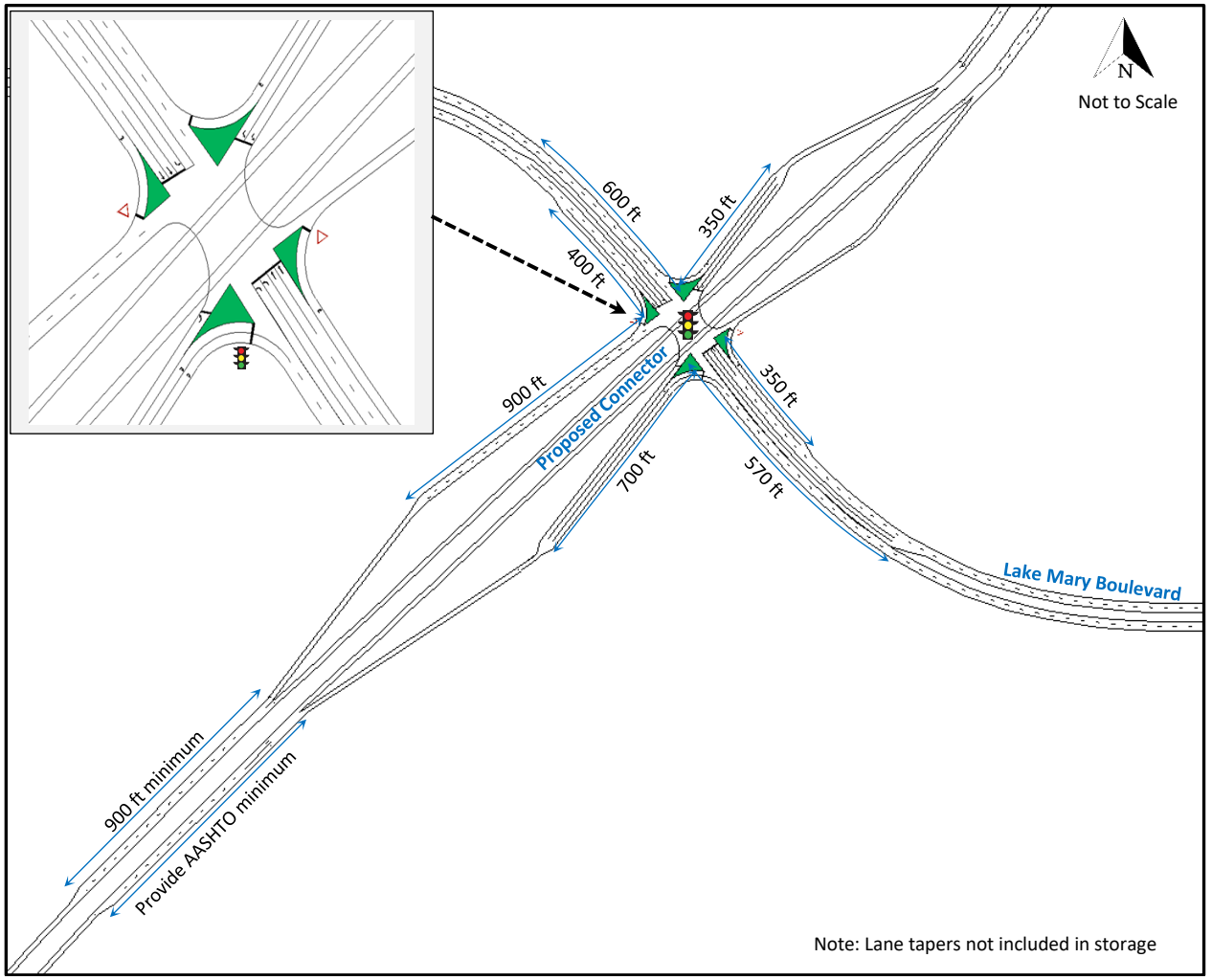


CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SR 417 Sanford Connector PD&E Study	2030 and 2050 No Build Alternative Lane Geometry	Figure 5-8



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SR 417 Sanford Connector PD&E Study	2030 and 2050 Build Alternative Lane Geometry	Figure 5-9

Figure 5-10. Proposed Sanford Airport Connector and Lake Mary Boulevard SPUI



5.3 Traffic Forecasts

5.3.1 Future Design Traffic Factors

The future design traffic factors for this study are presented in **Table 5-2**. For future conditions, the K Factor (Design Hour Factor) is the proportion of the AADT that is expected to occur during the design hour. The Directional Distribution Factor (D) is the proportion of traffic expected to travel in the peak direction during the design hour. For future conditions, the K and D factors represent the traffic demand a roadway is typically designed to accommodate.

Table 5-2. Future Design Traffic Factors

Facility/Segment	K Factor		D Factor		PHF	PHT	T_{24}
	AM	PM	AM	PM	AM/PM	AM/PM	
SR 417 Freeway Mainline	10.5%	10.5%	51.0%	51.0%	0.95	8.0%	15.5%
SR 417 to Sanford Airport Connector Mainline	10.5%	11.0%	52.9%	56.9%	0.95	8.0%	15.5%
SR 417 & Airport Boulevard/US 17-92 Interchange Ramps							
Southbound On-ramp and Northbound Off-ramp	10.1%	10.2%	61.0%	58.5%	0.95	8.0%	15.5%
SR 417 & CR 427/Lake Mary Boulevard Interchange Ramps							
Southbound Off-ramp and Northbound On-ramp	9.7%	9.7%	59.0%	59.0%	0.95	8.0%	15.5%
Southbound On-ramp and Northbound Off-ramp	10.0%	10.2%	53.9%	57.2%	0.95	8.0%	15.5%
SR 417 & Sanford Airport Connector Interchange Ramps							
Southbound On-ramp and Northbound Off-ramp	10.5%	11.0%	52.9%	56.9%	0.95	8.0%	15.5%
SR 417 & SR 434 Interchange Ramps							
Southbound Off-ramp and Northbound On-ramp	9.5%	9.5%	62.9%	62.9%	0.95	8.0%	15.5%
Southbound On-ramp and Northbound Off-ramp	10.0%	10.0%	61.5%	61.5%	0.95	8.0%	15.5%
Arterials							
Lake Mary Boulevard	7.5 - 9.5%		61.8%	61.5%	0.95	5.0%	8.7%
Red Cleveland Boulevard			60.7%	56.7%	0.95	5.0%	8.7%
Airport Boulevard			50.7%	57.1%	0.95	2.0%	2.3%
CR 427			55.7%	56.0%	0.95	5.0%	8.5%

To ensure a conservative design and maintain consistency, the selection of future K and D factors in this study generally followed the guidelines outlined in the 2024 FDOT *Project Traffic Forecasting Handbook*. For the SR 417 mainline, a design (standard) K factor of 10.5 percent was used, consistent with its designation as a toll facility. The proposed Connector, also a toll facility, was assigned a K factor of 11.0 percent, consistent with CFX's planning and design practices for new toll roads. For arterials, K factors were kept within the recommended range of 7.5 to 9.5 percent for urbanized areas. Ramp K factors were derived from the mainline and arterial values, factoring in design hour traffic balancing. These K factors were applied to the major design hour—AM, PM, or both—based on existing conditions and anticipated future traffic patterns. Slight adjustments were made to account for peak spreading in the design year and to ensure proper traffic balancing. Overall, future design K factors were set higher than existing K values to yield conservative volume estimates for lane geometry determination. D factors were initially calculated using existing conditions and adjusted as needed based on future projections to reflect

anticipated changes in traffic patterns. Final D factors were confirmed to fall within FDOT's recommended ranges.

The PHF is the ratio of total peak hour volume to the peak rate of flow within the hour, typically based on the highest 15-minute period. The PHF accounts for the variability of traffic within the peak hour. A PHF of 0.95 was used for all facilities in the future conditions analysis. The Design Hour Truck (DHT) factor is the proportion of trucks expected during the design hour and was assumed to be half of the daily truck (T_{24}) percentage, rounded up to the nearest whole number. Truck factors (DHT and T_{24}) estimated for existing conditions were generally maintained in the future conditions analysis.

5.3.2 Projected Traffic

Traffic projections for roadway segments within the AOI were developed using the updated regional travel demand model (CFRPM v7), prepared specifically for this study. The 2030 and 2045 PSWADT from the model was converted to AADT by applying a MOCF of 0.97. This AADT was then adjusted following the National Cooperative Highway Research Program Report 765 methodology. Airport enplanement projections were also considered. Additional refinements were made using StreetLight origin-destination data and a comparison of historical and model growth rates to ensure accuracy and reasonableness. Forecasts for 2050 were derived through extrapolation.

Directional Design Hour Volumes (DDHV) were calculated by applying future design K and D factors to the AADT. Future intersection volumes were developed using the projected DDHV for ramps and arterial segments. Turn proportions were initially based on existing conditions and refined using future model outputs and anticipated changes in land use and traffic patterns where applicable. Through-movement volumes on cross streets were estimated using a combination of historical and projected model growth rates. Final adjustments were made to balance AADT and DDHV profiles, ensuring continuity of flow and consistency in K and D factors and growth rates.

Table 5-3 presents the final 2050 projected AADT volumes and compares the impacts of the Build alternative versus the No Build scenario. Most of the projected traffic for the proposed Connector is expected to divert from the SR 417 and CR 427/Lake Mary Boulevard interchange ramps to/from the south. A small diversion is anticipated from the Airport Boulevard/US 17-92 ramps to/from the south, with some additional trips attracted to the Connector from SR 417 South. As noted in **Section 5.1.2**, the majority of traffic using the Connector is expected to travel east on Lake Mary Boulevard past the Airport, and further northeast on SR 415 toward Osteen. These regional trips currently use Airport Boulevard, Sanford Avenue, US 17-92, SR 46, or other routes. As a result of this diversion, traffic volumes are expected to reduce along Lake Mary Boulevard, west of Red Cleveland Boulevard; Airport Boulevard, east of Sanford Avenue; and CR 427, south of Lake Mary Boulevard.

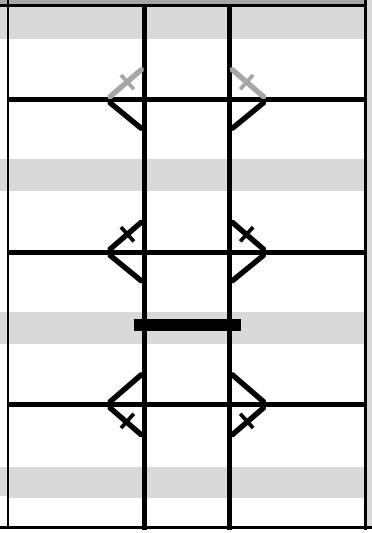
A small increase in traffic is expected on Lake Mary Boulevard, east of Red Cleveland Boulevard. This is due to the small number of trips anticipated to be attracted to the proposed Connector from SR 417 South. This increase is minimal and is not expected to impact operations along Lake Mary Boulevard east of the proposed Connector, as detailed in the results and discussion in **Section 5.4.2**. Similarly, an increase in traffic is projected on Red Cleveland Boulevard, north of Lake Mary Boulevard, resulting from traffic diverted from Airport Boulevard to the proposed Connector.

Table 5-3. Future Design Traffic Factors

Location	SR 417	No Build	Build	Difference	
				Volume	%
		92,000	**92,000**	**0**	**0%**
Airport Boulevard/US 17-92		9,600	9,600	0	0%
		13,500	10,500	-3,000	-22%
		95,900	**92,900**	**-3,000**	**-3%**
CR 427/Lake Mary Boulevard		17,400	17,400	0	
		32,700	15,800	-16,900	-52%
		111,200	**91,300**	**-19,900**	**-18%**
Sanford Airport Connector		n/a	21,900	21,900	n/a
Lake Jesup Mainline Toll Plaza		**111,200**	**113,200**	**2,000**	**2%**
SR 434		16,500	17,600	1,100	7%
		18,400	18,400	0	0%
		113,100	**114,000**	**900**	**1%**
Arterials					
Lake Mary Boulevard - West of Red Cleveland Boulevard		36,700	19,800	-16,900	-46%
Lake Mary Boulevard - East of Red Cleveland Boulevard or Connector		35,500	37,500	2,000	6%
Lake Mary Boulevard - West of SR 417		27,600	27,600	0	0%
Red Cleveland Boulevard - North of Lake Mary Boulevard or Connector		9,300	12,300	3,000	32%
Airport Boulevard - East of Sanford Avenue		13,400	10,400	-3,000	-22%
CR 427 - South of Lake Mary Boulevard		42,700	25,800	-16,900	-40%
CR 427 - West of SR 417		37,300	37,300	0	0%

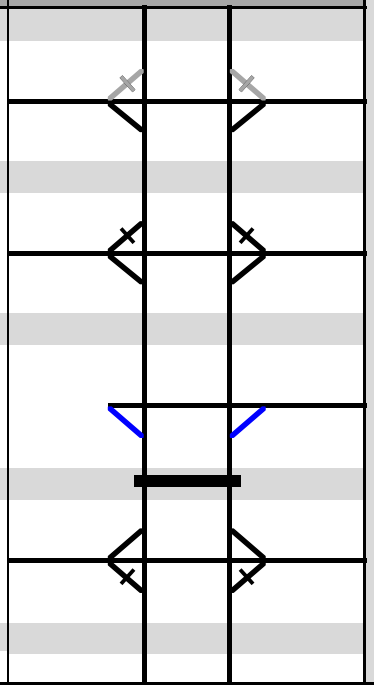
The final SR 417 mainline and ramps AADT and corresponding DDHV for years 2030 and 2050 are provided in **Tables 5-4** and **5-5**, for the No Build and Build alternatives, respectively. The bold values represent the mainline volumes, and the non-bold values represent ramp volumes. The final DDHV for the entire project area for the 2030 opening and 2050 design years are presented in **Figures 5-11** through **5-14**.

