Eller Drive & McIntosh Road Intersection Improvement Feasibility Study

Existing Conditions Report

Prepared for:

Port Everglades

and

Florida Department of Transportation District IV

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February 2024

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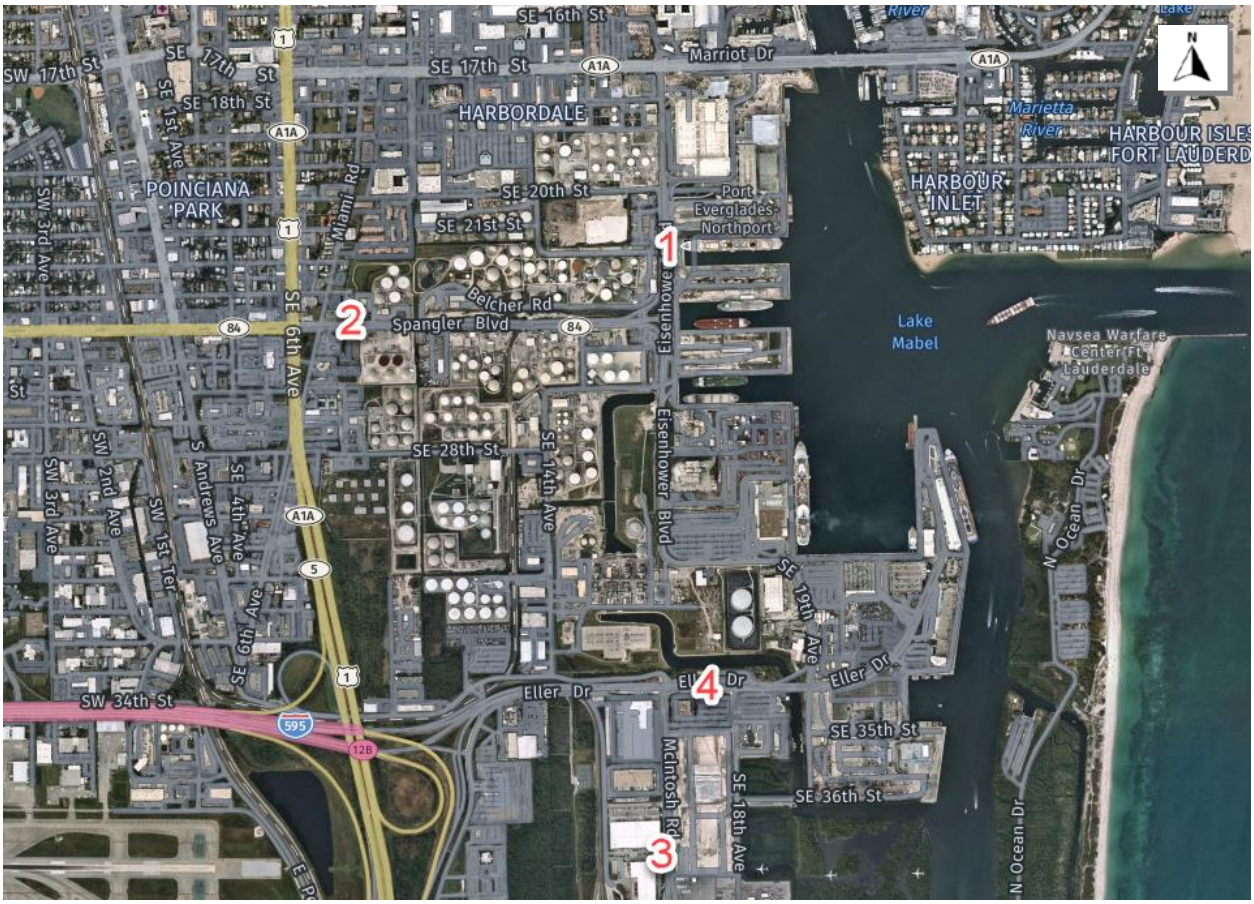
1 Introduction

Located in Broward County, Florida, Port Everglades (PEV) is one of the busiest cruise ports in the world. It is a leading container port in Florida and among the most active cargo ports in the United States. Port Everglades is South Florida's main seaport for receiving energy products including gasoline and jet fuel. Its Foreign-Trade Zone No. 25, office space inside the port's secure area and neighboring logistical warehouses makes Port Everglades a highly desirable business center for world trade.

Port Everglades is accessible by all modes of transportation including car, truck, taxi, ridesharing, bus, train, and ship. It has four security gates located at 1) Eisenhower Boulevard, 2) Spangler Boulevard, 3) McIntosh Road, and 4) Eller Drive, as shown in Figure 1.

Figure 1. Port Everglades Security Gates



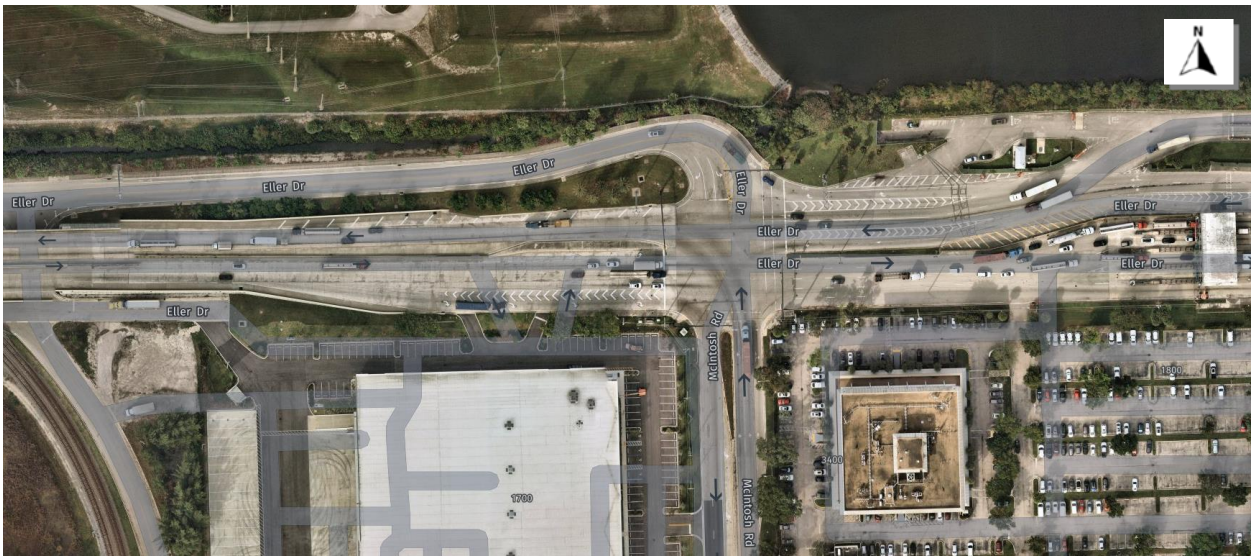
The intersection of Eller Drive and McIntosh Road provides direct connection to two of the four PEV's security gates and are used by trucks traveling to and from the Southport container facility, and passenger vehicles to and from Midport cruise terminals. During the peak cruise season, the intersection experiences significant congestion and delays, especially in the security gate areas where both cruise passenger and cargo truck traffic converge during cruise boarding times.

PEV and the Florida Department of Transportation (FDOT) District Four (D4) are partnering to conduct a feasibility study for improving the study intersection of Eller Drive and McIntosh Road within the PEV's jurisdictional area. The study aims to identify up to five (5) alternatives and validate a preferred option

to improve safety, mobility, and overall traffic operation at the intersection of Eller Drive at McIntosh Road. Alternatives include no-build, at-grade, partial grade separation, and full grade separation alternatives including assessing the proposed I-595 Flyover Project as outlined in PEV's 5-Year Capital Improvement Plan (CIP).

Figure 2 shows the study area which encompasses I-595 terminus to the west, a railroad crossing below the Eller Drive Overpass and entering the Intermodal Container Transfer Facility (ICTF), and the PEV security gate located on Eller Drive to the east of McIntosh Road.

Figure 2. Project Study Area



Study tasks include 1) field review and observations, 2) existing and future conditions, 3) crash data and analysis, 4) travel demand forecasting, 5) traffic operational analysis, 6) existing conditions report, 7) conceptual design and alternatives, 8) construction cost estimate, 9) benefit-cost analysis (BCA), 10) alternatives evaluation, 11) final recommendations, and meetings, reports, and presentations. This Existing Conditions Report provides findings and summaries from task 1 through task 6.

PEV is currently in the process of updating its 20-year Master/Vision Plan. This study will provide inputs to the 2023 Master/Vision Plan Update and support decision making for crucial infrastructure projects.

2 Field Reviews and Observations

Field Reviews

To observe and assess operational characteristics of the study intersection and the study area. Consultant staff members conducted the following field reviews and data collection efforts:

1. Field observations during early April 2023,
2. Drone flights and video footage during mid November 2023, and
3. Field traffic data collection during late November and early December 2023.

On Monday 4/3/2023, TranSystems staff conducted the first field visit at the study intersection and the vicinity area to observe roadway and traffic characteristics from 9 AM to 2 PM. Heavy eastbound trucks and traffic volumes were noticed, as well as high truck demand from the northbound approach making left turns onto I-595. It was observed that the eastbound traffic queue starting from the Eller Drive security gate sometimes spilled back to study intersection and blocked northbound traffic from entering the intersection as shown in the picture below. This was likely due to a combination of occasional long processing time at the security gate and lack of storage distance (500') between the security gate and the intersection, rather than intersection capacity and operations.

Figure 3. Observed Study Intersection Blockage (from Southeast)

Source: TranSystems

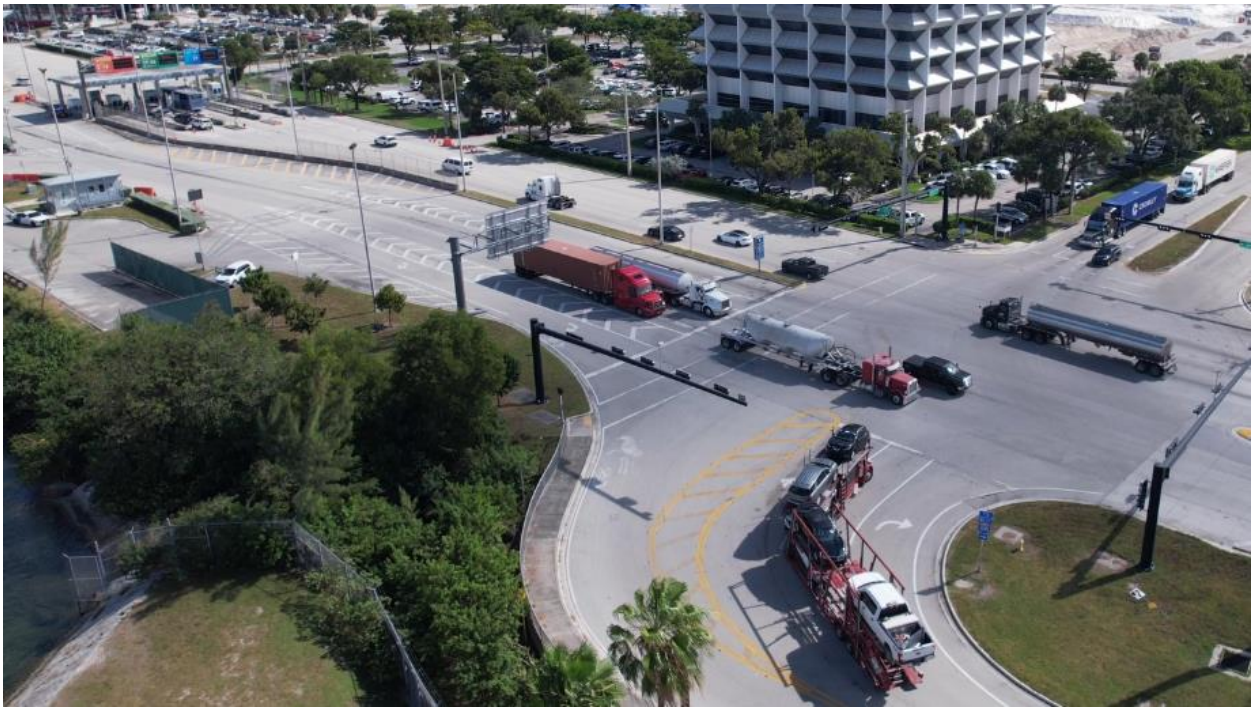
On Sunday 11/12/2023 and Monday 11/13/2023, the study team, through coordination with PEV and Federal Aviation Administration (FAA), conducted multiple drone flights to observe and record videos for mid-day peak period (11 AM to 1 PM) intersection and Eller Drive security gate operations. Figure 4 and Figure 5 show sample images from the footage. It is evident from the drone footage that trucks, especially turning left or right, needed longer time to clear the intersection than general traffic (6-7 seconds vs. 3-4 seconds), and truck headways are also longer than general traffic (6 seconds vs. 2 seconds). It is also noticed that right turns for eastbound and southbound trucks are difficult and require trucks to slow down and encroach on to the second lane from the right. Large trucks turning

south from eastbound often rid over the median. Southbound right turn trucks often turn from the center or left lane to avoid riding the curb.

Figure 4. Drone Footage for Intersection Operations (from Northeast)

Source: TranSystems

Figure 5. Drone Footage for Eller Drive Security Gate Operations (from Northwest)



Source: TranSystems

During late November and early December 2023, the study team conducted field traffic data collection for AM, MD, and PM peak intersection turning movement volumes and a 24-hour weekday approach counts and a 24-hour weekend day approach counts. Traffic data collection summary is provided in

Chapter 5 of this report. Raw traffic data collection sheets are provided in **Appendix A**.

Beside the above observations, the study team is made aware of several instances where truck queues going into Southport cargo terminals spilled back onto the eastbound approach. However, these appear to be related to Southport security gate operations and terminal operations. The terminal closure during lunch hours contributes to these queues, indicating that they are more associated with terminal operation rather than the study intersection's capacity and operations.

Figure 6. Southport Truck Queue Spill Back on October 6, 2023 (from PEV Admin Building)

Source: PEV

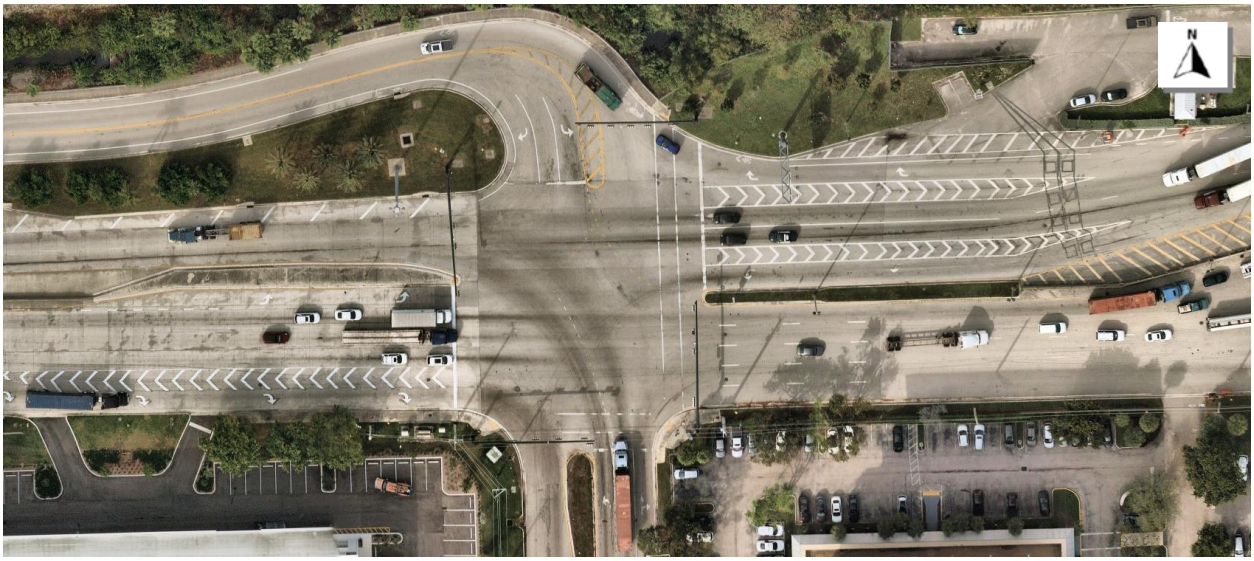
Figure 7. Truck Queues to and from Southport on November 30, 2023 (from Northeast)

Source: TranSystems

Roadway Characteristics

The study intersection, shown in Figure 8, has an unusual configuration. Eller Drive intersects with McIntosh Road and I-595 in a primarily east/west alignment with a sharp curve just north of the intersection.

Figure 8. Study Intersection



Intersection Geometries

The eastbound approach consists of one left-turn lane, three through lanes, and a channelized right-turn lane that provides access to McIntosh Road. On the receiving side, there are five lanes leading to the Eller Drive security gate. The northbound approach comprises two left-turn lanes and one shared right-through lane. There is one northbound receiving lane on Eller Drive. The westbound approach features two through lanes, a separated right-turn lane onto westbound Eller Drive and a separated left-turn lane onto southbound McIntosh Road. There are two westbound receiving lanes. The southbound approach has one through lane, one left-turn lane, and one right-turn lane. The storage length of both turn lanes is limited. The southbound receiving side has two lanes leading to the McIntosh Road security gate. All travel lanes are 11’ to 12’ wide. Table 1 below summarizes study intersection geometries.

Table 1. Study Intersection Geometries

Approach	Movement	# of Lanes	Lane Width	Storage	Taper
Eastbound	Left	1	12’	200’	70’
	Through	3	12’	-	-
	Right	1	12’	350’	240’
Northbound	Left	2	11’	-	-
	Through & Right	1	11’	200’	100’
Westbound	Left	1	12’	300’	140’
	Through	2	12’	-	-
	Right	1	12’	250’	150’
Southbound	Left	1	12’	75’	50’
	Through	1	12’	-	-
	Right	1	12’	75’	50’

Driveways

An eastbound right-in/right-out (RIRO) opening is located at about 200' west of the intersection, connecting to the warehouse area at the southwest quadrant. Another eastbound RIRO opening is located at 300' east of the study intersection, connecting to the U.S. Customs and Border Protection Office at the southeast corner. Upstream of the westbound approach, there is an inspection area for outbound trucks, and a small parking lot for Marnelli Park.

Posted Speeds

I-595 west of the intersection has a posted speed limit of 45 mph. Eller Drive east of the intersection has a speed limit of 20 mph. Eller Drive north of the intersection has a speed limit of 30 mph. Posted speed limit along McIntosh Road south of the intersection is unavailable. For traffic analysis purposes, a speed limit of 30 mph is applied.

Intersection Right-of-Way

Right-of-Way (ROW) of the intersection and adjacent area is shown in Figure 9 below. ROW is limited north of Eller Drive, and at the southwest quadrant of the intersection.

Figure 9. Intersection ROW

Source: Broward County Property Appraiser, November 2023

Traffic Control

The intersection is currently signal controlled with a 2070 LN controller. Timing parameters were recently modified by Broward County Traffic Engineering Division (BCTED_ in October 2022. The signal is currently running as actuated uncoordinated.

Context Classification

As of November 2023, the current context classification of Eller Drive east of the intersection is SDC3C. Eller Drive north of the intersection is C3C. Context classifications for I-595 to the west and McIntosh Road to the south are not available.

Functional Classifications

I-595 west of the intersection is an Urban Principal Arterial. Eller Drive north of the intersection is an Urban Major Collector. Eller Drive east of the intersection is an Urban Minor Collector. The McIntosh Road south of the intersection is undetermined in the current Broward County Road Jurisdiction and Functional Classification Map, as provided in **Appendix A**.

Bicycle and Pedestrian Facilities

Pedestrian crosswalks are on the east and south legs of the intersection with pedestrian signals. Additionally, there are no sidewalks on all approaches except for a 6-foot sidewalk along the north side of the north-leg approach. A pedestrian sidewalk currently exists along the north side of Eller Drive. There is a short sidewalk on the south side of the I-595 terminus. Sharrow and a marked bike lane exist on the north leg of the intersection. On the westbound approach, there is a short segment of bike lane connecting with the sharrow lane on Eller Drive.

Mass Transit

Currently, there is no Broward County Transit (BCT) route serving the study intersection. However, there are BCT local bus stops at the Northport section on SE 17th Street, and local and breeze buses on US 1 to the west. Additionally, there are privately operated shuttle bus services connecting PEV with other local destinations.

Signal Detection

CCTV cameras are installed on all four mast arms at the intersection for vehicle detection. Pedestrian push buttons and pedestal poles are installed for people crossing the intersection along the east leg and south leg where crosswalks are provided.

Lighting

A high mast street light pole is installed at the northwest quadrant of the intersection, next to the mast arm facing westbound traffic.

Pull/Splice Boxes

According to the intersection as-build plans, shown in **Appendix A**, there are 15 pull boxes at the intersection (Pay Item 635-1-11). Locations of the pull boxes are shown in the plans.

3 Existing and Future Conditions Review

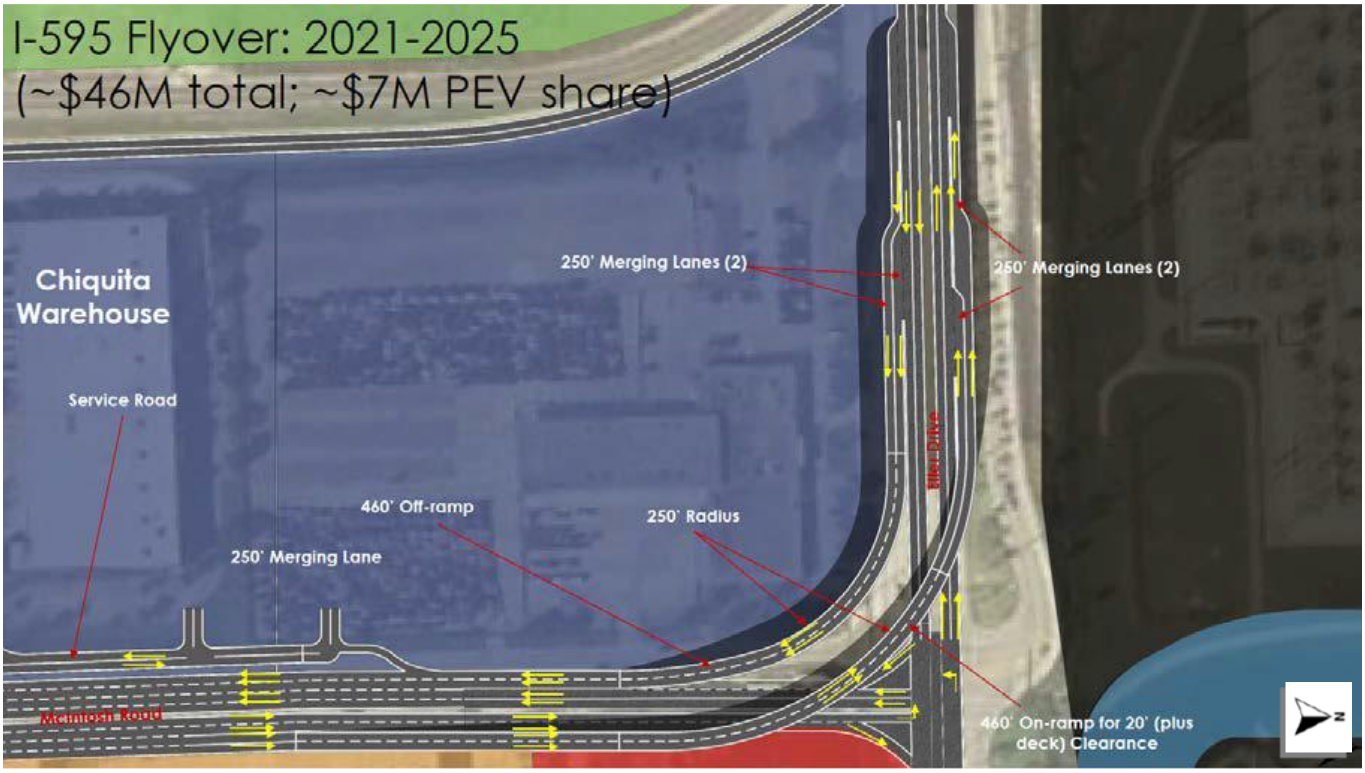
Review of 2019 PETA Study

In 2019, PEV completed a Port Everglades Traffic Analysis (PETA) to evaluate the impacts of proposed PEV projects, developed as part of the 2018 Master/Vision Plan Update, on the on-port and surrounding roadway network and provide recommendations on the roadway infrastructure improvement and alternatives to facilitate passenger and goods movements in and around PEV.

At the study intersection, the PETA evaluated the I-595 flyover project using detailed VISSIM microsimulation and traffic and truck volume projection based on market analysis completed as part of the 2018 Master/Vision Plan Update.

The I-595 flyover to and from McIntosh Road includes the flyover from I-595 eastbound to the McIntosh Road southbound, as well as the flyover from McIntosh Road northbound to I-595 westbound, with direct access for trucks to and from I-595 and McIntosh Road, as shown in Figure 10.

Figure 10. I-595 Flyover Project Concept



Source: 2019 PETA study

The PETA study indicated that the proposed I-595 Flyover project will not bring relief to cruise traffic. The vehicle processing time at the Eller Drive security gate is the primary reason for the prolonged delays, even though high traffic volumes are also a major contributing factor.

Other recommendations of the PETA for this study intersection include:

- Reduce security gate processing time on Eller Drive and Eisenhower Boulevard.
- Check Right-Of-Way (ROW) and vertical/horizonal clearance requirements for I-595 flyover.

- Coordinate with FDOT and Other Agencies on the Development of Proposed Projects

Review of Other Relevant Projects

In preparation of the project, the study team reviewed and documented efforts, concepts, conclusions and impacts from the following relevant projects. Project summaries are provided in this section.