Table 5-4. Future AADT and DDHV for No Build Alternative

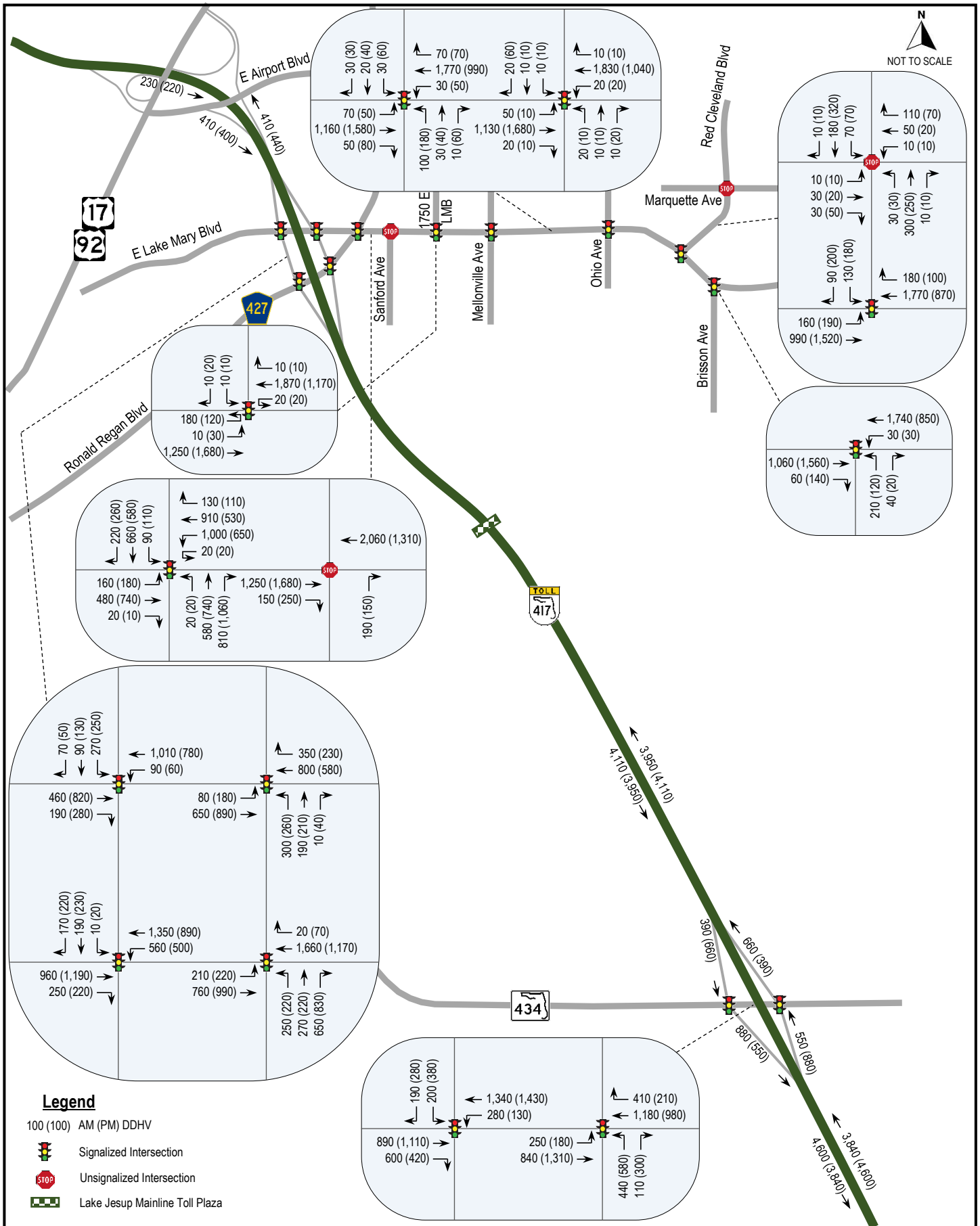
Location	SR 417	2030					2050				
		AADT	AM - DDHV		PM - DDHV		AADT	AM - DDHV		PM - DDHV	
			SB	NB	SB	NB		SB	NB	SB	NB
Airport Boulevard/US 17-92		10,400	640	410	620	440	13,500	830	520	800	580
		65,800	**3,540**	**3,400**	**3,430**	**3,460**	**95,900**	**4,990**	**4,900**	**5,000**	**5,030**
CR 427/Lake Mary Boulevard		10,800	430	620	430	620	17,400	690	1,000	690	1,000
		21,700	1,000	1,170	950	1,270	32,700	1,510	1,720	1,410	1,920
Lake Jesup Mainline Toll Plaza		**76,700**	**4,110**	**3,950**	**3,950**	**4,110**	**111,200**	**5,810**	**5,620**	**5,720**	**5,950**
SR 434		11,000	390	660	660	390	16,500	580	990	990	580
		14,300	880	550	550	880	18,400	1,130	710	710	1,130
		80,000	**4,600**	**3,840**	**3,840**	**4,600**	**113,100**	**6,360**	**5,340**	**5,440**	**6,500**

Values in purple indicate peak hour directional volumes

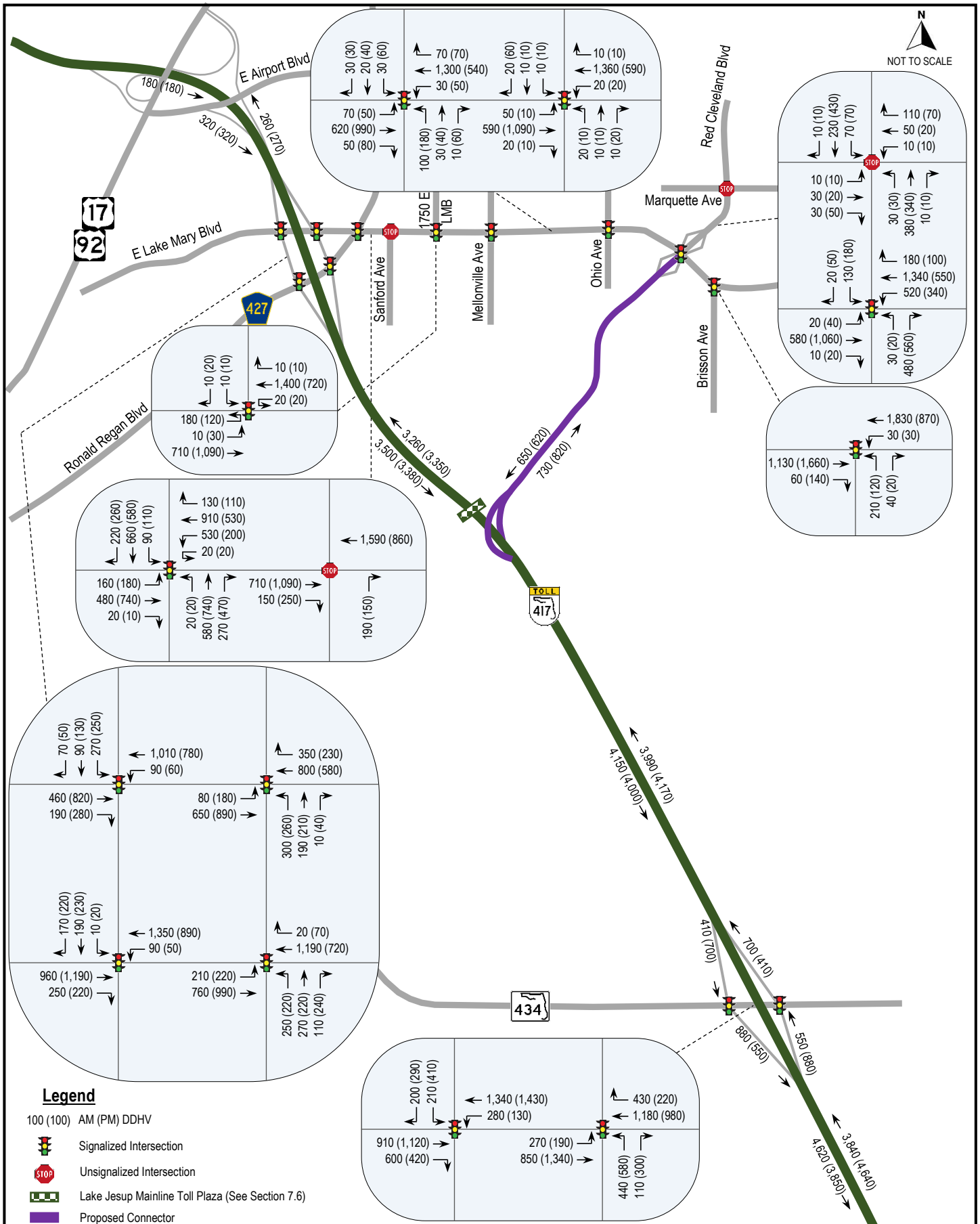
Table 5-5. Future AADT and DDHV for Build Alternative

Location	SR 417	2030 AADT	2030 AM - DDHV SB	2030 AM - DDHV NB	2030 PM - DDHV SB	2030 PM - DDHV NB	2050 AADT	2050 AM - DDHV SB	2050 AM - DDHV NB	2050 PM - DDHV SB	2050 PM - DDHV NB
Airport Boulevard/US 17-92		8,500	500	260	500	270	10,500	640	330	630	390
		63,900	**3,400**	**3,250**	**3,310**	**3,290**	**92,900**	**4,800**	**4,710**	**4,830**	**4,840**
CR 427/Lake Mary Boulevard		10,800	430	620	430	620	17,400	690	1,000	690	1,000
		11,600	530	630	500	680	15,800	730	830	670	930
		64,700	**3,500**	**3,260**	**3,380**	**3,350**	**91,300**	**4,840**	**4,540**	**4,810**	**4,770**
Sanford Airport Connector		13,100	650	730	620	820	21,900	1,080	1,180	1,010	1,290
Lake Jesup Mainline Toll Plaza		**77,800**	**4,150**	**3,990**	**4,000**	**4,170**	**113,200**	**5,920**	**5,720**	**5,820**	**6,060**
SR 434		11,700	410	700	700	410	17,600	620	1,050	1,050	620
		14,300	880	550	550	880	18,400	1,130	710	710	1,130
		80,400	**4,620**	**3,840**	**3,850**	**4,640**	**114,000**	**6,430**	**5,380**	**5,480**	**6,570**

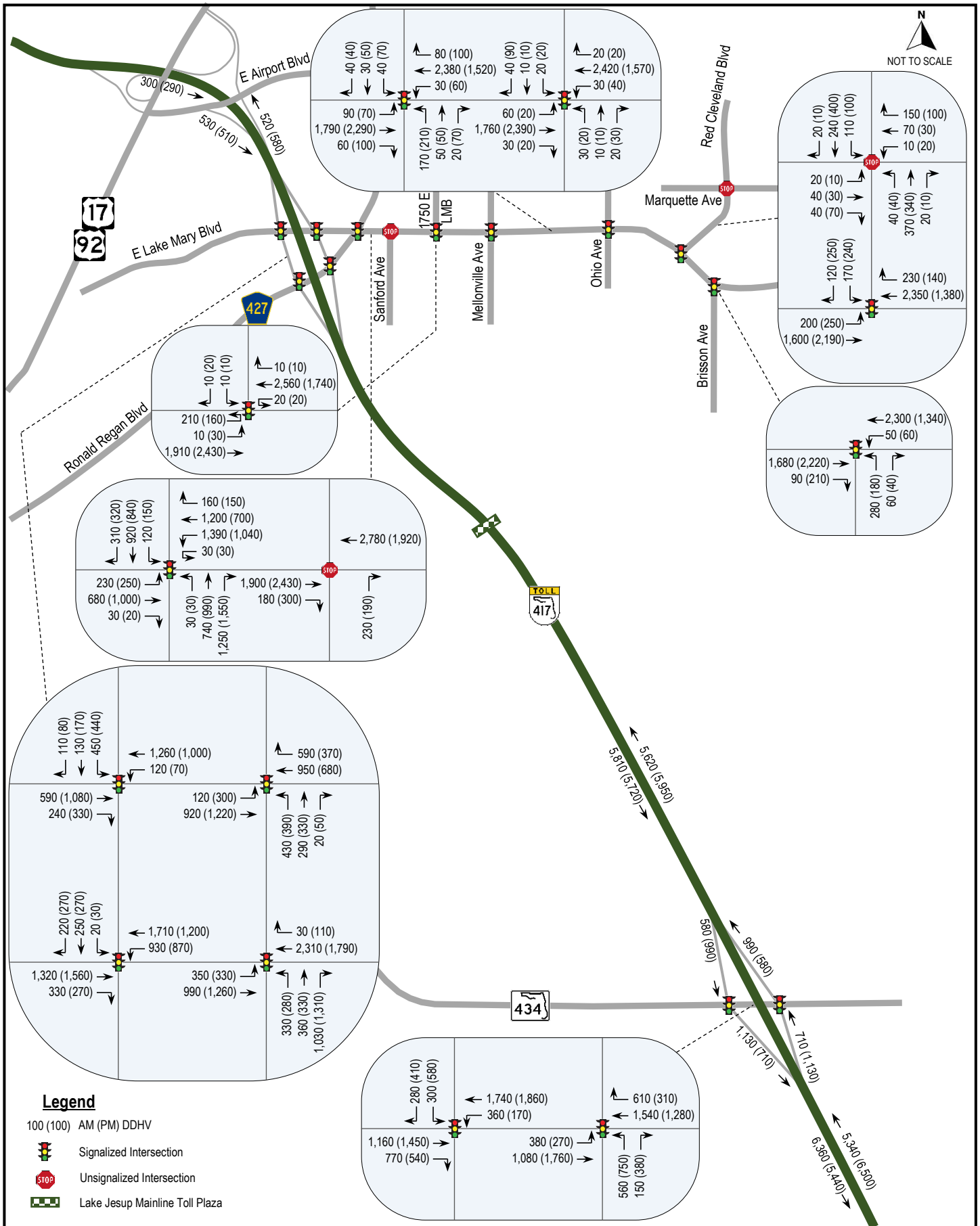
Values in purple indicate peak hour directional volumes



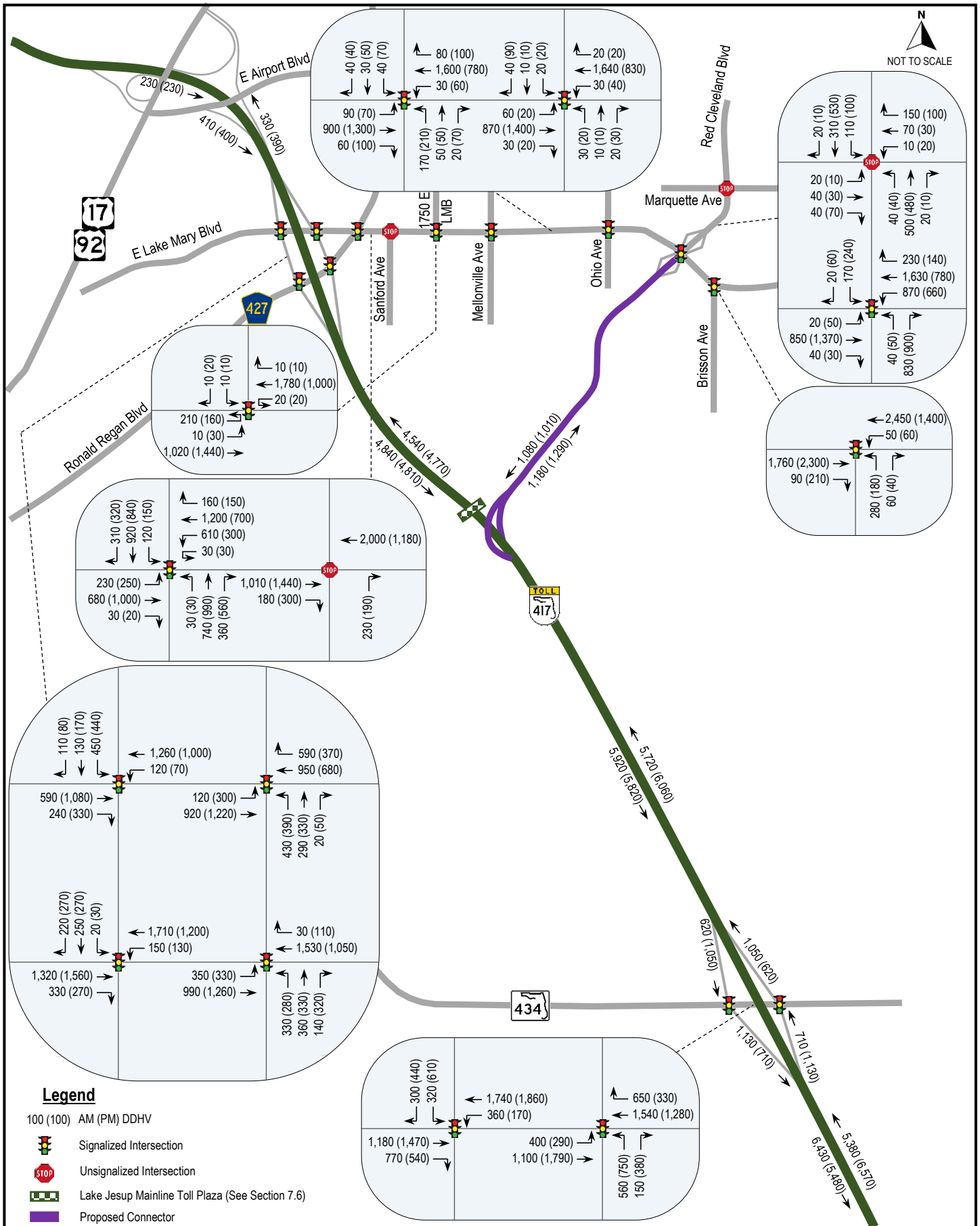
CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SR 417 Sanford Connector PD&E Study	2030 No Build DDHV	Figure 5-11



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SR 417 Sanford Connector PD&E Study	2030 Build DDHV	Figure 5-12



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SR 417 Sanford Connector PD&E Study	2050 No Build DDHV	Figure 5-13



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SR 417 Sanford Connector PD&E Study	2050 Build DDHV	Figure 5-14

5.3.3 Lane Requirements for Freeway Mainline and Ramps

Capacity analysis was conducted to provide an estimated timeline for lane requirements along the SR 417 mainline and ramp roadways. Freeway mainline capacity analysis was based on the LOS D maximum service volumes published in the FDOT *2023 Multimodal Quality/LOS Handbook*. Capacity analysis for ramp roadways was based on LOS E targets from the HCM 7th Edition. The FDOT and HCM targets were adjusted for local conditions such as speed, truck proportion and PHF. The lane requirements analysis is presented in **Tables 5-6** and **5-7**, for the No Build and Build alternatives, respectively.