- Airport-Seaport-Convention Center Connector
- Griffin Road Extension/ NE 7th Avenue Improvements/McIntosh Road Realignment Project
- Port Everglades By-Pass Road Improvements Project
- Southbound US 1 to Westbound I-595 On-Ramp
- Other Projects

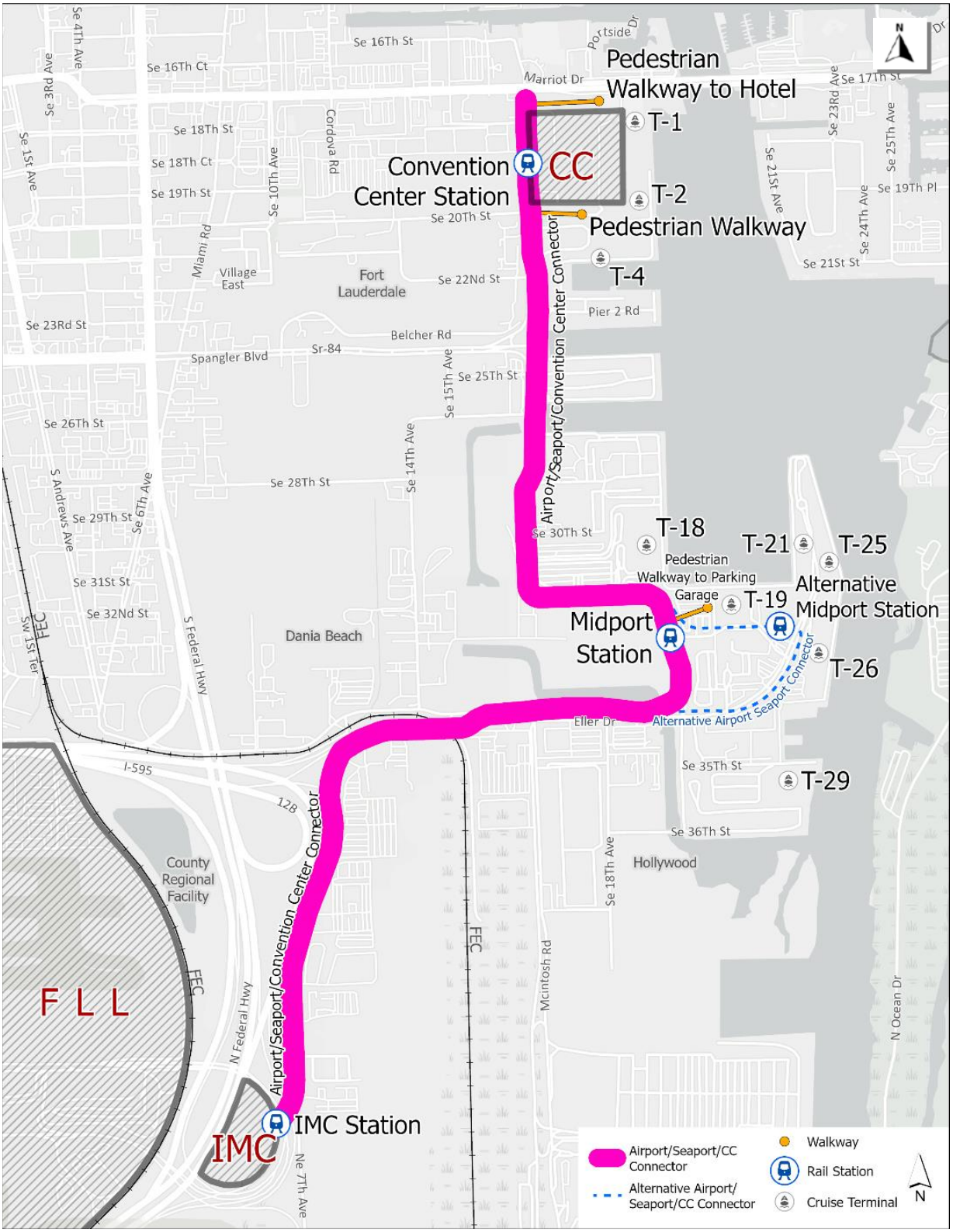
Airport-Seaport-Convention Center Connector

As part of the Premium Mobility Plan (PREMO), Broward County Transit (BCT) will study light rail transit (LRT) connecting Fort Lauderdale-Hollywood International Airport (FLL), Port Everglades, and the Broward County Convention Center, as shown in Figure 11. The Airport-Seaport-Convention Center Connector is planned to be 3.5 miles with 3 stations: Intermodal Center at FLL, Midport Cruise Terminals at PEV, and the Convention Center. The project is designed to provide a direct link between FLL, PEV's cruise terminals, and the Broward County Convention Center (BCCC). This project aims to efficiently transport cruise passengers, convention goers, and flight travelers between the airport, seaport, and convention center.

This transit project has the potential to reduce traffic by replacing conventional vehicle trips (such as cars, ride-hailing, taxis, and buses) to and from the PEV. It will alleviate traffic congestion, particularly for traffic via Eller Drive to Midport cruise areas. Thus, it will help alleviate cruise-related traffic at the intersection of Eller Drive and McIntosh Road.

BCT advanced the project by including capital planning budget funding of $81.7 million in FY25 for planning, design, and project management and $202.5 in FY27 for construction, anticipating FTA New Starts support for 50% of the total program cost.

Figure 11. Airport-Seaport-Convention Center Connector Project Map



Source: BCT PREMO

Griffin Road Extension/NE 7th Avenue Improvements/McIntosh Road Realignment Project

The eastern segment of SR 818/Griffin Road ends at NE 10th Avenue along the southern periphery of Fort Lauderdale/Hollywood International Airport (FLL). NE 7th Avenue runs along the eastern perimeter of FLL. McIntosh Road, lying parallel to the east of NE 7th Avenue, is the main access to the Southport area.

The Griffin Road Extension and NE 7th Avenue Improvement Projects propose to expand the existing NE 7th Avenue to four lanes (with two lanes in each direction) and extend to Griffin Road eastward from the improved NE 7th Avenue to connecting with McIntosh Road. The McIntosh Road Realignment aims to remove the existing Security Gate on McIntosh Road and reconfigure the current McIntosh Loop Road into a bi-directional multi-lane roadway, facilitating traffic in both directions. The reconfiguration will establish a secondary Southport's access point for truck traffics. Furthermore, the project proposes to realign McIntosh Road to a western alignment, making optimal use of the available adjacent land for an additional container yard. These three projects, shown in Figure 12, fall under the containerized cargo projects category in the 10-Year Vision Plan. Note that PEV is currently undertaking a new round of Master/Vision Plan Update which will include updated information of this project.

Figure 12. Griffin Rd Extension/NE 7th Ave Improvements /McIntosh Rd Realignment Project

Source: 2018 PEV Master/Vision Plan Update

These projects will efficiently improve truck traffic access to and from the southern access point for Southport. Currently, McIntosh Road serves as a single entry and exit point for the Port Everglades' Southport container terminals and the Intermodal Container Transfer Facility (ICTF), accommodating all truck traffic serving for the four Southport container terminals. This means that all truck traffic is limited to entering and exiting through a single intersection of McIntosh Road at Eller Drive. With the Griffin Road extension project, the southern end of McIntosh Road will connect to the existing Griffin Road, providing a secondary access road that will improve traffic flow to Southport, thereby alleviating truck-related congestion at the study intersection. According to the 2019 PETA study, it is projected that approximately 25 percent of future truck and passenger traffic could be directed away from the I-595

terminus to use Griffin Road to access Southport.

For continued Southport access improvement, NE 7th Avenue serves as an alternative route, connecting to the extended Griffin Road. The NE 7th Avenue Improvement project will increase traffic capacity by expanding the lanes, thereby improving the traffic conditions at the intersection of Eller Drive and NE 7th Ave and alleviating congestion for inbound port traffic. This alternative ensures that future truck traffic will still have access to the Southport Security Gate.

Port Everglades Bypass Road Project

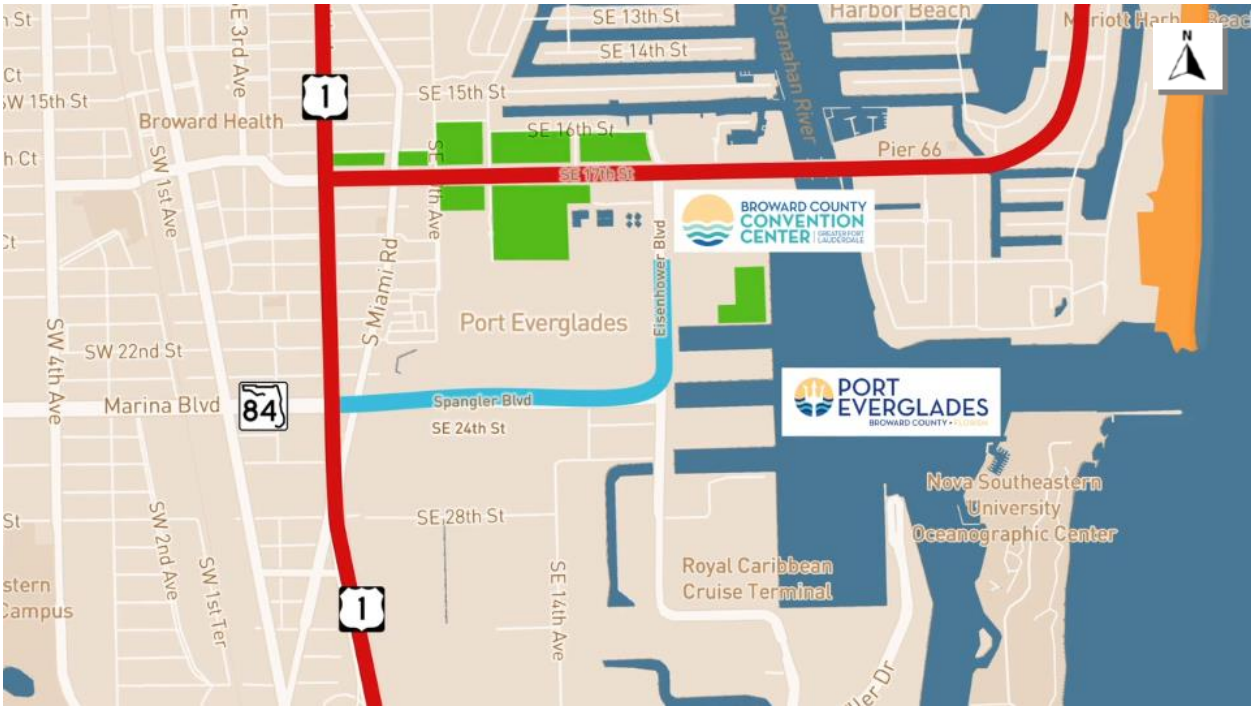
The project includes a new two-lane road with security fencing, a bridge with barrier wall, a roundabout to facilitate port traffic movement, security check points, lighting, traffic signals, intelligent transportation systems, and signage and pavement markings.

The planned bypass road, as shown by the blue line in Figure 13, will extend from the intersection of US 1 and SR 84 (Spangler Boulevard) to the intersection of SE 20th Street and Eisenhower Boulevard. The bypass will be separated by barrier walls and security fencing. For traffic signal improvement, an adaptive traffic control system will be implemented along US 1, extending northward from I-595, and SE 17th Street east of US-1 to the beaches. The adaptive system will allow for real-time adjustments to signal timings based on dynamic traffic conditions, ultimately improving traffic flow.

The project is expected to separate eastbound traffic on SR 84 by providing future truck traffic with a direct route to the security access gate at Spangler Boulevard. Additionally, it will provide direct access to the convention center and PEV terminals 2 and 4 for other types of traffic, thereby eliminating unnecessary travel for cruise passengers and convention attendees passing through the Northport security access gate at Spangler Boulevard. This is expected to reduce traffic queues at the Northport security gate. Similarly, the roadway will bypass the security gate at Eisenhower Boulevard, effectively separating southbound traffic on Eisenhower Blvd by providing direct access to other port terminals and US 1. However, according to the 2019 PETA study, the bypass project is unlikely to benefit the port directly or indirectly.

The Bypass Road Project is scheduled to begin construction in 2024.

Figure 13. Port Everglades Road Bypass Road Project Map



Source: Broward County Transit

Figure 14. Port Everglades Bypass Road Project Views

Source: https://www.classengraphics.com/photos/port-everglades-bypass-road

Southbound US 1 to Westbound I-595 On-Ramp

This FDOT project, as shown in Figure 15, begins at the intersection of SE 30th Street on US 1 Southbound and extends to the end of the I-595 on-ramp gore. It is proposed to widen the ramp over Eller Drive and the bridge over FEC, with potential implications for future traffic operations in the vicinity of the Port. During peak periods, southbound traffic on US 1 is easily observed queueing back to SR 84 from I-595. To alleviate traffic congestion along US 1 between I-595 and SR 84, a concept improvement plan has been introduced. This plan entails the expansion of the existing single-lane on-ramp from southbound US 1 to westbound I-595, increasing it to two lanes. This improvement will provide an additional on-ramp lane to I-595 for vehicles on US 1. And the signage and pavement markings will be improved to inform motorists of the improved interchange configuration. The second southbound lane to the on-ramp will increase capacity for vehicles entering I-595, thereby reducing the length of the queues on US 1. The project is currently in design.

Figure 15. Southbound US 1 to I-595 Westbound Concept

Source: FDOT FM# 443589-1 Southbound US 1 to Westbound I-595 On-Ramp

Other Projects

Eller Drive at SE 19th Avenue Intersection Reconfiguration

This intersection is proposed with an additional left-turn lane on the eastbound approach. Reconfiguration includes dual left-turn lanes, one through lane, and one shared through/right-turn lane. This intersection is the closest signalized one in the vicinity of the study area, located 1,550 feet east of the study intersection. However, the PETA study concluded that the SE 19th Avenue intersection

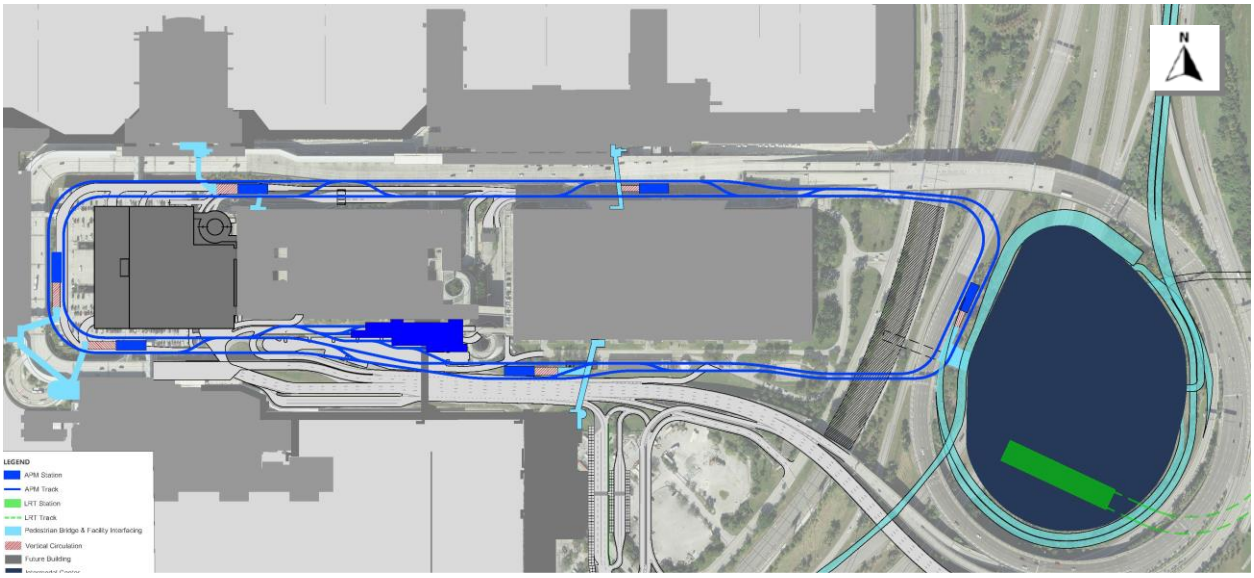
will still operate at LOS F by 2038 due to projected high cruise traffic in 2038. Additional recommendations from the PETA study include:

- Collaborate with cruise companies to develop staggered boarding schedules
- Consider potential grade separation in the future while recognizing the constraints imposed by the right-of-way and the associated financial implications

Broward County Intermodal Center

Broward County and FDOT D4 are currently planning for an Intermodal Center (IMC) east of the Fort Lauderdale-Hollywood International Airport (FLL) with a direct connection from and to I-595, as shown in Figure 16. The future intermodal transportation center will include transfers to Broward County Transit System including the Airport-Seaport-Convention Center Connector, Broward Commuter Rail (BCR), and future FLL Automated People Mover (APM).