Under No Build conditions (**Table 5-6**), the analysis showed that four lanes per direction will be required on the SR 417 mainline by 2043 south of SR 434, and by 2048 between SR 434 and CR 427/Lake Mary Boulevard. This is consistent with FTE's planned widening of the SR 417 mainline to eight lanes in this section. North of Lake Mary Boulevard, the existing configuration of three lanes plus an auxiliary lane per direction is expected to be sufficient through the 2050 design year. Additionally, all ramps are projected to operate adequately with a single lane through 2050, except for the CR 427/Lake Mary Boulevard ramps to/from the south, which will require two lanes each by 2048. These ramps are also planned to be widened by FTE to two lanes, as part of the mainline widening.

The future lane requirements with the proposed Connector in the Build conditions (**Table 5-7**) are very similar to the No Build. The four-lane need along SR 417 is only advanced by one year, due to the small number of trips attracted to the Connector from SR 417 South. The main difference with the Build is the elimination of the two-lane need for the CR 427/Lake Mary Boulevard ramps to/from the south. This is due to the significant traffic diversion to the proposed Connector. For the Connector itself, a single lane in each direction is projected to be sufficient through the 2050 design year for both the mainline and ramps.

Table 5-6. SR 417 No Build Alternative Mainline and Ramp Lane Requirements

Location	SR 417	Opening	Interpolated																		Design
		2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Airport Boulevard/US 17-92																						
		640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	790	800	810	820	830
	1 Aux	3,540	3,610	3,680	3,760	3,830	3,900	3,970	4,040	4,120	4,190	4,260	4,340	4,410	4,490	4,570	4,650	4,720	4,800	4,880	4,950	5,030
CR 427/Lake Mary Boulevard		620	640	660	680	700	720	730	750	770	790	810	830	850	870	890	910	920	940	960	980	1,000
		1,270	1,300	1,340	1,370	1,400	1,440	1,470	1,500	1,530	1,570	1,600	1,630	1,660	1,700	1,730	1,760	1,790	1,820	1,860	1,890	1,920
Lake Jesup Mainline Toll Plaza		4,110	4,200	4,290	4,390	4,480	4,570	4,660	4,750	4,850	4,940	5,030	5,120	5,210	5,310	5,400	5,490	5,580	5,670	5,770	5,860	5,950
SR 434		660	680	690	710	730	750	760	780	800	810	830	850	860	880	890	910	930	940	960	970	990
		880	890	910	920	930	950	960	970	980	1,000	1,010	1,020	1,030	1,050	1,060	1,070	1,080	1,090	1,110	1,120	1,130
		4,600	4,700	4,790	4,890	4,980	5,080	5,170	5,270	5,360	5,460	5,550	5,650	5,740	5,840	5,930	6,030	6,120	6,220	6,310	6,410	6,500

Freeway Inputs	
Truck % (t_t)	8.0%
Free Flow Speed (mph)	75
Peak Hour Factor (PHF)	0.95

Freeway LOS Targets			
Lanes	LOS D	Lanes*	LOS D
2	3,840	2+1	4,840
3	5,760	3+1	6,760
4	7,680	4+1	8,680
5	9,600	5+1	10,600
6	11,520	~~6+1~~	12,520

*Plus Auxiliary Lane

Ramp Capacity	
Lanes	LOS E
1	1,850
2	3,700
3	5,550

Speed - 40 to 50 MPH

Table 5-7. SR 417 Build Alternative Mainline and Ramp Lane Requirements

Location	SR 417	Opening	Interpolated																		Design
		2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Airport Boulevard/US 17-92																						
		500	510	510	520	530	540	540	550	560	560	570	580	580	590	600	610	610	620	630	630	640
	1 Aux	3,400	3,470	3,540	3,610	3,680	3,750	3,820	3,890	3,960	4,030	4,100	4,170	4,250	4,320	4,400	4,470	4,540	4,620	4,690	4,770	4,840
CR 427/Lake Mary Boulevard		620	640	660	680	700	720	730	750	770	790	810	830	850	870	890	910	920	940	960	980	1,000
		680	690	710	720	730	750	760	770	780	800	810	820	830	850	860	870	880	890	910	920	930
		4,110	4,200	4,290	4,390	4,480	4,570	4,660	4,750	4,850	4,940	5,030	5,120	5,210	5,310	5,400	5,490	5,580	5,670	5,770	5,860	5,950
Sanford Airport Connector																						
		820	840	870	890	920	940	960	990	1,010	1,040	1,060	1,080	1,110	1,130	1,150	1,180	1,200	1,220	1,240	1,270	1,290
Lake Jesup Mainline Toll Plaza		4,170	4,270	4,360	4,460	4,550	4,650	4,740	4,840	4,930	5,030	5,120	5,210	5,310	5,400	5,500	5,590	5,680	5,780	5,870	5,970	6,060
SR 434																						
		700	720	740	750	770	790	810	830	840	860	880	900	910	930	950	970	980	1,000	1,020	1,030	1,050
		880	890	910	920	930	950	960	970	980	1,000	1,010	1,020	1,030	1,050	1,060	1,070	1,080	1,090	1,110	1,120	1,130
		4,640	4,740	4,830	4,930	5,030	5,130	5,220	5,320	5,420	5,510	5,610	5,710	5,800	5,900	5,990	6,090	6,190	6,280	6,380	6,470	6,570

Freeway Inputs	
Truck % (t_t)	8.0%
Free Flow Speed (mph)	75
Peak Hour Factor (PHF)	0.95

Freeway LOS Targets			
Lanes	LOS D	Lanes*	LOS D
2	3,840	2+1	4,840
3	5,760	3+1	6,760
4	7,680	4+1	8,680
5	9,600	5+1	10,600
6	11,520	~~6+1~~	12,520

*Plus Auxiliary Lane

Ramp Capacity	
Lanes	LOS E
1	1,850
2	3,700
3	5,550

Speed - 40 to 50 MPH

5.4 Future Operational Performance

This section provides a summary of the traffic performance analysis and results for the 2030 and 2050 No Build and Build design hours. The analysis was based on the lane geometry presented in **Figures 5-8** through **5-10** and the DDHV presented in **Figures 5-11** through **5-14**. The Build alternative concept is provided in **Appendix E**. Detailed output reports and analysis files are provided in **Appendices F** and **G** for the 2030 and 2050 scenarios, respectively.

5.4.1 Freeway Segment Analysis

The 2030 and 2050 AM and PM design hour traffic operations along the SR 417 freeway segments within the AOI were evaluated in both directions using HCS 2023 software. The 2030 HCS results are summarized in **Tables 5-8** through **5-9** for the No Build and Build alternatives, respectively. The results show that all SR 417 freeway segments within the AOI are expected to operate at an acceptable LOS C or better under both 2030 No Build and Build conditions, with minimal differences between the two scenarios.

The 2050 design year HCS analysis is summarized in **Tables 5-10** and **5-11** for the No Build and Build alternatives, respectively. Most freeway segments within the AOI are projected to operate at an acceptable LOS D or better under both scenarios. The exception is the segment within the US 17-92 interchange area, which is expected to operate at an unacceptable LOS E or F in both No Build and Build conditions due to the two-lane capacity constraint. It is important to note that with the Build, the SR 417 segments north of the proposed Connector are expected to perform better than the No Build. This improvement is reflected in both LOS and density results, due to traffic diversion to the Connector. South of the proposed Connector, the small number of trips attracted to SR 417 is not expected to affect LOS, and the difference in density is negligible (1 pcpmpl).

5.4.2 Ramp Roadway Analysis

Tables 5-12 through **5-15** summarize the ramp roadway capacity evaluations for the 2030 and 2050 design hour No Build and Build conditions within the AOI. The results indicate that, in 2030, the existing ramps are expected to have a V/C ratio of 0.5 or lower under both No Build and Build scenarios. The V/C ratio for the proposed Connector ramps is projected to be 0.4 or lower in the 2030 Build condition. By 2050, the existing ramps are expected to have a V/C ratio of 0.6 or less under both No Build and Build conditions. The V/C ratio for the proposed Connector ramps is projected to be 0.7 or less in the 2050 Build scenario.

Table 5-8. 2030 No Build Alternative Design Hour Freeway Operations

Segment	Segment Type	Lanes	Volume (vph)		LOS/Density	
			AM	PM	AM	PM
SR 417 Southbound						
Upstream US 17/92 on-ramp (loop)	Basic	2	2,900	2,810	C/23	C/23
US 17/92 on-ramp (loop) to on-ramp (diagonal)	Merge	2	3,130	3,030	C/24	C/23
US 17/92 on-ramp (loop) to on-ramp (diagonal)	Basic	2	3,130	3,030	D/26	C/25
US 17/92 on-ramp (diagonal) to Lake Mary Boulevard off-ramp	Weave	3	3,540	3,430	C/21	C/20
Lake Mary Boulevard off-ramp to CR 427 on-ramp	Basic	4	3,110	3,000	B/12	B/11
CR 427 on-ramp to SR 434 off-ramp	Merge	4	4,110	3,950	B/16	B/15
CR 427 on-ramp to SR 434 off-ramp	Basic	4	4,110	3,950	B/16	B/15
CR 427 on-ramp to SR 434 off-ramp	Diverge	4	4,110	3,950	B/18	B/18
SR 434 off-ramp to on-ramp	Basic	4	3,720	3,290	B/14	B/13
Downstream SR 434 on-ramp	Merge	4	4,600	3,840	B/20	B/15
Downstream SR 434 on-ramp	Basic	4	4,600	3,840	B/18	B/15
SR 417 Northbound						
Upstream SR 434 off-ramp	Basic	4	3,840	4,600	B/15	B/18
Upstream SR 434 off-ramp	Diverge	4	3,840	4,600	B/17	C/22
SR 434 off-ramp to on-ramp	Basic	4	3,290	3,720	B/13	B/14
SR 434 on-ramp to CR 427 off-ramp	Merge	4	3,950	4,110	B/17	B/17
SR 434 on-ramp to CR 427 off-ramp	Basic	4	3,950	4,110	B/15	B/16
SR 434 on-ramp to CR 427 off-ramp	Diverge	4	3,950	4,110	A/9	B/10
CR 427 off-ramp to Lake Mary Boulevard on-ramp	Basic	4	2,780	2,840	A/11	A/11
Lake Mary Boulevard on-ramp to US 17/92 off-ramp	Weave	3	3,400	3,460	C/20	C/21
Downstream US 17/92 off-ramp	Basic	2	2,990	3,020	C/25	C/25

Table 5-9. 2030 Build Alternative Design Hour Freeway Operations

Segment	Segment Type	Lanes	Volume (vph)		LOS/Density	
			AM	PM	AM	PM
SR 417 Southbound						
Upstream US 17/92 on-ramp (loop)	Basic	2	2,900	2,810	C/23	C/23
US 17/92 on-ramp (loop) to on-ramp (diagonal)	Merge	2	3,080	2,990	C/23	C/23
US 17/92 on-ramp (loop) to on-ramp (diagonal)	Basic	2	3,080	2,990	C/26	C/25
US 17/92 on-ramp (diagonal) to Lake Mary Boulevard off-ramp	Weave	3	3,400	3,310	B/20	B/19
Lake Mary Boulevard off-ramp to CR 427 on-ramp	Basic	4	2,970	2,880	B/11	A/11
CR 427 on-ramp to Sanford Airport Connector on-ramp	Merge	4	3,500	3,380	B/11	B/11
CR 427 on-ramp to Sanford Airport Connector on-ramp	Basic	4	3,500	3,380	B/13	B/13
Sanford Airport Connector on-ramp to SR 434 off-ramp	Merge	4	4,150	4,000	B/14	B/13
Sanford Airport Connector on-ramp to SR 434 off-ramp	Basic	4	4,150	4,000	B/16	B/15
Sanford Airport Connector on-ramp to SR 434 off-ramp	Diverge	4	4,150	4,000	B/18	B/19
SR 434 off-ramp to on-ramp	Basic	4	3,740	3,300	B/14	B/13
Downstream SR 434 on-ramp	Merge	4	4,620	3,850	B/20	B/15
Downstream SR 434 on-ramp	Basic	4	4,620	3,850	B/18	B/15
SR 417 Northbound						
Upstream SR 434 off-ramp	Basic	4	3,840	4,640	B/15	B/18
Upstream SR 434 off-ramp	Diverge	4	3,840	4,640	B/17	C/22
SR 434 off-ramp to on-ramp	Basic	4	3,290	3,760	B/13	B/14
SR 434 on-ramp to Sanford Airport Connector off-ramp	Merge	4	3,990	4,170	B/18	B/17
SR 434 on-ramp to Sanford Airport Connector off-ramp	Basic	4	3,990	4,170	B/15	B/16
SR 434 on-ramp to Sanford Airport Connector off-ramp	Diverge	4	3,990	4,170	B/12	B/13
Sanford Airport Connector off-ramp to CR 427 off-ramp	Basic	4	3,260	3,350	B/12	B/13
Sanford Airport Connector off-ramp to CR 427 off-ramp	Diverge	4	3,260	3,350	A/4	A/4
CR 427 off-ramp to Lake Mary Boulevard on-ramp	Basic	4	2,630	2,670	A/10	A/10
Lake Mary Boulevard on-ramp to US 17/92 off-ramp	Weave	3	3,250	3,290	B/19	B/20
Downstream US 17/92 off-ramp	Basic	2	2,990	3,020	C/25	C/25