Figure 16. Broward County Intermodal Center



Source: Fort Lauderdale-Hollywood International Airport (FLL)

Developments in the surrounding area and travel pattern changes are expected as a result of this project. The study will coordinate closely with Broward County and FDOT on progress and findings from this project.

Traffic Characteristics

Historical roadway AADTs were obtained from the 2022 Florida Traffic Online (FTO). The traffic data are available for I-595 west of McIntosh Road, Eller Drive north of I-595, and Eller Drive east of McIntosh Road. Data for McIntosh Road south of Eller Drive is unavailable from FTO. AADT and Truck Percentage from FTO, and roadway segment LOS are summarized in **Table 3**.

Table 2. Florida Traffic Online 2022 AADT, Truck Percentage, and LOS

Intersection	Location	2022 AADT	Truck %	Segment LOS
Eller Drive and Mcintosh Road	Eller Drive North of I-595	2,500	7.3%	C
	Eller Drive East of McIntosh Road	6,400	3.9%	C
	I-595 West of McIntosh Road	13,000	7.3%	B
	McIntosh Road South of Eller Drive	NA	NA	NA

Source: 2022 Florida Traffic Online

The 2019 PETA study also provided volume projection to 2023 with passenger vehicles and trucks estimated separately. PETA 2023 AADT and truck % are shown in Table 33. All roadway segments at the intersection of Eller Drive and McIntosh operate at an acceptable LOS. No roadway segments experience capacity deficiency as of 2023.

Table 3. PETA Projected 2023 AADT, Truck Percentage, and LOS

Intersection	Location	2023 AADT	Truck %	Segment LOS
Eller Drive and Mcintosh Road	Eller Drive North of I-595	3,900	4.8%	C
	Eller Drive East of McIntosh Road	15,600	26.4%	C
	McIntosh Road South of Eller Drive	6,000	60.2%	C
	I-595 West of McIntosh Road	19,100	39.7%	B

Source: 2019 PETA Study

The study team also completed intersection turning movement counts and approach counts. Traffic data collected are provided in Chapter 5. The data collection included pedestrian and bicycle crossing activities which were low at the intersection.

As discussed in Chapter 2, eastbound traffic queue starting from the Eller Drive security gate periodically spills back to study intersection and blocks northbound traffic from entering the intersection. This is likely due to a combination of occasional long processing time at the security gate and lack of storage distance (500') between the security gate and the intersection, rather than intersection capacity and operations. In addition, it is evident that trucks needed longer time to clear the intersection than general traffic, and truck headways are also significantly longer than general traffic.

Current and Future Land Use

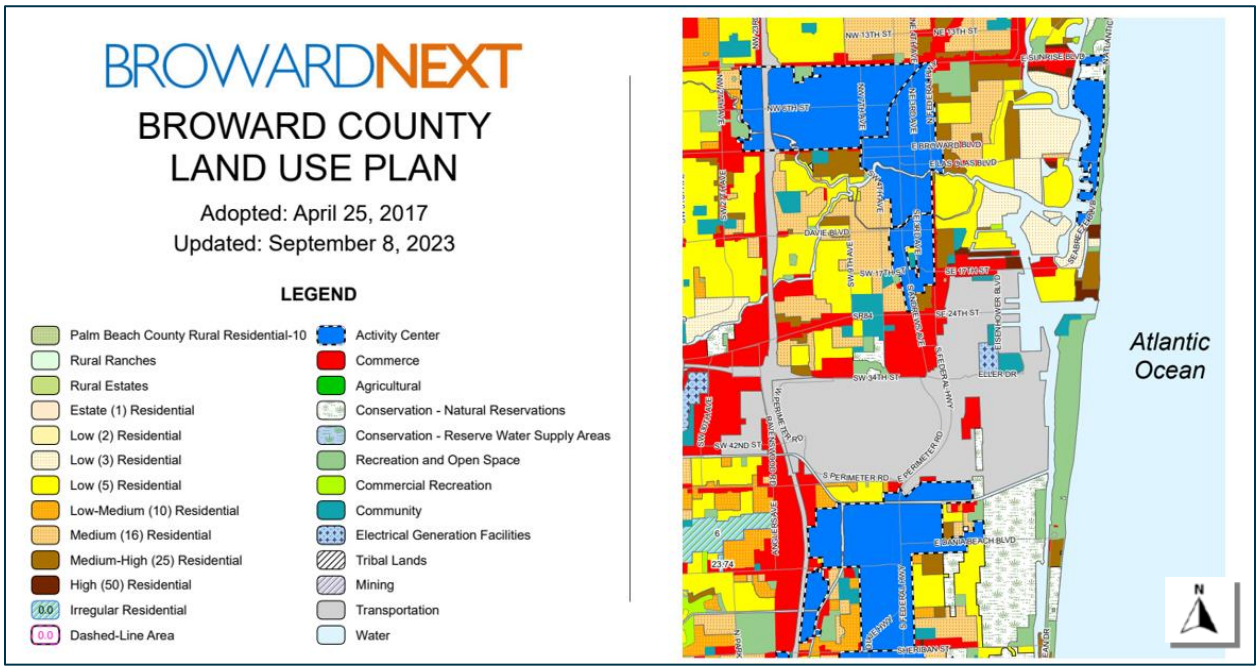
The existing area surrounding the intersection primarily consists of commercial offices, an electrical generation facility, FP&L cooling canal, warehouses, container yard, and recreational park. The 16-acre Port Everglades International Logistics Center (ILC), shown in Figure 17, is categorized as a containerized cargo project in the 5-year Capital Improvement Plan (CIP). It is located west of McIntosh Road and adjacent to the Intermodal Container Transfer Facility (ICTF). This project is anticipated to significantly enhance logistics capabilities at Southport, resulting in a substantial increase in truck traffic both entering and exiting the port.

Figure 17. PEV International Logistics Center (ILC)

Source: 2018 PEV Master/Vision Plan Update

According to the Future Broward County Land Use Plan Map, shown in Figure 18, the areas located at the north of Eller Drive are designated for electrical generation facilities (FP&L) and community use. The areas located west of McIntosh Road and south of I-595 are designated for commerce use.

Figure 18. Broward Future Land Use Map



Source: BrowardNext Future Land Use Plan

In PEV's 5-Year CIP, Phase 9C-1 Project is proposed to convert a currently utilized four-acre area for surface transportation operations into a container yard. As a result, it is anticipated that the Southport container yard will expand by approximately four more acres in 2025. The location of the planned Phase 9C-1 Project is shown in Figure 19.

Figure 19. Phase 9C-1 Container Yard Project Location

Source: 2018 PEV Master/Vision Plan Update

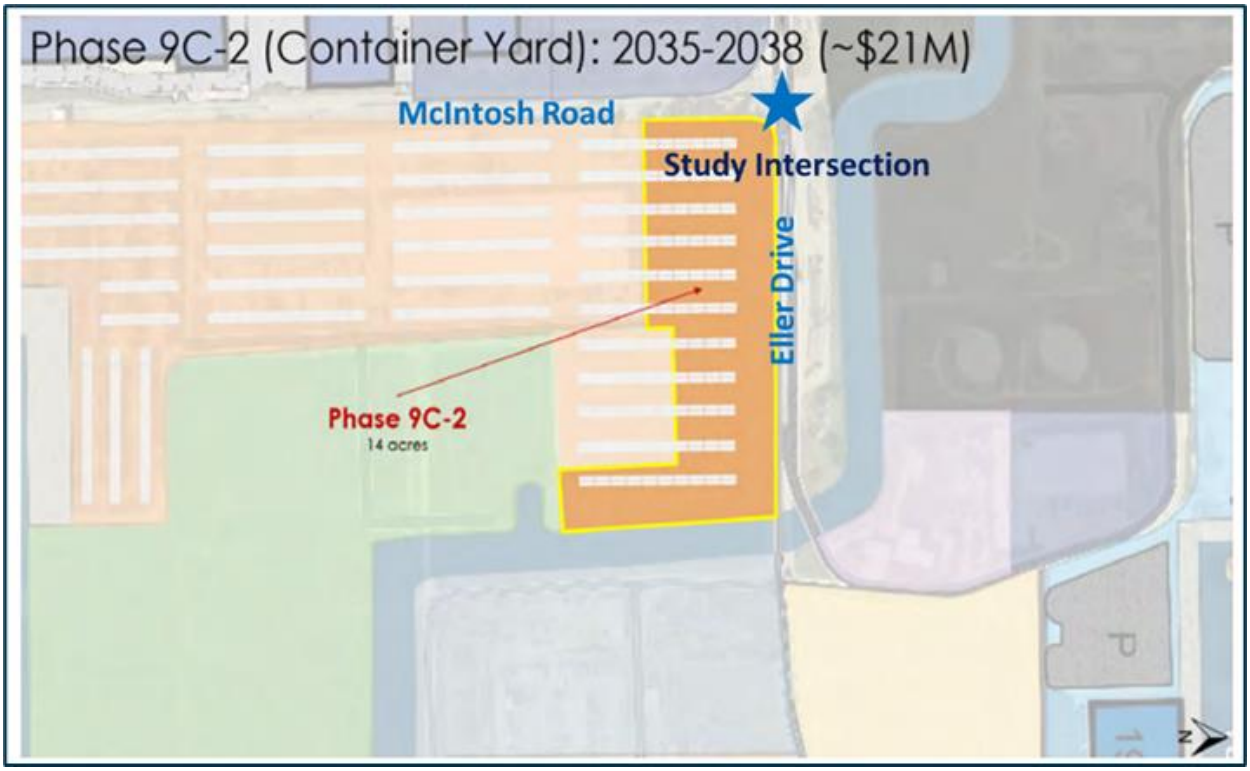
In PEV's 2018 Master/Vison Plan, the Commercial Consolidation Project (2031-2035) is proposed to construct a new commercial office complex for PEV administration and government offices at the southwest corner of the study intersection. However, the project is no longer viable as a new warehouse, shown in Figure 20, was subsequently built at the location. The location of any new building is being addressed in the 2023 Master/Vision Plan Update.

In addition, Phase 9C-2 project is proposed to transform the existing 14-acre land into the envisioned container yard to enhance containerized cargo capacity. The location of the planned Phase 9C-2 Project is shown in Figure 21. The future lane use around the study intersection is planned for a mix of purposes, including Administration and Government offices, warehouses, container yard, an electrical generation facility, FP&L cooling canal, and a recreational park.

Figure 20. SEAGIS Warehouse Facility

Source: SEAGIS Property Group

Figure 21. Phase 9C-2 Container Yard Project Location



Source: 2018 PEV Master/Vision Plan Update

Environmental Conditions

Port Everglades remains steadfast in its dedication to careful and ecologically sound growth. The Port's goal is to ensure the long-term interest of both the maritime community and the fragile environment within and around the port by adhering to stringent governmental regulations, employing best management practices, careful study, and advancing progressive remedial and protective measures.

Wildlife

Manatees have made their winter homes in FP&L's warm discharge canal inside the PEV. The Port participates in a variety of manatee protection programs to safeguard Florida's marine mammals. PEV provides 4.1 acres of offsite land to the South Florida Wildlife Center so that it can treat and rehabilitate injured, orphaned, or imperiled animals before releasing them back into the wild. PEV's new upland mangrove enhancement area is designed to attract native birds and other wildlife. Besides, PEV also has a High Mast Lighting Pilot Project to test lighting alternatives to reduce light emission to protect hatching turtles from walking the wrong way after birth at the adjacent state park. The Port also installed shields on the exterior Midport garage lights to protect the turtles.

Wetlands

A critical part of the Southport Turning Notch Extension includes replacing 8.7 acres of an existing mangrove conservation easement with a 16.5-acre upland enhancement of approximately 70,000 new mangroves and wetland plants as well as completing a number of environmental improvements in West Lake Park. The Port worked closely with port users, the environmental community, and the Florida

Department of Environmental Protection to develop the plan for the new mangrove habitat.

To date, the Port is responsible for improving tidal flushing to 168 acres within the Broward County West Lake Park. More park improvements are scheduled as part of the U.S. Army Corps of Engineers mitigation effort for the navigation channel deepening and widening project.

Dr. Von D. Mizell - Eula Johnson State Park is part of the Port's environmental legacy. The Port donated approximately 25.6 acres to the state in the 70's, and has since created 23 acres of wetlands, planted with 160,000 red mangroves and 7300 linear feet of shoreline protected by riprap comprised of native lime rock. In addition, the Port planted 6,500 native plants to beautify the landscape.

Water

The Port has developed a comprehensive, ongoing spill prevention and oil recovery program in conjunction with the U.S. Coast Guard, the petroleum industry, and a variety of emergency response contractors. In addition, all underground fuel storage tanks have been removed as part of a Port initiative to reduce the potential for groundwater contamination.

One of the greatest dangers to water quality comes from rain. The Port has implemented multiple programs, regulations, and drainage systems to ensure stormwater is properly collected and disposed.

In addition, the Port prohibits certain ship activities that release waste and foreign substances into the waterways such as ballast water, sewage, petroleum produces and other waste that could harm the environment.

Air Quality

PEV is the first seaport in the United States to voluntarily enter a partnership agreement with the U.S. Environmental Protection Agency (EPA) to study air emissions in a seaport scenario. Through this partnership, the EPA and PEV agreed to work together to develop baseline and future year emission inventories and to evaluate various effective technology and operational strategies.

In 2017, Port Everglades reached a major milestone with the completion of the 2015 Baseline Air Emissions Inventory, which includes emissions from ocean-going vessels, harbor vessels, cargo handling equipment, on-road vehicles, and rail operations.

Previous Master/Vision Plan Update

PEV collaborates with several organizations to achieve goals of environmental management, restoration, and remediation. The Existing Conditions Assessment, shown in **Appendix B**, of the 2018 Master/Vision Plan Update discussed in detail about existing environmental conditions, initiatives, and considerations pertain to PEV's ongoing operations and future development with expanded information about wildlife and habitat, mitigation projects, landfill and petroleum storage, climate change/ resiliency/ sustainability, drinking water management, and shore power.

Stakeholders

Project stakeholders include, but not limited to, property owners within 500 feet of the intersection, or that are directly impacted, as well as tenants, public and private businesses, and associations. In coordination with PEV, key stakeholders are identified as below:

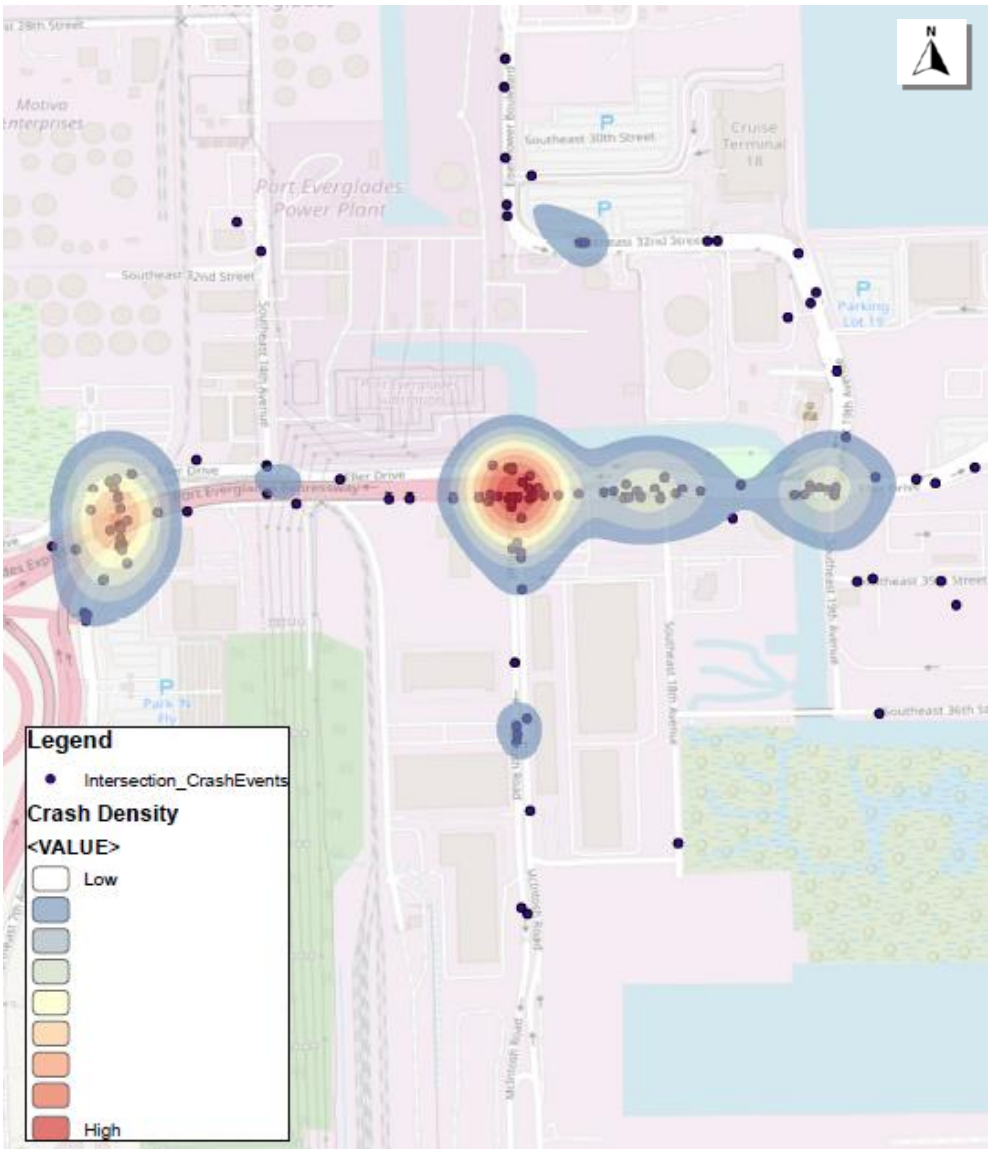
- Florida Department of Transportation, District IV
- South Florida Regional Planning Council
- Broward County Planning
- Broward County Traffic Engineering Division
- Broward County Transit
- Broward County Highway Construction and Engineering Division
- Broward Metropolitan Planning Organization
- Fort Lauderdale-Hollywood International Airport
- City of Fort Lauderdale
- City of Dania Beach
- City of Hollywood
- Property owners including:
    - 1800 Eller Drive tenant
    - 1700 Building Owner (SEAGIS)
    - Cruise business lines
    - Energy business lines
    - Cargo business lines

4 Historical Crash Data and Analysis

Crash Data

Historical crash data was obtained from the Signal Four Analytics for the most recent five-year period. Crash records within half-a-mile radius from the study intersection were extracted. There are a total of 74 crashes from 2018 to 2022. Figure 22 shows crash locations and heat map in and beyond the study area. Note that due to pandemic's impact, 2020, 2021, and 2022 crashes are likely underrepresenting typical conditions.

Figure 22. Crash Heat Map



The study intersection of Eller Drive and McIntosh Road is clearly a crash hot spot, along with Eller Drive security gate area and the intersections of Eller Drive and SE 19th Avenue east of the study intersection. Detailed crash diagrams are shown in Figure 23 through Figure 27.