Table 5-10. 2050 No Build Alternative Design Hour Freeway Operations

Segment	Segment Type	Lanes	Volume (vph)		LOS/Density	
			AM	PM	AM	PM
SR 417 Southbound						
Upstream US 17/92 on-ramp (loop)	Basic	2	4,160	4,200	**E/44**	**E/45**
US 17/92 on-ramp (loop) to on-ramp (diagonal)	Merge	2	4,460	4,490	**F/>43**	**F/>43**
US 17/92 on-ramp (loop) to on-ramp (diagonal)	Basic	2	4,460	4,490	**F/>45**	**F/>45**
US 17/92 on-ramp (diagonal) to Lake Mary Boulevard off-ramp	Weave	3	4,990	5,000	D/31	D/31
Lake Mary Boulevard off-ramp to CR 427 on-ramp	Basic	4	4,300	4,310	B/16	B/17
CR 427 on-ramp to SR 434 off-ramp	Merge	4	5,810	5,720	C/24	C/23
CR 427 on-ramp to SR 434 off-ramp	Basic	4	5,810	5,720	C/24	C/23
CR 427 on-ramp to SR 434 off-ramp	Diverge	4	5,810	5,720	C/26	C/28
SR 434 off-ramp to on-ramp	Basic	4	5,230	4,730	C/21	C/18
Downstream SR 434 on-ramp	Merge	4	6,360	5,440	C/27	C/22
Downstream SR 434 on-ramp	Basic	4	6,360	5,440	D/27	C/22
SR 417 Northbound						
Upstream SR 434 off-ramp	Basic	4	5,340	6,500	C/21	D/28
Upstream SR 434 off-ramp	Diverge	4	5,340	6,500	C/24	D/31
SR 434 off-ramp to on-ramp	Basic	4	4,630	5,370	B/18	C/21
SR 434 on-ramp to CR 427 off-ramp	Merge	4	5,620	5,950	C/25	C/24
SR 434 on-ramp to CR 427 off-ramp	Basic	4	5,620	5,950	C/23	C/24
SR 434 on-ramp to CR 427 off-ramp	Diverge	4	5,620	5,950	B/18	B/20
CR 427 off-ramp to Lake Mary Boulevard on-ramp	Basic	4	3,900	4,030	B/15	B/15
Lake Mary Boulevard on-ramp to US 17/92 off-ramp	Weave	3	4,900	5,030	D/32	D/33
Downstream US 17/92 off-ramp	Basic	2	4,380	4,450	**F/>45**	**F/>45**

***Bold Font**: Unacceptable LOS*

Table 5-11. 2050 Build Alternative Design Hour Freeway Operations

Segment	Segment Type	Lanes	Volume (vph)		LOS/Density	
			AM	PM	AM	PM
SR 417 Southbound						
Upstream US 17/92 on-ramp (loop)	Basic	2	4,160	4,200	**E/44**	**E/45**
US 17/92 on-ramp (loop) to on-ramp (diagonal)	Merge	2	4,390	4,430	**F/>43**	**F/>43**
US 17/92 on-ramp (loop) to on-ramp (diagonal)	Basic	2	4,390	4,430	**F/>45**	**F/>45**
US 17/92 on-ramp (diagonal) to Lake Mary Boulevard off-ramp	Weave	3	4,800	4,830	D/30	D/30
Lake Mary Boulevard off-ramp to CR 427 on-ramp	Basic	4	4,110	4,140	B/16	B/16
CR 427 on-ramp to Sanford Airport Connector on-ramp	Merge	4	4,840	4,810	B/17	B/16
CR 427 on-ramp to Sanford Airport Connector on-ramp	Basic	4	4,840	4,810	C/19	C/19
Sanford Airport Connector on-ramp to SR 434 off-ramp	Merge	4	5,920	5,820	C/22	C/22
Sanford Airport Connector on-ramp to SR 434 off-ramp	Basic	4	5,920	5,820	C/24	C/24
Sanford Airport Connector on-ramp to SR 434 off-ramp	Diverge	4	5,920	5,820	C/27	D/29
SR 434 off-ramp to on-ramp	Basic	4	5,300	4,770	C/21	C/18
Downstream SR 434 on-ramp	Merge	4	6,430	5,480	C/27	C/22
Downstream SR 434 on-ramp	Basic	4	6,430	5,480	D/27	C/22
SR 417 Northbound						
Upstream SR 434 off-ramp	Basic	4	5,380	6,570	C/21	D/28
Upstream SR 434 off-ramp	Diverge	4	5,380	6,570	C/24	D/31
SR 434 off-ramp to on-ramp	Basic	4	4,670	5,440	B/18	C/22
SR 434 on-ramp to Sanford Airport Connector off-ramp	Merge	4	5,720	6,060	C/25	C/25
SR 434 on-ramp to Sanford Airport Connector off-ramp	Basic	4	5,720	6,060	C/23	C/25
SR 434 on-ramp to Sanford Airport Connector off-ramp	Diverge	4	5,720	6,060	C/22	C/24
Sanford Airport Connector off-ramp to CR 427 off-ramp	Basic	4	4,540	4,770	B/17	C/18
Sanford Airport Connector off-ramp to CR 427 off-ramp	Diverge	4	4,540	4,770	A/9	A/10
CR 427 off-ramp to Lake Mary Boulevard on-ramp	Basic	4	3,710	3,840	B/14	B/15
Lake Mary Boulevard on-ramp to US 17/92 off-ramp	Weave	3	4,710	4,840	D/30	D/31
Downstream US 17/92 off-ramp	Basic	2	4,380	4,450	**F/>45**	**F/>45**

***Bold Font**: Unacceptable LOS*

Table 5-12. 2030 No Build Alternative Design Hour Ramp Roadway Capacity Analysis

SR 417 Interchange	Ramp	Lanes	Volume (vph)		Capacity (vph)	V/C	
			AM	PM		AM	PM
Airport Boulevard/ US 17-92	Northbound off-ramp	2	410	440	3,700	0.1	0.1
	Southbound on-ramp (loop)	1	230	220	1,800	0.1	0.1
	Southbound on-ramp (diagonal)	1	410	400	1,850	0.2	0.2
CR 427/ Lake Mary Boulevard	Southbound off-ramp	2	430	430	3,700	0.1	0.1
	Northbound on-ramp	1	620	620	1,850	0.3	0.3
	Northbound off-ramp	2	1,170	1,270	3,700	0.3	0.3
	Southbound on-ramp	2	1,000	950	3,700	0.3	0.3
SR 434	Southbound off-ramp	1	390	660	1,850	0.2	0.4
	Northbound on-ramp	1	660	390	1,850	0.4	0.2
	Northbound off-ramp	1	550	880	1,850	0.3	0.5
	Southbound on-ramp	1	880	550	1,850	0.5	0.3

Table 5-13. 2030 Build Alternative Design Hour Ramp Roadway Capacity Analysis

Interchange	Ramp	Lanes	Volume (vph)		Capacity (vph)	V/C	
			AM	PM		AM	PM
SR 417 and Airport Boulevard/ US 17-92	Northbound off-ramp	2	260	270	3,700	0.1	0.1
	Southbound on-ramp (loop)	1	180	180	1,800	0.1	0.1
	Southbound on-ramp (diagonal)	1	320	320	1,850	0.2	0.2
SR 417 and CR 427/ Lake Mary Boulevard	Southbound off-ramp	2	430	430	3,700	0.1	0.1
	Northbound on-ramp	1	620	620	1,850	0.3	0.3
	Northbound off-ramp	2	630	680	3,700	0.2	0.2
	Southbound on-ramp	2	530	500	3,700	0.1	0.1
SR 417 and Sanford Airport Connector	Northbound off-ramp	1	730	820	1,850	0.4	0.4
	Southbound on-ramp	1	650	620	1,850	0.4	0.3
SR 417 and SR 434	Southbound off-ramp	1	410	700	1,850	0.2	0.4
	Northbound on-ramp	1	700	410	1,850	0.4	0.2
	Northbound off-ramp	1	550	880	1,850	0.3	0.5
	Southbound on-ramp	1	880	550	1,850	0.5	0.3
Sanford Airport Connector and Lake Mary Boulevard	Southbound off-ramp	1	150	230	1,850	0.1	0.1
	Northbound on-ramp	1	210	140	1,850	0.1	0.1
	Northbound off-ramp	1	510	580	1,850	0.3	0.3
	Southbound on-ramp	1	530	360	1,850	0.3	0.2

Table 5-14. 2050 No Build Alternative Design Hour Ramp Roadway Capacity Analysis

SR 417 Interchange	Ramp	Lanes	Volume (vph)		Capacity (vph)	V/C	
			AM	PM		AM	PM
Airport Boulevard/ US 17-92	Northbound off-ramp	2	520	580	3,700	0.1	0.2
	Southbound on-ramp (loop)	1	300	290	1,800	0.2	0.2
	Southbound on-ramp (diagonal)	1	530	510	1,850	0.3	0.3
CR 427/ Lake Mary Boulevard	Southbound off-ramp	2	690	690	3,700	0.2	0.2
	Northbound on-ramp	1	1,000	1,000	1,850	0.5	0.5
	Northbound off-ramp	2	1,720	1,920	3,700	0.5	0.5
	Southbound on-ramp	2	1,510	1,410	3,700	0.4	0.4
SR 434	Southbound off-ramp	1	580	990	1,850	0.3	0.5
	Northbound on-ramp	1	990	580	1,850	0.5	0.3
	Northbound off-ramp	1	710	1,130	1,850	0.4	0.6
	Southbound on-ramp	1	1,130	710	1,850	0.6	0.4

Table 5-15. 2050 Build Alternative Design Hour Ramp Roadway Capacity Analysis

Interchange	Ramp	Lanes	Volume (vph)		Capacity (vph)	V/C	
			AM	PM		AM	PM
SR 417 and Airport Boulevard/ US 17-92	Northbound off-ramp	2	330	390	3,700	0.1	0.1
	Southbound on-ramp (loop)	1	230	230	1,800	0.1	0.1
	Southbound on-ramp (diagonal)	1	410	400	1,850	0.2	0.2
SR 417 and CR 427/ Lake Mary Boulevard	Southbound off-ramp	2	690	690	3,700	0.2	0.2
	Northbound on-ramp	1	1,000	1,000	1,850	0.5	0.5
	Northbound off-ramp	2	830	930	3,700	0.2	0.3
	Southbound on-ramp	2	730	670	3,700	0.2	0.2
SR 417 and Sanford Airport Connector	Northbound off-ramp	1	1,180	1,290	1,850	0.6	0.7
	Southbound on-ramp	1	1,080	1,010	1,850	0.6	0.5
SR 417 and SR 434	Southbound off-ramp	1	620	1,050	1,850	0.3	0.6
	Northbound on-ramp	1	1,050	620	1,850	0.6	0.3
	Northbound off-ramp	1	710	1,130	1,850	0.4	0.6
	Southbound on-ramp	1	1,130	710	1,850	0.6	0.4
Sanford Airport Connector and Lake Mary Boulevard	Southbound off-ramp	1	190	300	1,850	0.1	0.2
	Northbound on-ramp	1	250	190	1,850	0.1	0.1
	Northbound off-ramp	1	870	950	1,850	0.5	0.5
	Southbound on-ramp	1	910	690	1,850	0.5	0.4

5.4.3 Intersection Analysis

The 2030 and 2050 AM and PM design hour traffic operations at intersections within the AOI were analyzed using Synchro Version 11. The results are summarized in **Tables 5-16** and **5-17** for the 2030 and 2050 design hours, respectively. Under No Build conditions, intersection LOS is expected to degrade due to increased future traffic volumes. Congestion would worsen and cause protracted delays, especially at the CR 427/Lake Mary Boulevard interchange and adjacent intersections. For instance, the Lake Mary Boulevard and CR 427/Sanford Avenue intersection is projected to operate at an unacceptable LOS F in 2050, with very long delays of 292 seconds in the AM peak and 342 seconds in the PM peak under the No Build scenario.

With the Build alternative, significant improvements in intersection operations are anticipated at the CR 427/Lake Mary Boulevard interchange and along Lake Mary Boulevard, primarily due to traffic diversion to the proposed Connector. Cumulatively, intersection delays are expected to decrease by 27 and 28 percent during the 2030 AM and PM peak hours, respectively. As traffic and congestion increase further in the future, these benefits increase in 2050, with cumulative delay reductions of 37 percent in the AM peak and 42 percent in the PM peak. Individual intersections show even greater improvements. For example, the Lake Mary Boulevard and CR 427/Sanford Avenue intersection delays of 292 and 342 seconds in 2050 AM and PM No Build are projected to significantly reduce to 152 seconds (AM) and 147 seconds (PM) with the Build, representing reductions of 47 and 57 percent, respectively. Overall, intersections at the CR 427 ramps and most along Lake Mary Boulevard are expected to experience delay reductions ranging from 50 percent to over 80 percent during the 2050 peak hours under the Build alternative. As delays decrease, queue lengths are also expected to shorten, contributing to improved safety.

Detailed analysis results for each intersection movement are provided **Tables 5-18** through **5-21** for the 2030 and 2050 conditions. Under No Build conditions, most movements are projected to experience long delays and queues, especially at the CR 427/Lake Mary Boulevard interchange and adjacent intersections. These movements, already congested under existing conditions, are expected to worsen in the future. However, with the Build alternative, most movements are projected to operate more efficiently, with significantly shorter delays and queues compared to No Build. These improvements in operations are expected to grow as traffic demand increases through and beyond the 2050 design year.

Table 5-16. 2030 Design Hour Intersection Operations Summary

Intersection	AM				PM				Difference			
	No Build		Build		No Build		Build		AM		PM	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	Delay	Percentage	Delay	Percentage
Lake Mary Boulevard and SR 417 Southbound Ramps	B	16.8	B	16.7	B	19.7	B	19.7	0	-1%	0	0%
Lake Mary Boulevard and SR 417 Northbound Ramps	C	21.9	C	21.9	C	20.6	C	20.6	0	0%	0	0%
CR 427 and SR 417 Southbound Ramps	C	25.1	B	14.8	C	31.7	B	18.9	-10	-41%	-13	-40%
CR 427 and SR 417 Northbound Ramps	C	24.3	C	20.9	C	33.7	B	14.5	-3	-14%	-19	-57%
SR 434 and SR 417 Southbound Ramps	B	17.0	B	17.3	B	19.9	C	20.4	0	2%	1	3%
SR 434 and SR 417 Northbound Ramps	D	35.0	D	36.5	C	30.1	C	30.5	2	4%	0	1%
Lake Mary Boulevard and CR 427/Sanford Avenue	**F**	**120.7**	**E**	**66.7**	**F**	**132.5**	**E**	**62.2**	-54	-45%	-70	-53%
Lake Mary Boulevard and Sanford Avenue	B	14.8	A	9.9	C	16.8	B	10.3	-5	-33%	-7	-39%
Lake Mary Boulevard and 1750 East Lake Mary Boulevard	B	12.2	A	3.6	A	7.1	A	2.4	-9	-70%	-5	-66%
Lake Mary Boulevard and Mellonville Avenue	C	30.1	B	18.1	C	21	B	19.3	-12	-40%	-2	-8%
Lake Mary Boulevard and Ohio Avenue/Botanical Way	B	11.8	A	7	A	9.9	A	7.3	-5	-41%	-3	-26%
Lake Mary Boulevard and Red Cleveland Boulevard/Proposed Connector Ramps (SPUI)*	C	34.7	C	23.7	B	18.1	C	29.3	-11	-32%	11	62%
Lake Mary Boulevard and Brisson Avenue	B	18.6	B	16.7	C	21.3	B	11.1	-2	-10%	-10	-48%
Red Cleveland Boulevard and Marquette Avenue	C	15.3	C	17.5	B	14.4	C	17.4	2	14%	3	21%
Cumulative Intersection Delay (Seconds)		***398***		***291***		***397***		***284***	***-107***	***-27%***	***-113***	***-28%***

**No Build is a T-intersection. Build is an interchange (SPUI).*

Table 5-17. 2050 Design Hour Intersection Operations Summary

Intersection	AM				PM				Difference			
	No Build		Build		No Build		Build		AM		PM	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	Delay	Percentage	Delay	Percentage
Lake Mary Boulevard and SR 417 Southbound Ramps	C	28.8	C	28.7	D	51.8	D	51.8	0	0%	0	0%
Lake Mary Boulevard and SR 417 Northbound Ramps	C	25.0	C	25.0	C	29.4	C	29.4	0	0%	0	0%
CR 427 and SR 417 Southbound Ramps	D	36.5	C	23.2	D	53.1	C	25.7	-13	-36%	-27	-52%
CR 427 and SR 417 Northbound Ramps	**F**	**83.9**	C	33.6	**F**	**101.7**	C	23.0	-50	-60%	-79	-77%
SR 434 and SR 417 Southbound Ramps	C	24.7	C	25.8	C	33.5	C	34.7	1	4%	1	4%
SR 434 and SR 417 Northbound Ramps	**F**	**110.8**	**F**	112.2	D	54.3	D	54.9	1	1%	1	1%
Lake Mary Boulevard and CR 427/Sanford Avenue	**F**	**292.8**	**F**	152.7	**F**	**342.9**	**F**	**147.8**	-140	-48%	-195	-57%
Lake Mary Boulevard and Sanford Avenue	**E**	**43.7**	B	11.1	**F**	**77.6**	B	11.6	-33	-75%	-66	-85%
Lake Mary Boulevard and 1750 East Lake Mary Boulevard	C	26.8	A	6.3	A	9.7	A	3.5	-21	-76%	-6	-64%
Lake Mary Boulevard and Mellonville Avenue	**E**	**56.8**	C	28.3	**E**	**59.0**	C	22.8	-29	-50%	-36	-61%
Lake Mary Boulevard and Ohio Avenue/Botanical Way	C	23.9	A	8.0	C	25.7	A	9.5	-16	-67%	-16	-63%
Lake Mary Boulevard and Red Cleveland Boulevard/Proposed Connector Ramps (SPUI)*	**E**	**67.0**	C	27.7	C	31.6	D	54.8	-39	-59%	23	73%
Lake Mary Boulevard and Brisson Avenue	D	41.9	D	37.5	D	53.2	D	42.2	-4	-11%	-11	-21%
Red Cleveland Boulevard and Marquette Avenue	D	26.9	**E**	43.1	C	20.7	D	32.3	16	60%	12	56%
Cumulative Intersection Delay (Seconds)		***890***		***563***		***944***		***544***	***-326***	***-37%***	***-400***	***-42%***

**No Build is a T-intersection. Build is an interchange (SPUI).*

Table 5-18. 2030 No Build Alternative Design Hour Intersection Operations

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (C)	20.7 (21.1)	211 (1,272)	-
		Right	A (A)	4.4 (3.6)	0 **(375)**	1/325
	Westbound	Left	B (E)	12.7 (56.2)	267 (283)	1/330 1/480
		Through	A (A)	4.3 (2.9)	166 (231)	-
		Right	-	-	-	-
	Southbound	Left	E (E)	57.7 (59.8)	441 (1,244)	1/1,265
		Through	E (E)	57.7 (59.8)	441 (1,244)	
		Right	A (A)	0.6 (0.4)	0 (1,241)	1/1,265
	Overall Intersection		B (B)	16.8 (19.7)	-	-
Lake Mary Boulevard and SR 417 Northbound Ramps	Eastbound	Left	D (C)	41.5 (32)	133 (272)	1/320
		Through	B (A)	17.5 (7.9)	377 (462)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	B (C)	16 (25.7)	325 (347)	-
		Right	B (C)	16 (25.7)	325 (347)	-
	Northbound	Left	D (C)	38.9 (33.5)	211 (175)	-
		Through	D (C)	38.5 (33.3)	284 (285)	-
		Right	A (A)	0.1 (1.7)	0 (11)	1/250
	Overall Intersection		C (C)	21.9 (20.6)	-	-
CR 427 and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	D (C)	48.1 (32.6)	778 (2165)	-
		Right	B (B)	17.9 (12.9)	**250 (250)**	1/200
	Westbound	Left	B (E)	19 (63.4)	247 **(453)**	1/200 1/340
		Through	A (A)	2.9 (4)	189 (294)	-
		Right	-	-	-	-
	Southbound	Left	E **(F)**	78.9 **(86.7)**	196 (223)	-
		Through	E **(F)**	78.9 **(86.7)**	196 (223)	-
		Right	D (C)	38.4 (22.2)	129 (132)	1/220
	Overall Intersection		C (C)	25.1 (31.7)	-	-
CR 427 and SR 417 Northbound Ramps	Eastbound	Left	**F** (E)	**83.7** (64.5)	**250 (250)**	1/200
		Through	A (A)	0.8 (1.4)	450 (470)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	B (D)	12.6 (36.7)	459 (391)	1/340
		Right				2/1,235
	Northbound	Left	B (D)	12.6 (36.7)	459 (391)	-
		Through	E (D) D (D)	70.4 (45.8) 55 (40.6)	443 (319) 760 (558)	1/560 2/1,605
		Right	C (D)	32.4 (54.3)	**605** (550)	2/560
	Overall Intersection		C (C)	24.3 (33.7)	-	-
SR 434 and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (B)	20.8 (19.2)	342 (530)	-
		Right	A (A)	6.1 (3)	-	1/1,000
	Westbound	Left	E **(F)**	71.4 **(98.5)**	381 (233)	1/420
		Through	A (A)	2.4 (6)	126 (161)	-
		Right	-	-	-	-
	Southbound	Left	D (D)	53.6 (54.9)	228 (350)	1/850 1/1,715
		Through	-	-	-	-
		Right	B (C)	17.8 (34.9)	236 (255)	2/520
	Overall Intersection		B (B)	17 (19.9)	-	-
SR 434 and SR 417 Northbound Ramps	Eastbound	Left	D (D)	43.7 (38.4)	426 (599)	1/325 1/845
		Through	A (B)	2.3 (13.1)	213 (554)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	D (C)	46.1 (29.8)	458 (433)	1/560 1/1,320
		Right	D (C)	46.1 (29.8)	458 (433)	-
	Northbound	Left	E (E)	58.6 (58.9)	318 (440)	1/1,000 1/1,860
		Through	-	-	-	-
		Right	A (D)	10 (45.1)	56 (392)	1/425
	Overall Intersection		D (C)	35 (30.1)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 5-18. 2030 No Build Alternative Design Hour Intersection Operations (Cont'd)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and CR 427/Sanford Avenue	Eastbound	Left	E **(F)**	59.9 **(98.6)**	**370 (370)**	2/270
		Through	**F (F)**	**109.6 (155.9)**	882 (1000)	-
		Right	A (A)	0.2 (0.1)	**360 (400)**	1/350
	Westbound	Left	**F (F)**	**271.5 (244.3)**	**899** (434)	2/840
		Through	B (B)	17.7 (19.2)	313 (262)	-
		Right	A (A)	2.6 (3.8)	30 (33)	1/375
	Northbound	Left	E (E)	55.6 (55.1)	**375 (399)**	1/350
		Through	**F (F)**	**124.1 (229.7)**	1,218 (1,244)	-
		Right	A (B)	4.7 (16.4)	**300 (300)**	2/200
	Southbound	Left	**F (F)**	**225.1 (282.9)**	**378 (378)**	1/328
		Through	**F (F)**	**184.7 (163)**	1,284 (1,292)	-
		Right	**F (F)**	**184.7 (163)**	1,284 (1,292)	-
	Overall Intersection		**F (F)**	**120.7 (132.5)**	-	-
Lake Mary Boulevard and Sanford Avenue**	Eastbound	Left	-	-	-	-
		Through	A (A)	0 (0)	4 (18)	-
		Right	A (A)	0 (0)	-	1/120
	Westbound	Left	-	-	-	-
		Through	A (A)	0 (0)	901 (146)	-
		Right	-	-	-	-
	Northbound	Left	-	-	-	-
		Through	-	-	-	-
		Right	B (C)	14.8 (16.8)	141 (161)	-
	Overall Intersection		B (C)	14.8 (16.8)	-	-
Lake Mary Boulevard and 1750 East Lake Mary Boulevard	Eastbound	U-Turn	D (A)	42.4 (3.8)	293 (154)	1/560
		Left	D (A)	42.4 (3.8)	293 (154)	
		Through	A (A)	2.4 (5.4)	224 (893)	-
	Westbound	U-Turn	A (A)	6.8 (7.4)	199 (119)	1/215
		Through	B (A)	15.2 (9.5)	814 (342)	-
		Right	B (A)	15.2 (9.5)	814 (342)	-
	Southbound	Left	E (C)	56.6 (24.7)	94 (85)	-
		Through	-	-	-	-
		Right	E (C)	56.6 (24.7)	94 (85)	-
	Overall Intersection		B (A)	12.2 (7.1)	-	-
Lake Mary Boulevard and Mellonville Avenue	Eastbound	Left	C (A)	20.7 (4.6)	113 (121)	1/380
		Through	B (B)	14.6 (12.4)	266 (380)	-
		Right	B (B)	14.6 (12.4)	266 (380)	-
	Westbound	Left	B (B)	12.9 (11.4)	**340** (124)	1/290
		Through	D (B)	40.2 (14.2)	2533 (328)	-
		Right	D (B)	40.2 (14.2)	2533 (328)	-
	Northbound	Left	D **(F)**	48.8 **(111)**	191 (640)	-
		Through	C (D)	26.2 (42.7)	105 **(240)**	1/190
		Right	C (D)	26.2 (42.7)	105 **(240)**	
	Southbound	Left	C (E)	33.1 (67.9)	90 (168)	-
		Through	B (D)	18.9 (46.6)	111 (196)	1/220
		Right	B (D)	18.9 (46.6)	111 (196)	
	Overall Intersection		C (C)	30.1 (21)	-	-
Lake Mary Boulevard and Ohio Avenue/Botanical Way	Eastbound	Left	A (A)	6 (3)	90 (44)	1/440
		Through	A (B)	6 (11.3)	230 (319)	-
		Right	A (A)	0 (0)	42 (25)	1/370
	Westbound	Left	A (A)	3.1 (3.8)	227 (57)	1/440
		Through	B (A)	14.5 (6)	929 (220)	-
		Right	B (A)	14.5 (6)	929 (220)	-
	Northbound	Left	E (D)	58.3 (54)	84 (67)	-
		Through	E (D)	58.3 (54)	84 (67)	-
		Right	A (A)	0.5 (1)	54 (66)	1/630
	Southbound	Left	D (D)	54.6 (52.5)	66 (52)	1/265
		Through	C (C)	31.1 (22.4)	103 (104)	-
		Right	C (C)	31.1 (22.4)	103 (104)	-
	Overall Intersection		B (A)	11.8 (9.9)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 5-18. 2030 No Build Alternative Design Hour Intersection Operations (Cont'd)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and Red Cleveland Boulevard	Eastbound	Left	D (D)	44.5 (46.8)	146 (143)	2/340
		Through	A (B)	6.4 (10.8)	199 (288)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	D (B)	52.3 (19.1)	982 (290)	-
		Right	A (A)	4.1 (3.4)	**395** (90)	1/345
	Southbound	Left	D (D)	49.2 (53.1)	238 (227)	-
		Through	-	-	-	-
		Right	C (B)	21 (17.9)	76 (104)	1/315 1/Lane Drop
	Overall Intersection		C (B)	34.7 (18.1)	-	-
Lake Mary Boulevard and Brisson Avenue	Eastbound	Left	-	-	-	-
		Through	B (C)	17 (27.7)	357 (424)	-
		Right	B (C)	17 (27.7)	357 (424)	-
	Westbound	Left	A (A)	7.5 (6.6)	225 (73)	1/280
		Through	B (A)	16.3 (7.3)	709 (193)	-
		Right	-	-	-	-
	Northbound	Left	D (C)	49.1 (34.2)	**188 (143)**	1/140
		Through	-	-	-	-
		Right	B (B)	11.2 (13.3)	247 (84)	-
	Overall Intersection		B (C)	18.6 (21.3)	-	-
Red Cleveland Boulevard and Marquette Avenue**	Eastbound	Left	C (B)	15.3 (14.4)	91 (86)	-
		Through	C (B)	15.3 (14.4)	91 (86)	-
		Right	C (B)	15.3 (14.4)	91 (86)	-
	Westbound	Left	B (B)	13.4 (12.6)	86 (72)	-
		Through	B (B)	13.4 (12.6)	86 (72)	-
		Right	B (B)	13.4 (12.6)	53 (0)	1/190
	Northbound	Left	A (A)	7.7 (8.1)	46 (55)	1/280
		Through	A (A)	0 (0)	6 (0)	-
		Right	A (A)	0 (0)	0 (6)	1/265
	Southbound	Left	A (A)	8.1 (8)	65 (54)	1/230
		Through	A (A)	0 (0)	13 (4)	-
		Right	A (A)	0 (0)	13 (4)	-
	Overall Intersection		C (B)	15.3 (14.4)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 5-19. 2030 Build Alternative Design Hour Intersection Operations