Figure 23. Crash Diagram 1/5

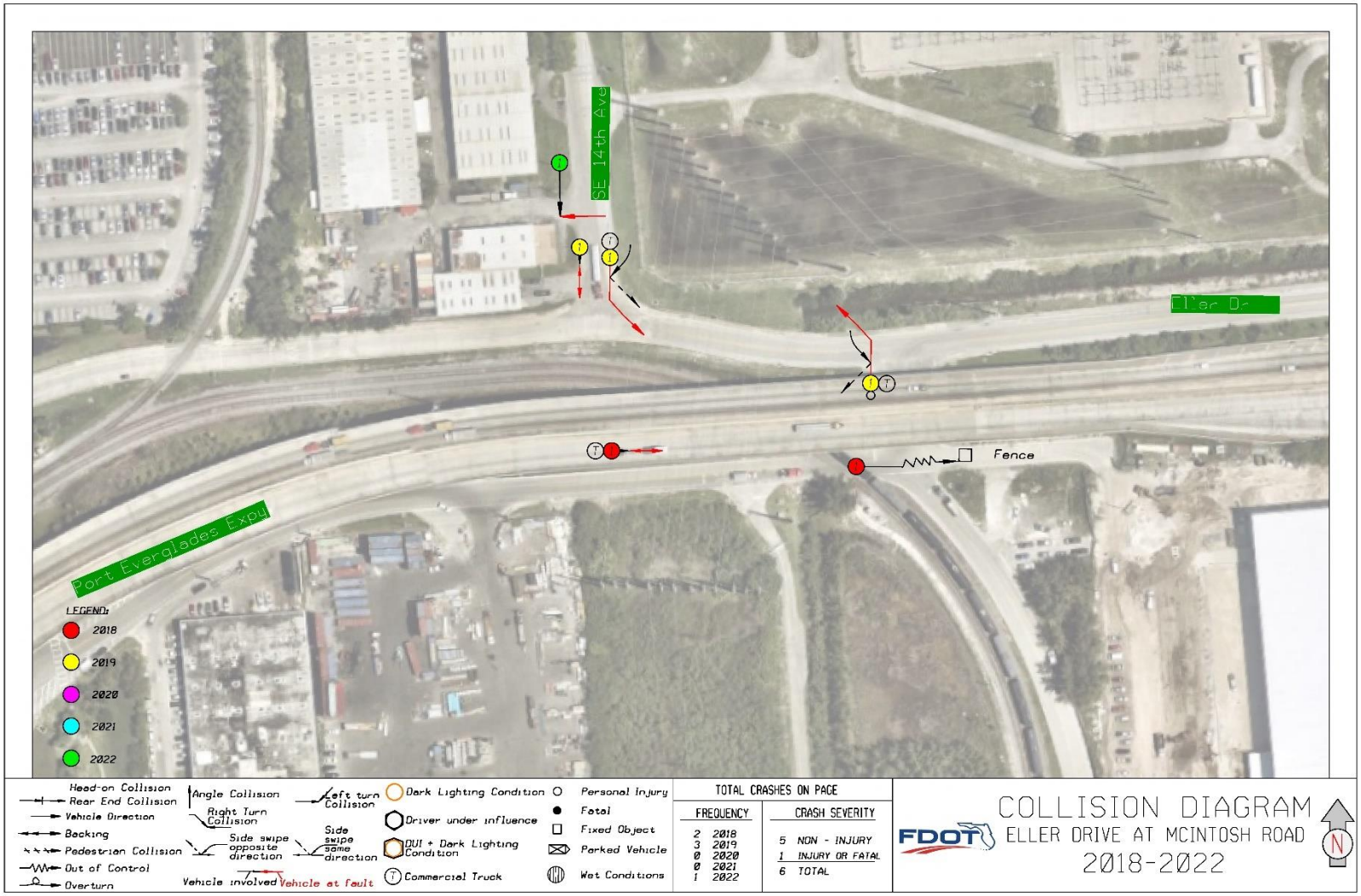


Figure 24. Crash Diagram 2/5

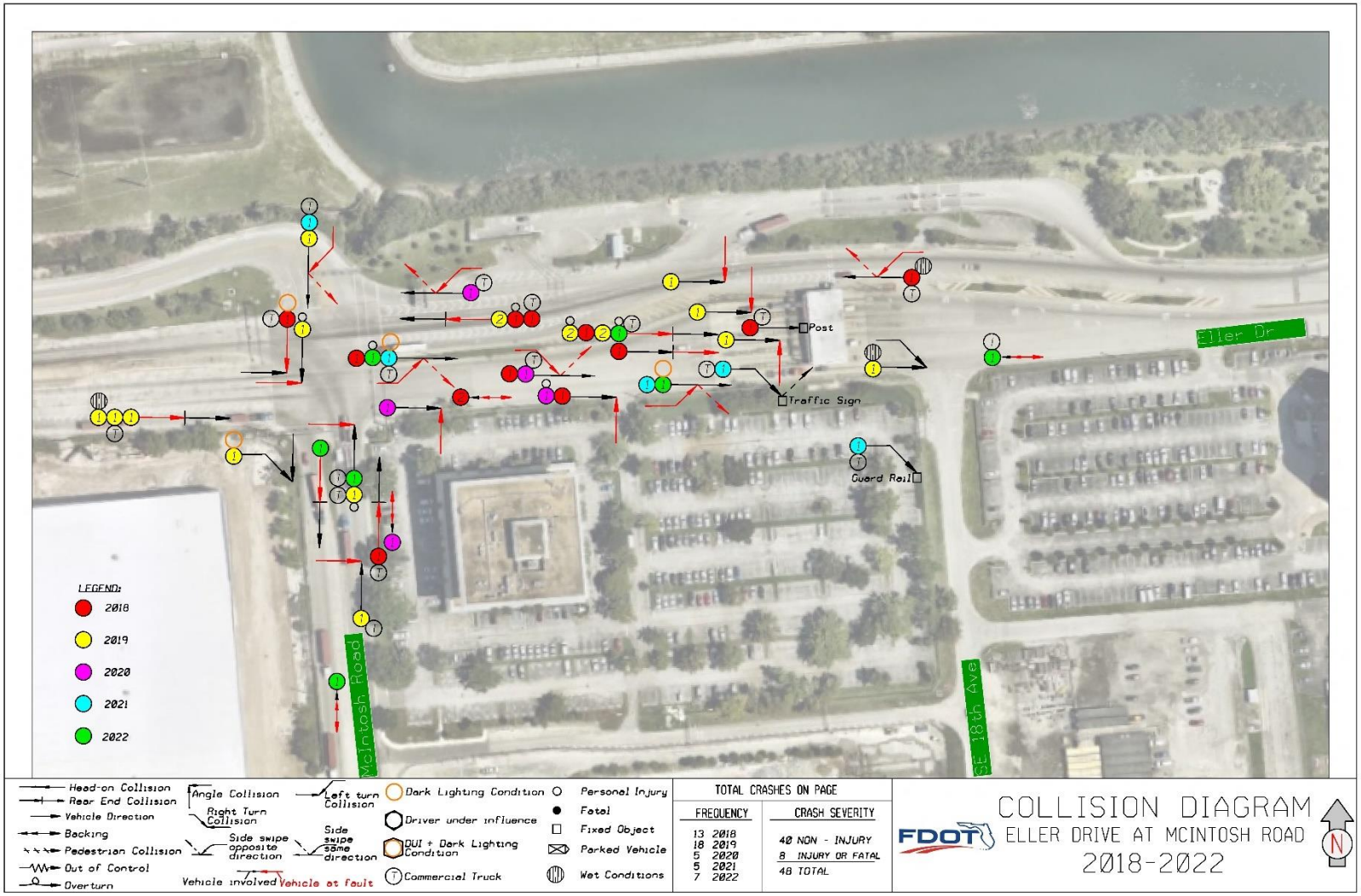


Figure 25. Crash Diagram 3/5

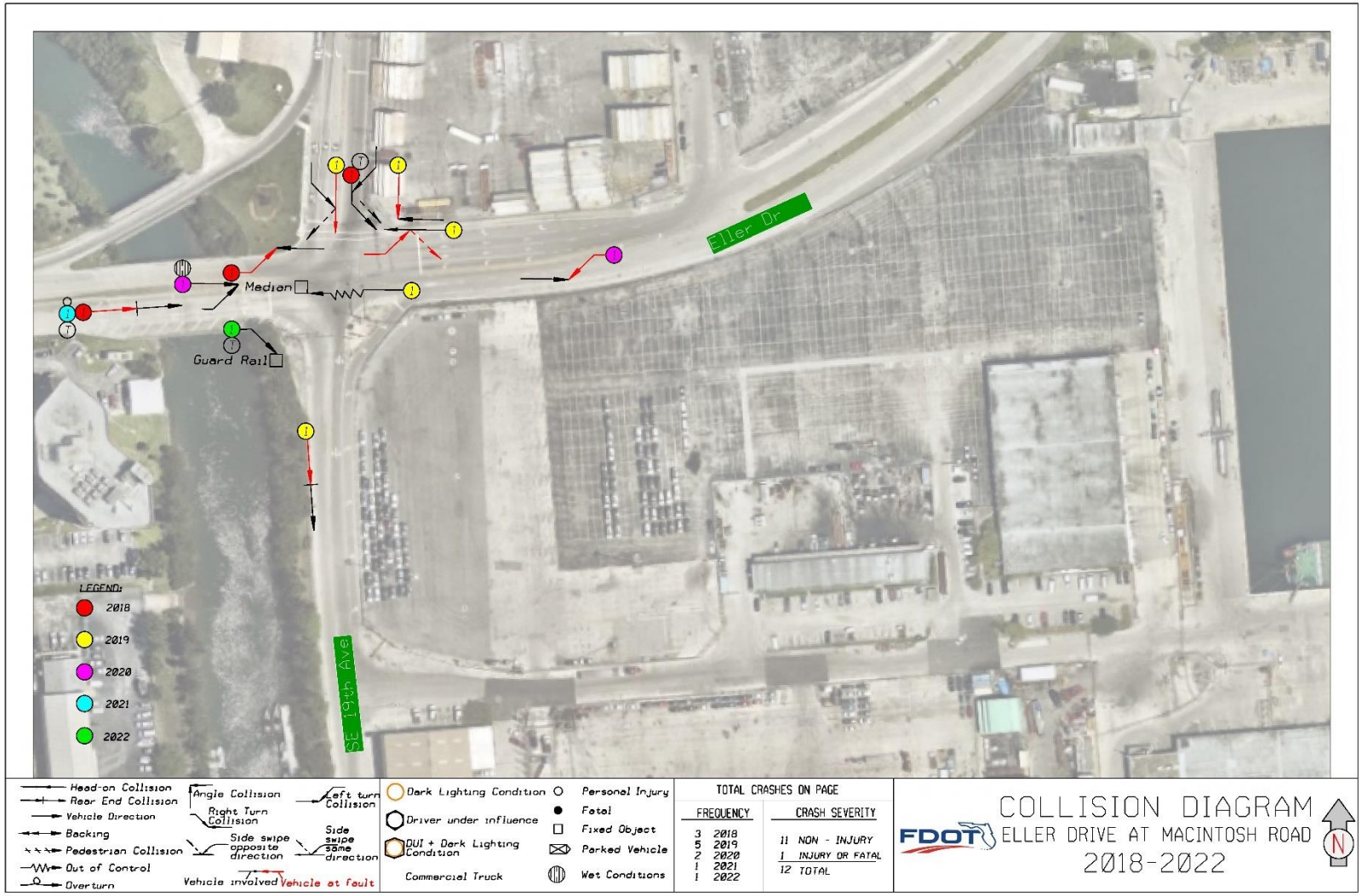


Figure 26. Crash Diagram 4/5

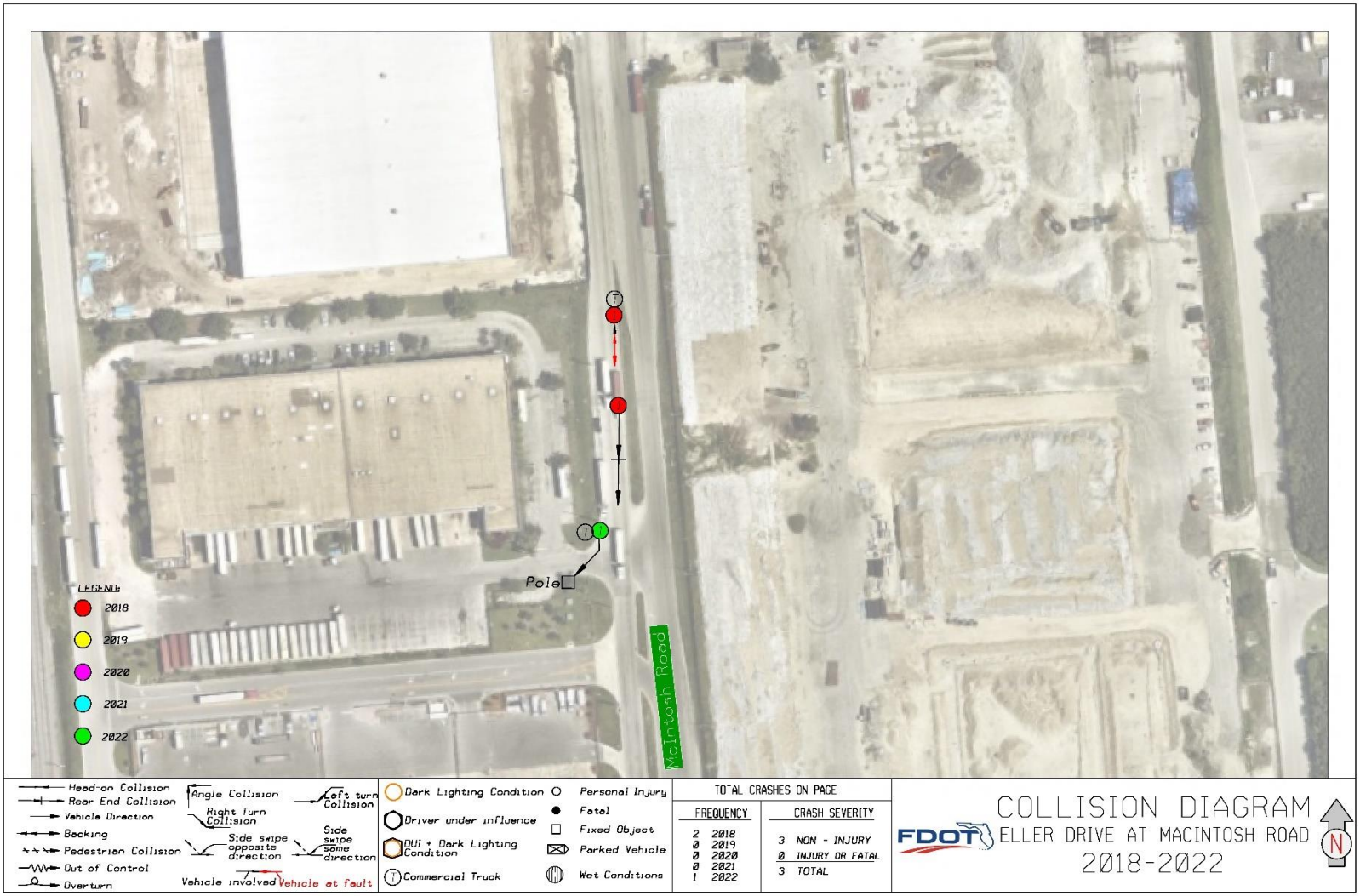
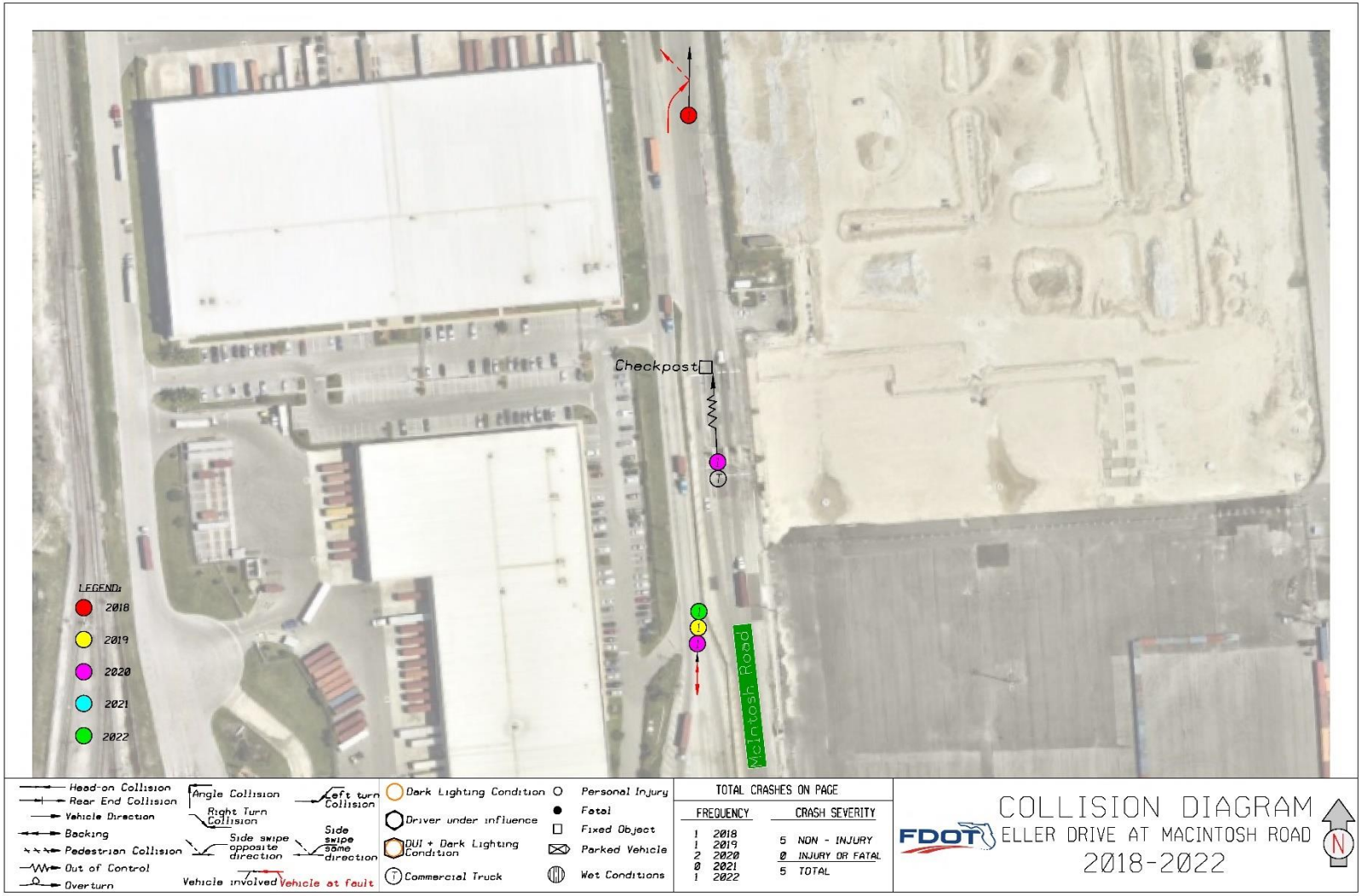


Figure 27. Crash Diagram 5/5



Crash Analysis

Table 4 through Table 9 show crashes by year, severity, type, location, time-of-day, and vehicle type. Relatively small number of crashes from 2020 to 2022 were likely results of pandemic's impact to cruise travels.

Table 4. Crashes by Year

Year	Frequency	Percent
2018	21	28.38%
2019	29	39.19%
2020	8	10.81%
2021	5	6.76%
2022	11	14.86%
Total	74	100%

Table 5. Crashes by Severity

Crash Severity	Frequency	Percent
Fatal	0	0%
Injury	9	12.16%
Property Damage Only (PDO)	65	87.84%
Total Crashes	74	100%

Table 6. Crashes by Type

Crash Type	Frequency	Percent
Rear-End	21	28.38%
Angle	10	13.51%
Backing	8	10.81%
Sideswipe	24	32.43%
Turning	3	4.05%
Fixed Object	8	10.81%
Total Crashes	74	100%

Table 7. Crashes by Location

Crash Location	Frequency	Percent
Intersection	25	33.78%
Non-Intersection	49	66.22%
Total Crashes	74	100%

Table 8. Crashes by Time of Day

Crash Time	Frequency	Percent
Daytime	67	90.54%
Nighttime	7	9.46%
Total Crashes	74	100%

Table 9. Crashes by Vehicle Type

Vehicle Type	Frequency	Percent
Commercial	26	35.14%
Non-Commercial	48	64.86%
Total Crashes	74	100%

Observations and Countermeasures

Based on the five-year crash records and crash analysis provided above, the study team has the following observations:

1. A significant amount of the crashes happened east of the study intersection up to the Eller Drive security gate. The crashes were primarily rearend crashes and sideswipe crashes, which was likely a result of queuing at the Eller Drive security gate.
2. Multiple fixed object crashes at the Eller Drive security gate were trucks swiping the security gate or signal posts. At the SE 18th Avenue intersection east of the Eller Drive gate, we noticed another trailer swiping a guard-rail during a turning movement. Truck turning movements should be evaluated to determine whether turning radius is sufficient for the design vehicle at the intersection.
3. Several rear-end crashes and angle crashes were observed at the study intersection. It is recommended to review signal timing, especially yellow clearance intervals, to determine if this is contributing to behaviors resulted in rear-end crashes. Both of these crash types could result from congestion at the intersection as well.
4. McIntosh Road south of the study intersection has relatively few crashes. A fixed object crash at a warehouse entrance suggested another possible turning radius issue. The rest of the crashes along McIntosh Road occurred at McIntosh Road security gate.

5 Existing Conditions Traffic Operations Analysis

Traffic Data Collection

Traffic data, including peak periods intersection Turning Movement Counts (TMCs) and traffic signal timing and phasing plans, were collected and documented in this report to examine the functional and geometric characteristics of the study intersection and approach roadways.

Six-hour Turning Movement Counts (TMCs) were collected from 7 AM to 9 AM (AM Peak Periods), from 11 AM to 1 PM (Midday Peak Periods), and from 4 PM to 6 PM (PM Peak Periods) on Thursday, November 30, 2023, and Saturday, December 2, 2023, at the study intersection for all movements and all classes. Based on the traffic data, the period from 8 AM to 9 AM was identified as the weekdays and weekends AM peak hour, and 11 AM to 12 PM was identified as the weekdays and weekends midday peak hour. 4 PM to 5 PM was identified as the weekday PM peak hour, and 5 PM to 6 PM was identified as the weekend PM peak hour. The raw count data are included in **Appendix A**.

Considering the different travel characteristics of passenger vehicles and trucks, separate volume analyses for each traffic type were conducted. The existing peak period turning movement volumes, truck volumes, and passenger vehicle volumes are depicted in **Figure 28** through **Figure 33.**

Figure 28. Existing Total Turning Movement Volumes-Weekday

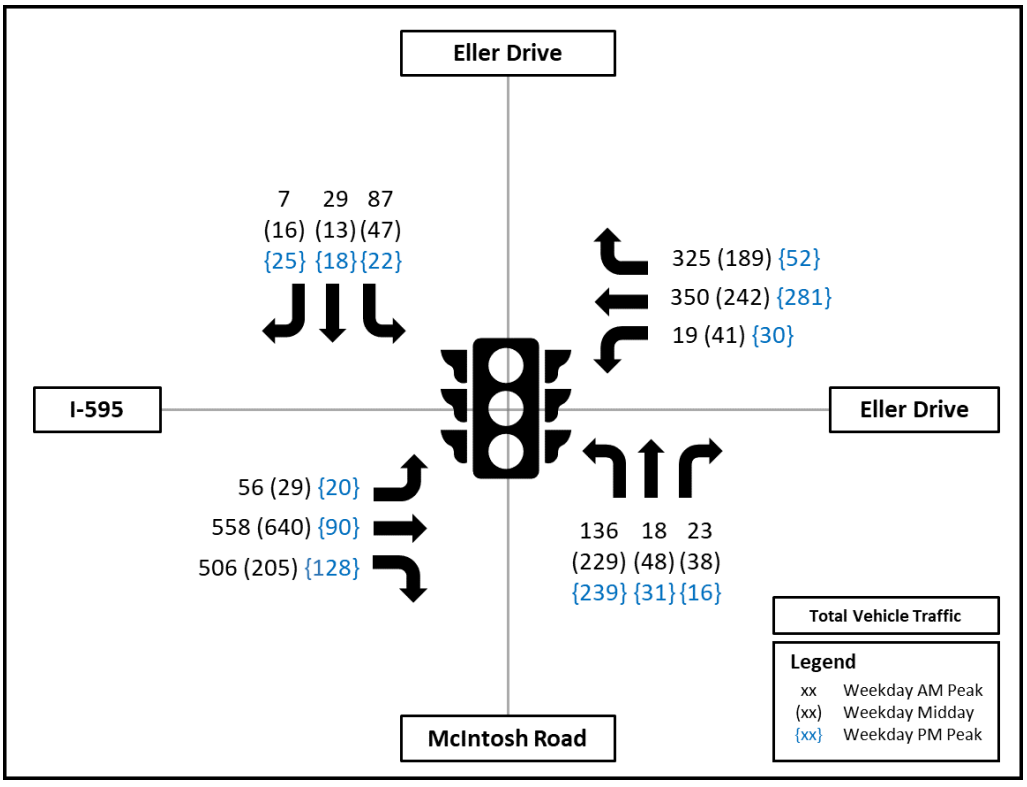


Figure 29. Existing Truck Turning Movement Volumes-Weekday

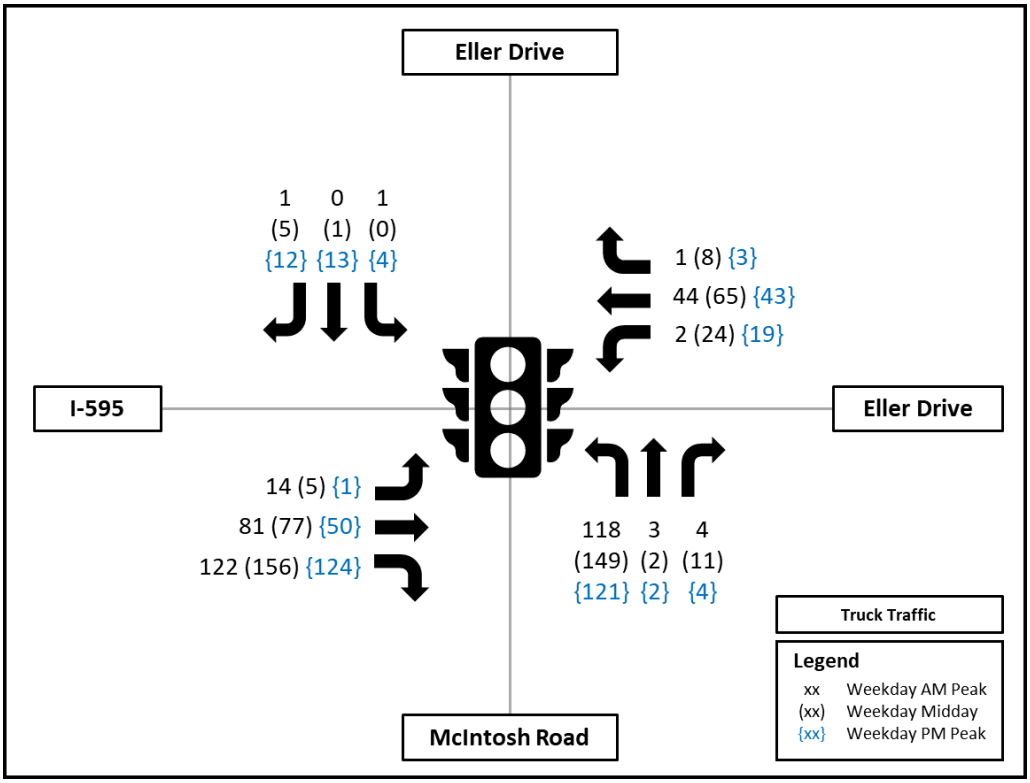


Figure 30. Existing Passenger Vehicle Turning Movement Volumes-Weekday

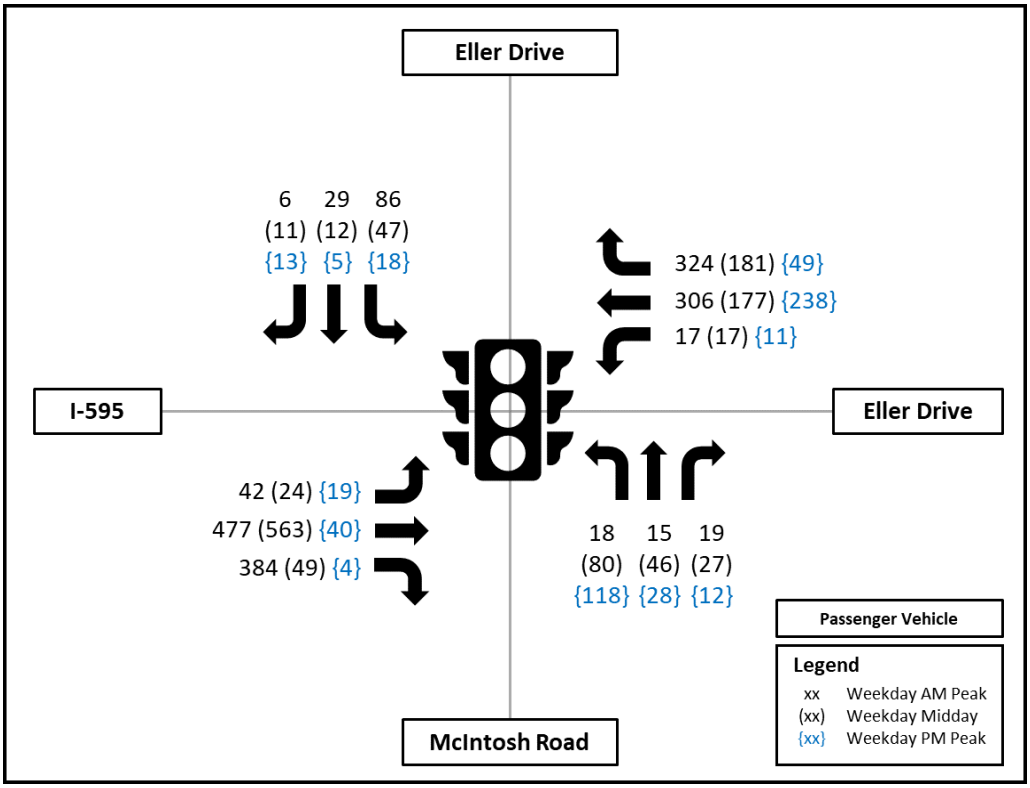


Figure 31. Existing Total Turning Movement Volumes-Weekend

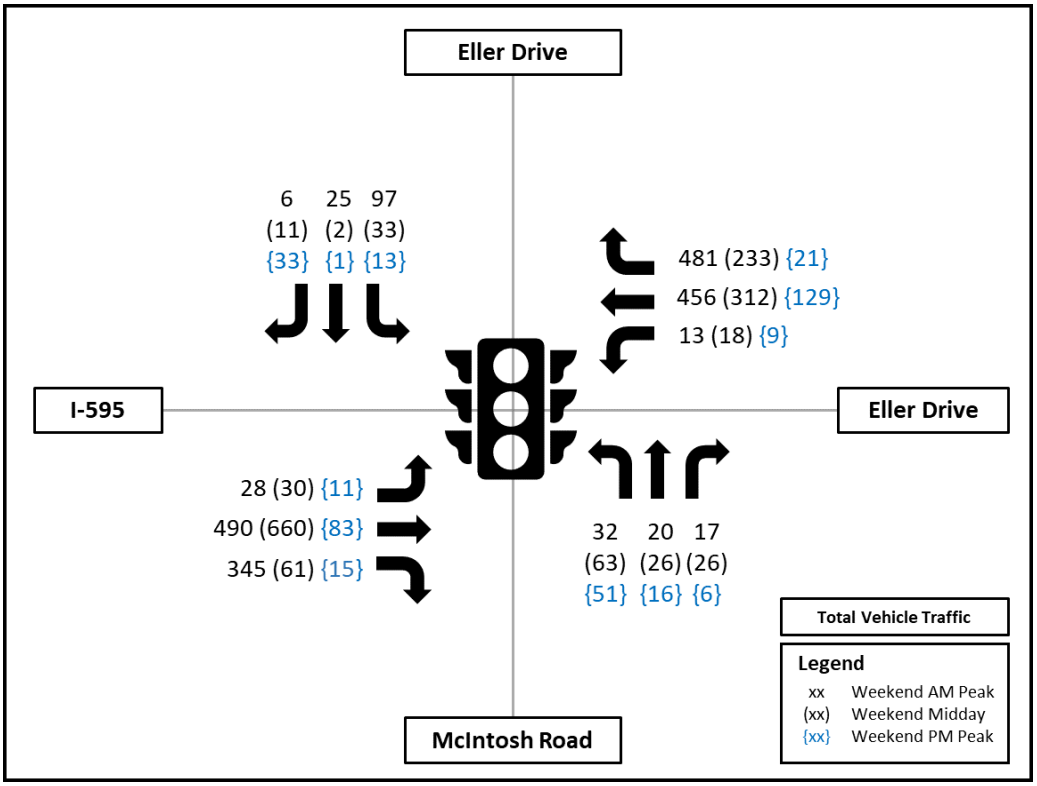


Figure 32. Existing Truck Turning Movement Volumes-Weekend

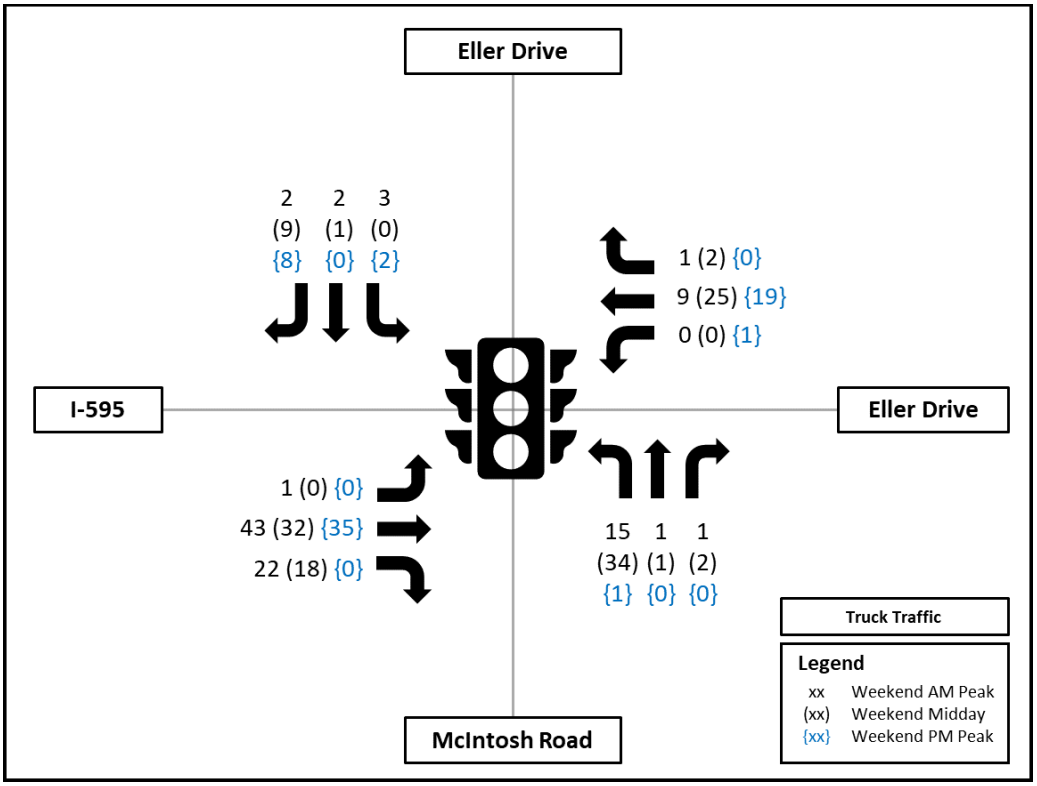
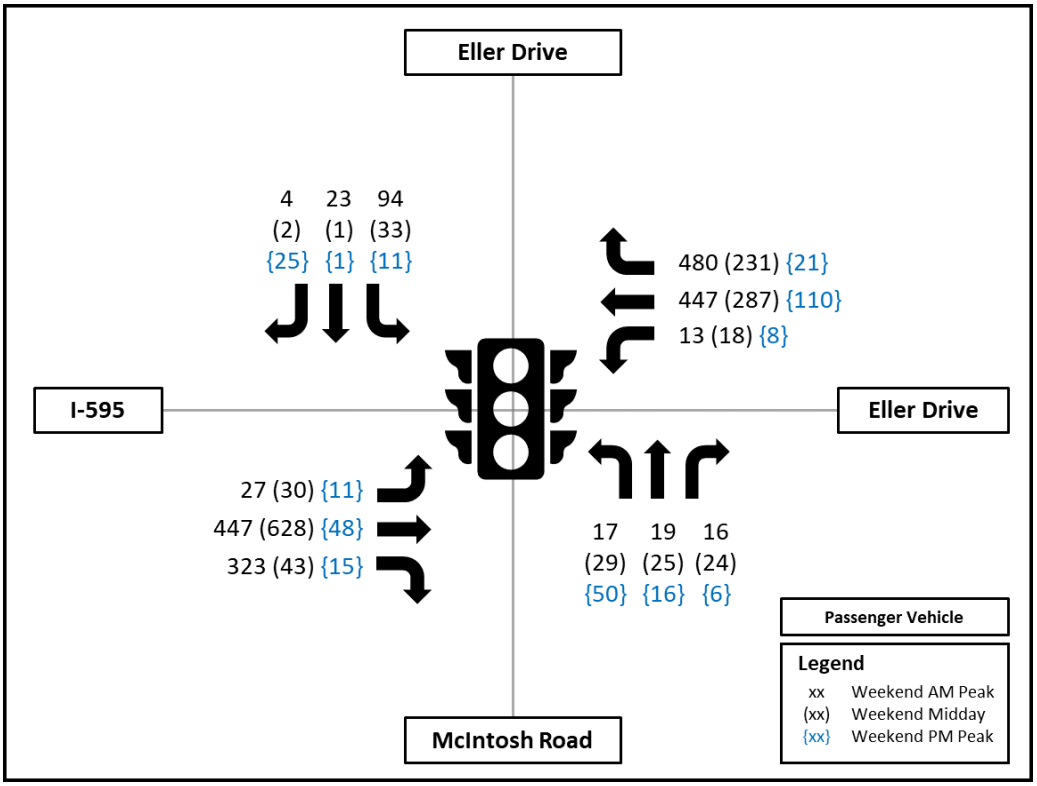


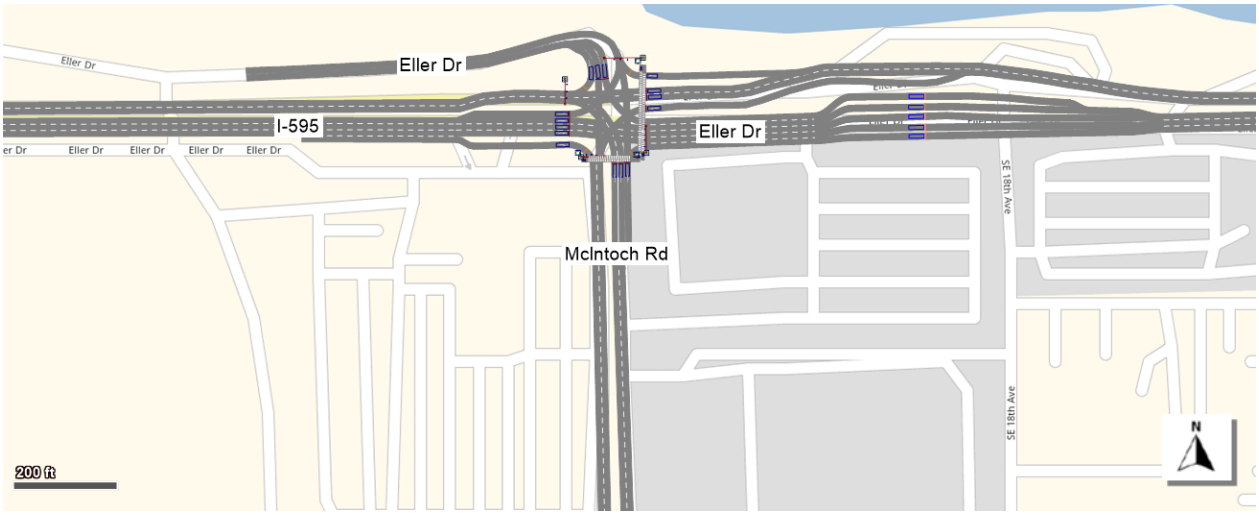
Figure 33. Existing Passenger Vehicle Turning Movement Volumes-Weekend



VISSIM Model Development

PTV VISSIM 2023 was applied to simulate traffic movements and analyze existing conditions at the signalized study intersection of Eller Drive and McIntosh Road for AM, MD, and PM peak hours. Intersection geometric data was sourced from recent aerial images and field observations. Figure 34 shows a screenshot of the VISSIM model network.

Figure 34. VISSIM Model Screenshot



Traffic Inputs

Port Everglades is characterized by high volumes of trucks. The vehicle makeup in this study area is different from the usual distribution observed on roadways. The vehicle composition in the micro-simulation model has a significant impact on analyzing operation since vehicle performance differs based on their sizes. Therefore, Vehicle composition distribution was calibrated so that composition of passenger vehicles and heavy trucks matches with the traffic counts collected. To accurately reflect the study area's vehicle classification, a fleet mix was generated by using the Kentucky Transportation Cabinet (KYTC) Microsimulation Parameters Quick Reference Spreadsheet[1]. Project specific inputs for the percentage of passenger vehicles and trucks and roadway types were collected at study intersection. The detailed breakdown of the vehicle composition can be found in **Appendix C**. The collected intersection turning movement counts are used as input volumes. Bicycle and pedestrian crossing activities were modeled at the study intersection based on field counts and intersection signal control configurations.

Traffic Control

Intersection signal timing and phasing plans were sourced from the Broward County Traffic Engineering Division (BCTED). The traffic signal was coded in the VISSIM Ring Barrier Controller (RBC) based on the signal timing and phasing sheets. Detailed signal plans are included in **Appendix A**.

Security Gate Operations

Trucks and passenger vehicle processing times are applied to model stop and dwelling behaviors at the Eller Drive security gate. Processing times are made consistent with VISSIM models from the 2019 PETA study.

The 2019 PETA study also pointed out traffic queues from Eller Drive security gate could extend to the intersection of Eller Drive and McIntosh Road due to excessive processing time of certain vehicles at the gate. The statistical distribution of security gates processing times, shown in Table 10, are applied to the VISSIM model.

Table 10. Security Gates Processing Time

Security Gate	Vehicle	Processing Time (sec)		
		Average	Minimum	Maximum
Eller Drive	Truck	8	2	17
	Passenger	7	2	132
McIntosh Road	Truck	18	3	117
	Passenger	19	6	90

Source: 2019 PETA study

[1] https://transportation.ky.gov/Planning/Documents/KYTC%20Microsimulation%20Guidelines.pdf

Simulation Parameters

There are six (6) VISSIM models developed for this project including AM, MD, and PM peak periods for both weekday and weekend. Each model has a simulation period of 9,000 seconds, with a 900-second warm up period in the beginning, and a 900-second cool down period at the end.

Simulation resolution was set as ten (10) time steps per simulation second. Ten (10) runs with different random seeds were performed for each model. Average results from the ten runs were used for both model calibration and evaluation.