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (C)	20.7 (21.1)	202 (271)	-
		Right	A (A)	4.4 (3.6)	-	1/325
	Westbound	Left	B (E)	12.5 (57.6)	306 (280)	1/330 1/480
		Through	A (A)	4.2 (2.9)	167 (91)	-
		Right	-	-	-	-
	Southbound	Left	E (E)	57.7 (59.8)	446 (437)	1/1,265
		Through	E (E)	57.7 (59.8)	446 (437)	
		Right	A (A)	0.6 (0.4)	-	1/1,265
	Overall Intersection		B (B)	16.7 (19.7)	-	-
Lake Mary Boulevard and SR 417 Northbound Ramps	Eastbound	Left	D (C)	40.5 (31)	107 (232)	1/320
		Through	B (A)	16.6 (7.6)	165 (149)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	B (C)	17 (26.1)	331 (376)	-
		Right	B (C)	17 (26.1)	331 (376)	-
	Northbound	Left	D (C)	38 (33.6)	231 (175)	-
		Through	D (C)	37.5 (33.4)	290 (270)	-
		Right	A (A)	0.1 (1.6)	34 (35)	1/250
	Overall Intersection		C (C)	21.9 (20.6)	-	-
CR 427 and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	B (B)	14.5 (16)	313 (589)	-
		Right	A (A)	2.9 (4.5)	**234 (230)**	1/200
	Westbound	Left	C (D)	25.7 (49.1)	163 (91)	1/200 1/340
		Through	A (A)	4.7 (3.9)	250 (132)	-
		Right	-	-	-	-
	Southbound	Left	E **(F)**	74.5 **(85.5)**	179 (207)	-
		Through	E **(F)**	74.5 **(85.5)**	179 (207)	-
		Right	D (C)	38.3 (27.4)	105 (93)	1/220
	Overall Intersection		B (B)	14.8 (18.9)	-	-
CR 427 and SR 417 Northbound Ramps	Eastbound	Left	B (A)	19 (6.5)	**250 (222)**	1/200
		Through	B (A)	14.4 (0.9)	370 (159)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	A (A)	6.3 (2.9)	300 (117)	1/340 2/1,235
		Right	A (A)	6.3 (2.9)	300 (117)	-
	Northbound	Left	E **(F)**	78.5 **(82.6)**	370 (330)	1/560
		Through	E (E)	57.8 (62.5)	282 (225)	2/1,605
		Right	A (A)	8.1 (9.5)	22 (138)	2/560
	Overall Intersection		C (B)	20.9 (14.5)	-	-
SR 434 and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (B)	21 (19.7)	256 (359)	-
		Right	A (A)	6.1 (3)	-	1/1,000
	Westbound	Left	E **(F)**	71 **(98.6)**	368 (266)	1/420
		Through	A (A)	2.4 (6)	118 (115)	-
		Right	-	-	-	-
	Southbound	Left	D (D)	53.8 (54.9)	161 (421)	1/850 1/1,715
		Through	-	-	-	-
		Right	B (C)	19.3 (34.9)	105 (193)	2/520
	Overall Intersection		B (C)	17.3 (20.4)	-	-
SR 434 and SR 417 Northbound Ramps	Eastbound	Left	D (D)	44.5 (39.5)	445 (458)	1/325 1/845
		Through	A (B)	2.5 (14.2)	188 (551)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	D (C)	48.8 (30)	439 (410)	1/560 1/1,320
		Right	D (C)	48.8 (30)	439 (410)	-
	Northbound	Left	E (E)	58.6 (58.9)	307 (417)	1/1,000 1/1,860
		Through	-	-	-	-
		Right	A (D)	10 (45.1)	31 (345)	1/425
	Overall Intersection		D (C)	36.5 (30.5)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 5-19. 2030 Build Alternative Design Hour Intersection Operations (Cont'd)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and CR 427/Sanford Avenue	Eastbound	Left	E **(F)**	65.2 **(106.2)**	180 **(370)**	2/270
		Through	E (E)	78.2 (70.4)	322 (605)	-
		Right	A (A)	0.1 (0.1)	0 (280)	1/350
	Westbound	Left	**F** (E)	**89.5** (58.3)	345 (147)	2/840
		Through	C (C)	33.3 (25.4)	321 (266)	-
		Right	A (A)	4 (6.1)	-	1/375
	Northbound	Left	E (C)	70.4 (35)	97 **(399)**	1/350
		Through	**F (F)**	**88.2 (89.8)**	410 (1,120)	-
		Right	A (B)	0.8 (12.8)	**300 (300)**	2/200
	Southbound	Left	**F (F)**	**149.6 (161.3)**	**378 (377)**	1/328
		Through	**F** (E)	**89.2** (69)	1,109 (605)	-
		Right	**F** (E)	**89.2** (69)	1,109 (605)	-
	Overall Intersection		**E (E)**	**66.7 (62.2)**	-	-
Lake Mary Boulevard and Sanford Avenue**	Eastbound	Left	-	-	-	-
		Through	A (A)	0 (0)	0 (5)	-
		Right	A (A)	0 (0)	-	1/120
	Westbound	Left	-	-	-	-
		Through	A (A)	0 (0)	90 (18)	-
		Right	-	-	-	-
	Northbound	Left	-	-	-	-
		Through	-	-	-	-
		Right	A (B)	9.9 (10.3)	110 (143)	-
	Overall Intersection		A (B)	9.9 (10.3)	-	-
Lake Mary Boulevard and 1750 East Lake Mary Boulevard	Eastbound	U-Turn	B (A)	10.8 (1.2)	230 (154)	1/560
		Left	B (A)	10.8 (1.2)	230 (154)	
		Through	A (A)	3.5 (0.6)	105 (135)	-
	Westbound	U-Turn	A (A)	1.4 (3.7)	52 (51)	1/215
		Through	A (A)	1.9 (3.5)	281 (142)	-
		Right	A (A)	1.9 (3.5)	281 (142)	-
	Southbound	Left	E (D)	56.6 (48.5)	74 (73)	-
		Through	-	-	-	-
		Right	E (D)	56.6 (48.5)	74 (73)	-
	Overall Intersection		A (A)	3.6 (2.4)	-	-
Lake Mary Boulevard and Mellonville Avenue	Eastbound	Left	B (A)	14.5 (2.6)	134 (84)	1/380
		Through	A (A)	7.4 (6.4)	151 (284)	-
		Right	A (A)	7.4 (6.4)	151 (284)	-
	Westbound	Left	A (A)	9.7 (8.7)	68 (95)	1/290
		Through	B (B)	15.7 (13.3)	419 (281)	-
		Right	B (B)	15.7 (13.3)	419 (281)	-
	Northbound	Left	**F (F)**	**92.5 (93.4)**	222 (365)	-
		Through	D (D)	51.4 (35.3)	138 **(240)**	1/190
		Right	D (D)	51.4 (35.3)	138 **(240)**	
	Southbound	Left	E (E)	65.2 (62)	90 (160)	-
		Through	C (D)	32 (40.9)	113 (153)	1/220
		Right	C (D)	32 (40.9)	113 (153)	
	Overall Intersection		B (B)	18.1 (19.3)	-	-
Lake Mary Boulevard and Ohio Avenue/Botanical Way	Eastbound	Left	A (A)	4 (2.5)	91 (43)	1/440
		Through	A (A)	5.4 (7)	179 (257)	-
		Right	A (A)	0 (0)	26 (38)	1/370
	Westbound	Left	A (A)	2.2 (1.9)	46 (62)	1/440
		Through	A (A)	5.4 (2.7)	241 (136)	-
		Right	A (A)	5.4 (2.7)	241 (136)	-
	Northbound	Left	E (E)	73.8 (71.2)	87 (62)	-
		Through	E (E)	73.8 (71.2)	87 (62)	-
		Right	A (A)	0.6 (1.2)	39 (43)	1/630
	Southbound	Left	E (E)	67 (68.3)	53 (62)	1/265
		Through	D (C)	37 (27.8)	79 (98)	-
		Right	D (C)	37 (27.8)	79 (98)	-
	Overall Intersection		A (A)	7 (7.3)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 5-19. 2030 Build Alternative Design Hour Intersection Operations (Cont'd)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and Red Cleveland Boulevard/ Proposed Connector Ramps (SPUI)	Eastbound	Left	**F** (E)	**85.8** (70.6)	81 (113)	1/500
		Through	B (B)	14.1 (17.9)	328 (502)	-
		Right	A (A)	0 (0)	0 (197)	1/345
	Westbound	Left	E (D)	60.2 (46.1)	259 (236)	2/700
		Through	A (A)	6.9 (6.4)	302 (139)	-
		Right	A (A)	0.1 (0.1)	-	1/345
	Northbound	Left	E (E)	69.4 (66.7)	68 (76)	1/575
		Through	-	-	-	-
		Right	C (D)	33.6 (50.4)	142 (269)	1/575 1/1,520
	Southbound	Left	E **(F)**	75 **(82.2)**	146 (151)	1/345 1/980
		Through	-	-	-	-
		Right	A (A)	1.1 (2.6)	-	1/345
	Overall Intersection		C (C)	23.7 (29.3)	-	-
Lake Mary Boulevard and Brisson Avenue	Eastbound	Left	-	-	-	-
		Through	A (A)	9.2 (8.8)	392 (508)	-
		Right	A (A)	9.2 (8.8)	392 (508)	-
	Westbound	Left	A (A)	6.1 (6)	87 (75)	1/280
		Through	B (A)	13.4 (4.4)	381 (174)	-
		Right	-	-	-	-
	Northbound	Left	**F (F)**	**89.1 (92.4)**	**189 (189)**	1/140
		Through	-	-	-	-
		Right	B (C)	15.9 (23.6)	422 (258)	-
	Overall Intersection		B (B)	16.7 (11.1)	-	-
Red Cleveland Boulevard and Marquette Avenue**	Eastbound	Left	C (C)	17.5 (17.4)	76 (72)	-
		Through	C (C)	17.5 (17.4)	76 (72)	-
		Right	C (C)	17.5 (17.4)	76 (72)	-
	Westbound	Left	C (B)	15 (14.7)	75 (66)	-
		Through	C (B)	15 (14.7)	75 (66)	-
		Right	C (B)	15 (14.7)	22 (6)	1/190
	Northbound	Left	A (A)	7.9 (8.4)	37 (30)	1/280
		Through	A (A)	0 (0)	0 (7)	-
		Right	A (A)	0 (0)	-	1/265
	Southbound	Left	A (A)	8.4 (8.2)	59 (59)	1/230
		Through	A (A)	0 (0)	9 (0)	-
		Right	A (A)	0 (0)	9 (0)	-
	Overall Intersection		C (C)	17.5 (17.4)	-	-

- Not Applicable/Available

***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*

**SimTraffic maximum queue length*

***Unsignalized intersection*

Table 5-20. 2050 No Build Alternative Design Hour Intersection Operations

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (D)	23.6 (41.1)	1,335 (1,338)	-
		Right	A (A)	4.6 (5.6)	**375 (375)**	1/325
	Westbound	Left	C **(F)**	24.9 **(98.1)**	313 (307)	1/330 1/480
		Through	B (D)	11.7 (53.2)	180 (296)	-
		Right	-	-	-	-
	Southbound	Left	**F (F)**	**87.2 (94)**	1,250 (1,250)	1/1,265
		Through	**F (F)**	**87.2 (94)**	1,250 (1,250)	
		Right	A (A)	1.9 (7.8)	1,252 (1,246)	1/1,265
	Overall Intersection		C (D)	28.8 (51.8)	-	-
Lake Mary Boulevard and SR 417 Northbound Ramps	Eastbound	Left	D (D)	45.7 (42.9)	**334 (392)**	1/320
		Through	B (B)	18.8 (12.2)	474 (470)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	B (D)	16.7 (39.6)	336 (507)	-
		Right	B (D)	16.7 (39.6)	336 (507)	-
	Northbound	Left	D (D)	48 (40.1)	228 (179)	-
		Through	D (D)	47.5 (39.8)	316 (286)	-
		Right	A (A)	0.1 (1.6)	-	1/250
	Overall Intersection		C (C)	25 (29.4)	-	-
CR 427 and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	E (E)	65.1 (73.7)	2,179 (2,182)	-
		Right	C (B)	25 (18.9)	**250 (250)**	1/200
	Westbound	Left	C (E)	32.7 (77.7)	267 **(470)**	1/200 1/340
		Through	B (A)	10 (2.7)	194 (375)	-
		Right	-	-	-	-
	Southbound	Left	E **(F)**	78.2 **(87.3)**	218 (244)	-
		Through	E **(F)**	78.2 **(87.3)**	218 (244)	-
		Right	D (E)	54 (75.5)	151 (205)	1/220
	Overall Intersection		D (D)	36.5 (53.1)	-	-
CR 427 and SR 417 Northbound Ramps	Eastbound	Left	**F (F)**	**134.7 (147.3)**	**250 (250)**	1/200
		Through	A (A)	3.4 (1.8)	480 (480)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	**F (F)**	**95.8 (132.7)**	494 (605)	1/340 2/1,235
		Right	**F (F)**	**95.8 (132.7)**	494 (605)	-
	Northbound	Left	E (D)	62.9 (41.7)	**659 (647)**	1/560
		Through	D (D)	48.6 (36.6)	1,601 (1,601)	2/1,605
		Right	**F (F)**	**136.3 (170.5)**	**660 (660)**	2/560
	Overall Intersection		**F (F)**	**83.9 (101.7)**	-	-
SR 434 and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (C)	26.8 (29)	554 (1343)	-
		Right	C (A)	20.7 (4.1)	0 **(1,050)**	1/1,000
	Westbound	Left	E **(F)**	71.5 **(87.5)**	397 (323)	1/420
		Through	A (C)	7.8 (32)	137 (348)	-
		Right	-	-	-	-
	Southbound	Left	E (E)	55.4 (56.5)	236 **(1,721)**	1/850 1/1,715
		Through	-	-	-	-
		Right	D (D)	38.3 (40)	240 **(620)**	2/520
	Overall Intersection		C (C)	24.7 (33.5)	-	-
SR 434 and SR 417 Northbound Ramps	Eastbound	Left	D (D)	49.2 (54.5)	566 **(963)**	1/325 1/845
		Through	A (B)	4.9 (18.5)	242 (596)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	**F (F)**	**190.8 (85.5)**	613 (626)	1/560 1/1,320
		Right	**F (F)**	**190.8 (85.5)**	613 (626)	-
	Northbound	Left	E (E)	75.6 (70.4)	432 (945)	1/1,000 1/1,860
		Through	-	-	-	-
		Right	B (E)	14.3 (57.3)	180 **(475)**	1/425
	Overall Intersection		**F** (D)	**110.8** (54.3)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 5-20. 2050 No Build Alternative Design Hour Intersection Operations (Cont'd)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and CR 427/Sanford Avenue	Eastbound	Left	E **(F)**	73.6 **(104.1)**	**370 (370)**	2/270
		Through	**F (F)**	**285 (316.7)**	1,010 (1,028)	-
		Right	A (A)	0.3 (0.2)	**400 (400)**	1/350
	Westbound	Left	**F (F)**	**746.7 (943)**	**929 (930)**	2/840
		Through	C (B)	25.9 (19.5)	321 (340)	-
		Right	A (A)	2.3 (3)	55 (145)	1/375
	Northbound	Left	D (D)	51.3 (51.6)	**399 (399)**	1/350
		Through	**F (F)**	**213.7 (421.7)**	1,254 (1258)	-
		Right	A (E)	5.9 (59.3)	**300 (300)**	2/200
	Southbound	Left	**F (F)**	**362.6 (475.6)**	**378 (378)**	1/328
		Through	**F (F)**	**458.1 (410.4)**	1,293 (1295)	-
		Right	**F (F)**	**458.1 (410.4)**	1,293 (1295)	-
	Overall Intersection		**F (F)**	**292.8 (342.9)**	-	-
Lake Mary Boulevard and Sanford Avenue**	Eastbound	Left	-	-	-	-
		Through	A (A)	0 (0)	7 (21)	-
		Right	A (A)	0 (0)	-	1/120
	Westbound	Left	-	-	-	-
		Through	A (A)	0 (0)	**1,194 (1,194)**	-
		Right	-	-	-	-
	Northbound	Left	-	-	-	-
		Through	-	-	-	-
		Right	**E (F)**	**43.7 (77.6)**	202 (173)	-
	Overall Intersection		**E (F)**	**43.7 (77.6)**	-	-
Lake Mary Boulevard and 1750 East Lake Mary Boulevard	Eastbound	U-Turn	E (C)	55.2 (27.8)	298 (252)	1/560
		Left	E (C)	55.2 (27.8)	298 (252)	
		Through	A (A)	4.1 (7.1)	447 (1094)	-
	Westbound	U-Turn	A (B)	3.7 (19.9)	**265 (264)**	1/215
		Through	D (B)	41.2 (10.4)	**1,524 (1,522)**	-
		Right	D (B)	41.2 (10.4)	1,524 (1522)	-
	Southbound	Left	E (D)	56.6 (53.5)	98 (122)	-
		Through	-	-	-	-
		Right	E (D)	56.6 (53.5)	98 (122)	-
	Overall Intersection		C (A)	26.8 (9.7)	-	-
Lake Mary Boulevard and Mellonville Avenue	Eastbound	Left	**F** (A)	**86.5** (9.8)	140 (147)	1/380
		Through	B (E)	17.4 (77.9)	297 (453)	-
		Right	B (E)	17.4 (77.9)	297 (453)	-
	Westbound	Left	B (D)	14.5 (48.7)	**340 (340)**	1/290
		Through	**F** (C)	**81.1** (23.5)	**2,757 (2,668)**	-
		Right	**F** (C)	**81.1** (23.5)	2,757 (2,668)	-
	Northbound	Left	**F (F)**	**130.8 (143.7)**	951 (1,001)	-
		Through	E (D)	56.6 (48.4)	**240 (240)**	1/190
		Right	E (D)	56.6 (48.4)	**240 (240)**	
	Southbound	Left	E (E)	64.8 (70.1)	121 (308)	-
		Through	D (D)	37.9 (51.1)	166 **(236)**	1/220
		Right	D (D)	37.9 (51.1)	166 **(236)**	
	Overall Intersection		**E (E)**	**56.8 (59)**	-	-
Lake Mary Boulevard and Ohio Avenue/Botanical Way	Eastbound	Left	D (A)	37.3 (3.5)	108 (57)	1/440
		Through	B (D)	13.5 (35.9)	297 (387)	-
		Right	A (A)	0 (0.1)	52 (28)	1/370
	Westbound	Left	A (B)	5.3 (15.2)	**490 (451)**	1/440
		Through	C (B)	30.5 (10.4)	**1,816 (1,426)**	-
		Right	C (B)	30.5 (10.4)	1,816 (1,426)	-
	Northbound	Left	E (E)	76.6 (74.9)	114 (83)	-
		Through	E (E)	76.6 (74.9)	114 (83)	-
		Right	A (A)	0.9 (1.9)	64 (70)	1/630
	Southbound	Left	E (E)	70.5 (67.2)	86 (76)	1/265
		Through	C (C)	28.3 (24.2)	132 (195)	-
		Right	C (C)	28.3 (24.2)	132 (195)	-
	Overall Intersection		C (C)	23.9 (25.7)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 5-20. 2050 No Build Alternative Design Hour Intersection Operations (Cont'd)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and Red Cleveland Boulevard	Eastbound	Left	E (D)	66.8 (52.9)	176 (143)	2/340
		Through	A (C)	8.6 (28.4)	283 (341)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	**F** (C)	**113.2** (31)	996 (812)	-
		Right	A (A)	5.7 (4.4)	**395 (395)**	1/345
	Southbound	Left	**F** (E)	**84.4** (66.9)	295 (279)	-
		Through	-	-	-	-
		Right	D (C)	35.6 (24.1)	103 (134)	1/315 1/Lane Drop
	Overall Intersection		**E** (C)	**67** (31.6)	-	-
Lake Mary Boulevard and Brisson Avenue	Eastbound	Left	-	-	-	-
		Through	C (E)	32.3 (76.5)	457 (499)	-
		Right	C (E)	32.3 (76.5)	457 (499)	-
	Westbound	Left	B (C)	15.5 (32.6)	**330** (179)	1/280
		Through	D (A)	46.5 (7.7)	**4,676** (510)	-
		Right	-	-	-	-
	Northbound	Left	E (F)	76.2 (91.8)	**190 (189)**	1/140
		Through	-	-	-	-
		Right	B (B)	11.1 (17.4)	986 (371)	-
	Overall Intersection		D (D)	41.9 (53.2)	-	-
Red Cleveland Boulevard and Marquette Avenue**	Eastbound	Left	D (C)	26.9 (20.7)	94 (93)	-
		Through	D (C)	26.9 (20.7)	94 (93)	-
		Right	D (C)	26.9 (20.7)	94 (93)	-
	Westbound	Left	C (C)	18.8 (18.5)	100 (78)	-
		Through	C (C)	18.8 (18.5)	100 (78)	-
		Right	C (C)	18.8 (18.5)	55 (18)	1/190
	Northbound	Left	A (A)	7.9 (8.4)	50 (60)	1/280
		Through	A (A)	0 (0)	8 (2)	-
		Right	A (A)	0 (0)	6 (0)	1/265
	Southbound	Left	A (A)	8.5 (8.4)	72 (75)	1/230
		Through	A (A)	0 (0)	23 (10)	-
		Right	A (A)	0 (0)	23 (10)	-
	Overall Intersection		D (C)	26.9 (20.7)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 5-21. 2050 Build Alternative Design Hour Intersection Operations

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (D)	23.6 (41.1)	246 (1333)	-
		Right	A (A)	4.6 (5.6)	0 **(375)**	1/325
	Westbound	Left	C **(F)**	23.6 **(98.1)**	352 (308)	1/330 1/480
		Through	B (D)	11.5 (53.1)	409 (384)	-
		Right	-	-	-	-
	Southbound	Left	**F (F)**	**87.2 (94)**	1,026 (1,253)	1/1,265
		Through	**F (F)**	**87.2 (94)**	1,026 (1,253)	
		Right	A (A)	1.9 (7.8)	127 (1245)	1/1,265
	Overall Intersection		C (D)	28.7 (51.8)	-	-
Lake Mary Boulevard and SR 417 Northbound Ramps	Eastbound	Left	D (D)	44.7 (42.9)	144 (280)	1/320
		Through	B (B)	17.8 (12.2)	165 (458)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	B (C)	16.2 (32.6)	916 (507)	-
		Right	B (C)	16.2 (32.6)	916 (507)	-
	Northbound	Left	D (D)	50.7 (50.3)	261 (247)	-
		Through	D (D)	50 (49.8)	389 (343)	-
		Right	A (A)	0.1 (0.8)	0 (82)	1/250
	Overall Intersection		C (C)	25 (29.4)	-	-
CR 427 and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (C)	22.4 (28.5)	1217 (2165)	-
		Right	A (A)	9.1 (8.6)	**250 (250)**	1/200
	Westbound	Left	C (E)	21.4 (56.2)	298 (144)	1/200 1/340
		Through	B (A)	16.7 (5)	323 (126)	-
		Right	-	-	-	-
	Southbound	Left	E (E)	68.3 (66.5)	236 (248)	-
		Through	E (E)	68.3 (66.5)	236 (248)	-
		Right	D (E)	44.7 (58.8)	**258** (216)	1/220
	Overall Intersection		C (C)	23.2 (25.7)	-	-
CR 427 and SR 417 Northbound Ramps	Eastbound	Left	E (D)	57.3 (54.2)	**250 (250)**	1/200
		Through	B (A)	15.3 (1.3)	462 (474)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	C (A)	24.7 (9.9)	444 (181)	1/340 2/1,235
		Right	C (A)	24.7 (9.9)	444 (181)	-
	Northbound	Left	**F** (E)	**94.4** (79)	473 (392)	1/560
		Through	D (E)	54.6 (59.5)	468 (303)	2/1,605
		Right	A (D)	7 (36.9)	198 (190)	2/560
	Overall Intersection		C (C)	33.6 (23)	-	-
SR 434 and SR 417 Southbound Ramps	Eastbound	Left	-	-	-	-
		Through	C (C)	27.2 (29.3)	320 (1,344)	-
		Right	C (A)	20.9 (4.1)	0 **(1,050)**	1/1,000
	Westbound	Left	E (E)	71.6 (72.9)	353 (272)	1/420
		Through	A (C)	9.3 (34)	134 (231)	-
		Right	-	-	-	-
	Southbound	Left	E (E)	56.6 (60.6)	232 **(1,722)**	1/850 1/1,715
		Through	-	-	-	-
		Right	D (D)	40.5 (42.7)	245 **(620)**	2/520
	Overall Intersection		C (C)	25.8 (34.7)	-	-
SR 434 and SR 417 Northbound Ramps	Eastbound	Left	D (E)	59.8 (76.1)	625 **(1,001)**	1/325 1/845
		Through	A (C)	5.5 (20)	271 (597)	-
		Right	-	-	-	-
	Westbound	Left	-	-	-	-
		Through	**F** (E)	**191.4** (79.6)	482 (654)	1/560 1/1,320
		Right	**F** (E)	**191.4** (79.6)	482 (654)	-
	Northbound	Left	E (E)	75.6 (75.4)	401 (839)	1/1,000 1/1,860
		Through	-	-	-	-
		Right	B (E)	15.2 (57.3)	127 **(475)**	1/425
	Overall Intersection		**F** (D)	**112.2** (54.9)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 5-21. 2050 Build Alternative Design Hour Intersection Operations (Cont'd)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and CR 427/Sanford Avenue	Eastbound	Left	**F (F)**	**104.8 (101.7)**	**370 (370)**	2/270
		Through	**F (F)**	**147.3 (169.6)**	947 (1,015)	-
		Right	A (A)	0.2 (0.1)	**400 (400)**	1/350
	Westbound	Left	**F (F)**	**267.6 (244.1)**	534 (215)	2/840
		Through	D (C)	48.5 (27.8)	349 (325)	-
		Right	A (A)	3.5 (7.9)	0 (31)	1/375
	Northbound	Left	E (D)	79.3 (47.8)	**400 (400)**	1/350
		Through	**F (F)**	**139.4 (215)**	1,234 (1,234)	-
		Right	A (B)	1.5 (15.4)	**300 (300)**	2/200
	Southbound	Left	**F (F)**	**231.5 (266.8)**	**378 (378)**	1/328
		Through	**F (F)**	**276.1 (198.2)**	1,295 (1,290)	-
		Right	**F (F)**	**276.1 (198.2)**	1,295 (1,290)	-
	Overall Intersection		**F (F)**	**152.7 (147.8)**	-	-
Lake Mary Boulevard and Sanford Avenue**	Eastbound	Left	-	-	-	-
		Through	A (A)	0 (0)	0 (4)	-
		Right	A (A)	0 (0)	-	1/120
	Westbound	Left	-	-	-	-
		Through	A (A)	0 (0)	411 (73)	-
		Right	-	-	-	-
	Northbound	Left	-	-	-	-
		Through	-	-	-	-
		Right	B (B)	11.1 (11.6)	231 (165)	-
	Overall Intersection		B (B)	11.1 (11.6)	-	-
Lake Mary Boulevard and 1750 East Lake Mary Boulevard	Eastbound	U-Turn	C (A)	28.3 (5.5)	270 (175)	1/560
		Left	C (A)	28.3 (5.5)	270 (175)	
		Through	A (A)	5.1 (1.8)	146 (146)	-
	Westbound	U-Turn	A (A)	2.6 (4.5)	31 (67)	1/215
		Through	A (A)	3.7 (4.2)	263 (204)	-
		Right	A (A)	3.7 (4.2)	263 (204)	-
	Southbound	Left	E (D)	56.6 (48.5)	95 (93)	-
		Through	-	-	-	-
		Right	E (D)	56.6 (48.5)	95 (93)	-
	Overall Intersection		A (A)	6.3 (3.5)	-	-
Lake Mary Boulevard and Mellonville Avenue	Eastbound	Left	D (A)	49.2 (5.3)	155 (88)	1/380
		Through	B (B)	13.9 (11.5)	231 (319)	-
		Right	B (B)	13.9 (11.5)	231 (319)	-
	Westbound	Left	B (B)	13.1 (13.5)	**340** (146)	1/290
		Through	C (B)	27.1 (18.5)	570 (353)	-
		Right	C (B)	27.1 (18.5)	570 (353)	-
	Northbound	Left	**F (F)**	**95.8 (95.3)**	321 (454)	-
		Through	D (D)	49.8 (38.8)	**240 (240)**	1/190
		Right	D (D)	49.8 (38.8)	**240 (240)**	
	Southbound	Left	E (E)	57.7 (58.7)	118 (183)	-
		Through	C (D)	31.5 (41.8)	177 (180)	1/220
		Right	C (D)	31.5 (41.8)	177 (180)	
	Overall Intersection		C (C)	28.3 (22.8)	-	-
Lake Mary Boulevard and Ohio Avenue/Botanical Way	Eastbound	Left	A (A)	6.9 (2.8)	172 (43)	1/440
		Through	A (A)	7.1 (9.8)	212 (297)	-
		Right	A (A)	0 (0.1)	31 (35)	1/370
	Westbound	Left	A (A)	1.8 (2.3)	54 (78)	1/440
		Through	A (A)	5.9 (4.2)	343 (142)	-
		Right	A (A)	5.9 (4.2)	343 (142)	-
	Northbound	Left	E **(F)**	72.2 **(80.6)**	127 (87)	-
		Through	E **(F)**	72.2 **(80.6)**	127 (87)	-
		Right	A (A)	0.9 (1.8)	42 (71)	1/630
	Southbound	Left	E (E)	65.5 (70.8)	91 (76)	1/265
		Through	C (C)	26.9 (25)	136 (141)	-
		Right	C (C)	26.9 (25)	136 (141)	-
	Overall Intersection		A (A)	8 (9.5)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

Table 5-21. 2050 Build Alternative Design Hour Intersection Operations (Cont'd)

Intersection	Approach	Movement	LOS	Delay (Seconds)	Maximum Queue Length (Feet)*	Available # Lanes/Storage Length (Feet)
			AM (PM)	AM (PM)	AM (PM)	
Lake Mary Boulevard and Red Cleveland Boulevard/ Proposed Connector Ramps (SPUI)	Eastbound	Left	E (E)	72.5 (70.5)	66 (156)	1/500
		Through	C **(F)**	32.3 **(86.3)**	354 (505)	-
		Right	A (A)	0 (0.1)	0 **(391)**	1/345
	Westbound	Left	D (D)	45.8 (38)	364 (351)	2/700
		Through	A (A)	3.9 (6.7)	190 (158)	-
		Right	A (A)	0 (0.6)	-	1/345
	Northbound	Left	E (E)	69.8 (72.8)	112 (226)	1/575
		Through	-	-	-	-
		Right	D (E)	47.1 (60.2)	295 (653)	1/575 1/1,520
	Southbound	Left	E **(F)**	77.8 **(101.3)**	152 (292)	1/345 1/980
		Through	-	-	-	-
		Right	A (A)	1.1 (3.1)	0 (35)	1/345
	Overall Intersection		C (D)	27.7 (54.8)	-	-
Lake Mary Boulevard and Brisson Avenue	Eastbound	Left	-	-	-	-
		Through	B (E)	18 (55.8)	605 (777)	-
		Right	B (E)	18 (55.8)	605 (777)	-
	Westbound	Left	C (C)	25.2 (34.6)	**330** (136)	1/280
		Through	D (A)	43.4 (6.4)	1,497 (223)	-
		Right	-	-	-	-
	Northbound	Left	**F (F)**	**121.1 (138.7)**	**190 (190)**	1/140
		Through	-	-	-	-
		Right	B (B)	13.4 (19.2)	991 (685)	-
	Overall Intersection		D (D)	37.5 (42.2)	-	-
Red Cleveland Boulevard and Marquette Avenue**	Eastbound	Left	E (D)	43.1 (32.3)	98 (105)	-
		Through	E (D)	43.1 (32.3)	98 (105)	-
		Right	E (D)	43.1 (32.3)	98 (105)	-
	Westbound	Left	D (D)	26.7 (28.4)	100 (73)	-
		Through	D (D)	26.7 (28.4)	100 (73)	-
		Right	D (D)	26.7 (28.4)	55 (50)	1/190
	Northbound	Left	A (A)	8.1 (8.8)	54 (53)	1/280
		Through	A (A)	0 (0)	22 (2)	-
		Right	A (A)	0 (0)	-	1/265
	Southbound	Left	A (A)	9 (8.8)	101 (76)	1/230
		Through	A (A)	0 (0)	22 (10)	-
		Right	A (A)	0 (0)	22 (10)	-
	Overall Intersection		**E** (D)	**43.1** (32.3)	-	-

- Not Applicable/Available
***Bold Font**: Unacceptable LOS or maximum queue exceeds available storage*
**SimTraffic maximum queue length*
***Unsignalized intersection*

5.5 Future Safety Evaluation

A safety analysis was conducted to evaluate the future impacts of the proposed Connector within the project limits. The analysis included the SR 417 freeway mainline, ramp segments, ramp terminal intersections, and intersections along Lake Mary Boulevard within the AOI. Predictive methods from Chapters 12, 18, and 19 of the Highway Safety Manual were used where available, along with the Interchange Safety Analysis Tool (ISATe). These methods apply a combination of Safety Performance Functions, Crash Modification Factors, and calibration factors to estimate the potential frequency and cost of crashes for each segment and intersection in the future.

The No Build and Build alternatives were evaluated and the predicted number of crashes and associated costs were compared for the 2030 to 2050 analysis period. The following crash costs were used (*Source: FDOT 2023 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 (PDO) – $7,700

The results of the future safety analysis are summarized in **Table 5-22**. The results show that the Build alternative is expected to result in fewer potential crashes compared to the No Build alternative, due to diversion of traffic to the proposed Connector. Overall, the Build alternative is anticipated to reduce predicted crashes by 786 (-13.7 percent) within the 20-year analysis period. The corresponding crash cost savings would be approximately $58 Million, in 2025 present value, a 15.8 percent reduction. Detailed safety analysis tables are provided in **Appendix H**.

It is important to note that the future safety analysis tools available to date are deterministic in nature and estimate future crashes primarily based on AADT and roadway characteristics, without considering vehicle interactions. The No Build alternative is expected to have extensive congestion and queues at the CR 427/Lake Mary Boulevard interchange and adjacent intersections which would potentially increase crashes. If congestion and queuing effects were factored in, the predicted crashes for the No Build alternative would likely be higher than those shown in **Table 5-22**. Consequently, the predicted crash reduction and cost savings associated with implementing the Build alternative would also be higher than reported.

Table 5-22. Predicted Number of Crashes and Cost Savings from 2030 to 2050

Location	Predicted Crashes	2025 Present Value
No Build Alternative		
SR 417		
Freeway Segments	2,388.5	$138,263,552
Ramp Segments	235.5	$12,976,398
Ramp Terminal Intersections	1,336.3	$25,839,454
SUBTOTAL	3,960.3	$177,079,404
Lake Mary Boulevard Intersections		
Lake Mary Boulevard and CR 427/Sanford Avenue	728.4	$79,702,096
Lake Mary Boulevard and Sanford Avenue	359.0	$39,182,325
Lake Mary Boulevard and 1750 East Lake Mary Boulevard	259.8	$28,511,896
Lake Mary Boulevard and Mellonville Avenue	105.9	$11,592,009
Lake Mary Boulevard and Ohio Avenue/Botanical Way	16.5	$1,804,421
Lake Mary Boulevard and Red Cleveland Boulevard	108.1	$11,887,833
Lake Mary Boulevard and Brisson Avenue	195.5	$21,369,669
SUBTOTAL	1,773.2	$194,050,248
TOTAL	***5,733.5***	***$371,129,652***
Build Alternative		
SR 417		
Freeway Segments	2,302.4	$134,629,834
Ramp Segments	237.4	$13,708,082
Ramp Terminal Intersections	1,104.3	$21,133,948
SUBTOTAL	3,644.1	$169,471,864
Lake Mary Boulevard Intersections		
Lake Mary Boulevard and CR 427/Sanford Avenue	528.9	$58,089,490
Lake Mary Boulevard and Sanford Avenue	229.4	$25,187,643
Lake Mary Boulevard and 1750 East Lake Mary Boulevard	157.2	$17,363,010
Lake Mary Boulevard and Mellonville Avenue	62.5	$6,880,689
Lake Mary Boulevard and Ohio Avenue/Botanical Way	9.6	$1,058,596
Lake Mary Boulevard and Red Cleveland Boulevard/Proposed Connector Ramps (SPUI)	108.4	$11,938,122
Lake Mary Boulevard and Brisson Avenue	207.3	$22,654,139
SUBTOTAL	1,303.3	$143,171,689
TOTAL	***4,947.4***	***$312,643,553***
CRASH REDUCTION AND COST SAVINGS	***786***	**$58,486,099**
% REDUCTION	**-13.7%**	**-15.8%**

6. FHWA Policy Requirements

This section discusses the proposed SR 417 and Connector interchange in relation to the two Federal Highway Administration policy points.

Point 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, 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)).

An operational and safety analysis was conducted to evaluate the impacts of the proposed SR 417 and Connector interchange on roadways within the AOI. Several performance measures were used to compare roadway operations and safety under future No Build and Build alternatives. The analysis found that the proposed interchange would not adversely affect roadway operations or safety within the study area. In fact, it is expected to improve both, at roadway segments, ramps, and intersections. The following is a summary of the findings:

- **SR 417 Mainline and Ramps**: Under 2024 existing conditions, the SR 417 mainline within the AOI operated acceptably, and the interchange ramps had adequate capacity. Future analysis showed that traffic operations on the SR 417 mainline and ramps would be similar or improved under the Build alternative compared to the No Build scenario, due to traffic diversion to the proposed Connector.
- **Intersection Operations**: Field observations and 2024 analysis showed long delays and queues during peak hours at the SR 417 and CR 427/Lake Mary Boulevard ramp terminal intersections, as well as nearby intersections on Lake Mary Boulevard at CR 427/Sanford Avenue and Sanford Avenue. These closely spaced intersections negatively impact interchange operations. Under the No Build alternative, congestion at these locations is expected to worsen as traffic increases. However, the Build alternative would significantly improve intersection operations at the CR 427/Lake Mary Boulevard interchange and along Lake Mary Boulevard, due to traffic diversion to the proposed Connector. Cumulatively, intersection delay is projected to decrease by 27 percent (AM) and 28 percent (PM) in 2030, and by 37 percent (AM) and 42 percent (PM) in 2050. Notably, delay at the Lake Mary Boulevard and CR 427/Sanford Avenue intersection would drop from

292/342 seconds (AM/PM) in 2050 No Build to 152/147 seconds with the Build—reductions of 48 percent and 57 percent, respectively. Overall, intersections at the CR 427 ramps and most along Lake Mary Boulevard would experience delay reductions ranging from 36 percent to 85 percent in 2050 peak hours, with the Build alternative. Reduced delays would also shorten queues and enhance safety.

- **Safety Analysis**: Historical crash data from 2019 to 2024 indicated that the SR 417 mainline within the AOI is not necessarily a high-crash location. The concentration of crashes along the mainline was higher at diverge and merge areas. In contrast, the CR 427/Lake Mary Boulevard ramp terminals and adjacent Lake Mary Boulevard intersections at CR 427 and Sanford Avenue were identified as high-crash locations. These intersections and the arterial segments are heavily congested during peak hours, with stop-and-go conditions.

  Future safety analysis suggests that the Build alternative would reduce potential crashes by 786 (a 13.7 percent reduction) over a 20-year period. This corresponds to an estimated crash cost savings of approximately $58 million (2025 present value), a 15.8 percent reduction. It is important to note that actual crash reductions and cost savings may be even greater, as current safety analysis tools may underestimate the effects of congestion and vehicle interactions.

Point 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 proposed Connector is a future toll facility that will essentially be designed as a set of direct-access ramps, without intermediate access, connecting SR 417 to Lake Mary Boulevard (county road) at the existing Red Cleveland Boulevard intersection. The proposed Connector will form a partial interchange with SR 417, providing access to and from the south only. Both full and partial interchange configurations were evaluated for the SR 417 terminus. However, the ramps to/from the north were eliminated due to: (1) low projected traffic demand of approximately 1,700 AADT for both ramps by 2050, and (2) potential weaving concerns with the nearby CR 427/Lake Mary Boulevard interchange. The proposed access will be designed to meet or exceed current engineering standards, with a design speed of 50 mph for the SR 417 and Connector ramps. It should be noted that the design of the ramps to/from the south does not preclude the future addition of ramps to/from the north. If such expansion is needed, it would require a new study and the preparation of an IMR.

7. Other Considerations

7.1 Local Transportation Plans and Planning Studies Consistency

The IJR considered all planned and programmed roadway improvements within the study area, as previously mentioned in **Section 4.2.2**. The proposed SR 417 Sanford Airport Connector is included in both the 2045 MetroPlan Orlando Master Transportation Plan and CFX's 2045 Master Plan.

7.2 Funding Plan

The PD&E Study for the proposed Connector is funded and is expected to be completed by the end of 2025. However, funding for design, right-of-way acquisition, and construction is currently not included in CFX's five-year work program.

7.3 Access Management Agreement for Interchange Cross Streets

The proposed interchange at SR 417 will not connect to an existing or future cross street; therefore, an access management agreement is not required. The proposed Connector is a future facility consisting of a set of direct-access ramps, without intermediate access, connecting SR 417 to Lake Mary Boulevard (county road) at the existing Red Cleveland Boulevard intersection, approximately 1.6 miles from SR 417.

7.4 Intergovernmental Coordination

During the CF&M Study and throughout the PD&E Study, CFX engaged in extensive coordination with local governments and stakeholders within the study area, including Seminole County, the City of Sanford, FTE, and Orlando Sanford International Airport. CFX also held targeted meetings with environmental, project-specific, and community groups. In addition, the following public meetings were conducted as part of the PD&E Study: Public Kickoff Meeting, Alternatives Public Meetings, and Public Hearing.

7.5 Conceptual Signing Plan

There are no anticipated signing issues with the proposed SR 417 and Connector interchange. A conceptual signing plan is provided in **Appendix E**.

7.6 Future Tolling at the SR 417 Lake Jesup Plaza

While the proposed Connector ramps would be located just south of the existing SR 417 Lake Jesup toll plaza, CFX is committed to preserving FTE's toll collection and revenue in its entirety and proposes the following two options in that regard: (1) unified toll collection, and (2) relocation of the SR 417 mainline gantry south of the proposed Connector. Depending on the option agreed upon by both CFX and FTE management, and whether the PD&E Study is approved by the CFX Governing Board, and the decision to move forward with design is made, CFX commits to fully evaluating the details involved for the option selected after the PD&E Study is completed. Additional details are outlined in the letter provided in **Appendix I**.

For traffic modeling purposes, the toll point on the SR 417 mainline at Lake Jesup was assumed to be located south of the proposed Connector. This assumption ensured that all SR 417 traffic was tolled and provided a reasonable estimate of the traffic expected to use the proposed Connector. This modeling approach reflected either of the two proposed tolling options.

8. Conclusion

This IJR was prepared for the proposed SR 417 and Connector partial interchange access request, and to support the PD&E Study for the Connector. The purpose of the proposed Connector is to provide a direct access to the Airport, enhance local connectivity, and improve traffic operations and safety. It will be a two-lane tolled facility extending from SR 417 northeastward to Lake Mary Boulevard as a new alignment approximately 1.6 miles long, to be built and operated by CFX. The proposed Connector will include a partial interchange at SR 417 with ramps to/from the south only. It will not have intermediate access and the design and posted speed will be 45 mph. It will terminate at the existing Lake Mary Boulevard (county road) and Red Cleveland Boulevard intersection as a local SPUI.

The analysis was conducted for the 2024 existing, 2030 opening and 2050 design years. The SR 417 mainline within the AOI operated acceptably in the 2024 existing conditions and the interchange ramps had adequate capacity. However, field observations and the analysis showed long delays and queues during peak hours at the SR 417 and CR 427/Lake Mary Boulevard interchange. The adjacent intersections on Lake Mary Boulevard at CR 427 and Sanford Avenue were also congested and impacted the interchange operations. Further, historical crash data analysis showed that there is a high concentration of rear end and angle crashes at the interchange and adjacent intersections, which are typical at locations with stop-and-go traffic conditions.

The PD&E Study evaluated the No Build alternative, and six Build alignments to screen viable alternatives for the proposed Connector. Following extensive public and stakeholder engagement and based on the evaluation matrix prepared for screening purposes, the Preferred Alternative (Alignment 2A) was selected. Further, both full and partial interchanges at the SR 417 terminus were evaluated. However, the ramps to/from north were eliminated due to: (1) low projected traffic demand of approximately 1,700 daily for both ramps in 2050, and (2) potential weaving concerns with the existing CR 427/Lake Mary Boulevard interchange. It was determined that a partial interchange with ramps to/from the south only would be considered. The design speed for the proposed SR 417 Connector ramps is 50 mph. It should be noted that the design for the ramps to/from the south does not preclude addition of ramps to/from north if needed in the future, in which case, a new study will be required.

Based on the analysis, the projected daily traffic for the proposed Connector is 20,900 in the 2050 design year, and two lanes would be sufficient. However, the typical section provided can accommodate four lanes if additional capacity is needed in the future. The analysis also showed that most of the traffic expected to use the proposed Connector would be diverted from the SR 417 and CR 427/Lake Mary Boulevard interchange ramps to/from the south, and the majority would be traveling east on Lake Mary Boulevard past the Airport, and farther northeast on SR 415 to Osteen. It is estimated that daily traffic at the CR 427 ramps would reduce by approximately 52 percent in the 2050 design year. Similarly, traffic would reduce along Lake Mary Boulevard between SR 417 and Red Cleveland Boulevard, by approximately 46 percent in the 2050 design year.

The analysis also showed that, in the future, traffic operations on the SR 417 mainline and ramps would be similar or better with the Build alternative compared to the No Build alternative, due to traffic diversion to the proposed Connector. For the intersections, the results showed that there would be a significant improvement in operations with the Build alternative at the CR 427/Lake Mary Boulevard interchange and along Lake Mary Boulevard. Cumulatively, the reduction in intersection delay is expected to be 37 and 42

percent in 2050 AM and PM peak hours, respectively. Further, the reduction in the individual intersection delay would be much higher. Of note, the Lake Mary Boulevard and CR 427/Sanford Avenue intersection delay in 2050 AM and PM No Build would reduce by 48 and 57 percent. Generally, the CR 427 ramp intersections and most of the intersections along Lake Mary Boulevard would experience a reduction in delay ranging from 36 percent to 85 percent in 2050 peak hours, with the Build alternative. When delays reduce, queue lengths and crashes would also reduce.

Future safety analysis showed that the Build alternative is expected to result in fewer potential crashes compared to the No Build alternative, due to diversion of traffic to the proposed Connector. Overall, the Build alternative is anticipated to reduce predicted crashes by 786 (-13.7 percent) within the 20-year analysis period. The corresponding crash cost savings would be approximately $58 Million, in 2025 present value, a 15.8 percent reduction. It is important to note that the predicted crashes for the No Build alternative would likely be higher than reported, if congestion queuing impacts and vehicle interactions can be fully accounted for in the future safety analysis tools. Consequently, the predicted crash reduction and cost savings associated with implementing the Build alternative would also be higher than reported.

It can be concluded that the proposed Connector and interchanges will not have an adverse impact on the operations and safety of the roadways within the study area. In fact, the proposed Connector will improve operations and safety at the existing roadway segments, ramps and intersections. Further, the Connector will provide a shorter and faster route from SR 417 to the Airport, and to Lake Mary Boulevard east and northeast of the Airport, benefiting regional trips.

APPENDICES

Provided Seperately