VISSIM Model Calibration

Calibration Targets

The Existing Conditions VISSIM models have been calibrated in accordance with guidelines from the 2021 FDOT Traffic Analysis Handbook. Detailed targets are shown in Table 11. Note that GEH Statistic is an empirical formula used in traffic modeling to measure quality of model outputs such as traffic volumes.

$$GEH = \sqrt{\frac{2(M-C)^2}{M+C}}$$

Where M is modeled hourly traffic volume and C is observed or balanced traffic counts.

Table 11. Calibration Targets

Calibration item	Calibration Target/Goal
Capacity	Simulated capacity to be within 10% of the field measurements.
Traffic Volume	Simulated and measured link volumes for more than 85% of links to be: ▪ Within 100 vph for volumes less than 700 vph ▪ Within 15% for volumes between 700 vph and 2700 vph ▪ Within 400 vph, for volumes greater than 2700 vph.
	Simulated and measured link volumes for more than 85% of links to have a GEH* statistic value of five (5) or lower.
	Sum of link volumes within calibration area to be within 5%.
	Sum of link volumes to have a GEH* statistic value of five (5) or lower.
Travel Time (includes Transit)	Simulated travel time within ±1 minute for routes with observed travel times less than seven (7) minutes for all routes identified in the data collection plan.
	Simulated travel time within ±15% for routes with observed travel times greater than seven (7) minutes for all routes identified in the data collection plan.
Speed	Modeled average link speeds to be within the ±10 mph of field-measured speeds on at least 85% of all network links.
Intersection Delay	Simulated and field-measured link delay times to be within 15% for more than 85% of cases.
Queue Length	Difference between simulated and observed queue lengths to be within 20%.
Visualization	Check consistency with field conditions of the following: on- and off-ramp queuing; weaving maneuvers; patterns and extent of queue at intersection and congested links; lane utilization/choice; location of bottlenecks; etc.
	Verify no unrealistic U-turns or vehicle exiting and reentering the network.

Source: FDOT Traffic Analysis Handbook, May 2021

Calibration Parameters

Several VISSIM parameters have been adjusted to calibrate the VISSIM model against the existing conditions:

Connector Parameters

Lane Change Distance, defined on a downstream connector, is the maximum distance where vehicles start to make necessary lane changes in their path. Emergency Stop Distance, also defined on a downstream connector, is the last opportunity where vehicles can make required lane change. Both are used to model the lane change rule of vehicles that follow their route, or in dynamic assignment.

Car Following Model Parameters

All intersection roadway links were modeled with Wiedmann 74 Car Following Model suitable for behaviors typically seen along urban traffic and merging areas. Different car following behaviors factors, including "w74bxAdd" and "w74bxMult", have been defined for cars and trucks. Other car following parameters were calibrated where necessary.

Lane Changing Behavior Parameters

There are two types of lane changes in VISSIM—necessary lane change and free lane change. When a driver tries to change lanes, the first step is to find a suitable gap in the destination flow. The gap size is dependent on the speed of both the lane changer and the vehicle that "comes from behind." In case of a necessary lane change it is also dependent on the deceleration values of the aggressiveness. Parameters calibrated here include maximum deceleration, minimum headway, safety distance reduction factor, advanced merging, and cooperative lane change.

Calibration Results

Summarized model calibration results and GEH statistics are shown in Table 12 and Table 13. All applicable calibration criteria were met. Detailed model calibration results are shown in Table 14 through Table 19.

Table 12. Link Calibration Results

	Link Volumes		
Peak Period	**Flow<700 vph (± 100)**	**700<Flow<2700 vph (± 15%)**	**Flow>2700 vph (± 400)**
Weekday AM	100%	100%	100%
Weekday Midday	100%	100%	100%
Weekday PM	100%	100%	100%
Weekend AM	100%	100%	100%
Weekend Midday	100%	100%	100%
Weekend PM	100%	100%	100%

Table 13. Model GEH Results

Peak Period	GEH < 2	GEH < 5
Weekday AM	100%	100%
Weekday Midday	83.3%	100%
Weekday PM	100%	100%
Weekend AM	100%	100%
Weekend Midday	100%	100%
Weekend PM	100%	100%

Table 14. Existing Year VISSIM Intersection Operation – Weekday AM Peak Hour

Intersection	App.	Mov.	Field Volume (veh/h)	Model Volume (veh/h)	Approach Field Volume (veh/h)	Approach Model Volume (veh/h)	Volume Difference (veh/h)	Absolute Percent Difference (%)	Test 1 within 100 vph V<700	Test 2 within 15% 700<=V<=2700	Test 3 within 400 vph V>2700	Mvmt GEH
Eller Drive at Mcintosh Road	EB	EBL	56	54	1120	1124	4	0%	NA	PASS	NA	0.270
		EBT	558	561								0.127
		EBR	506	509								0.133
	WB	WBL	19	18	694	707	13	2%	PASS	NA	NA	0.232
		WBT	350	359								0.478
		WBR	325	330								0.276
	SB	SBL	87	88	123	128	5	4%	PASS	NA	NA	0.107
		SBT	29	32								0.543
		SBR	7	8								0.365
	NB	NBL	136	138	177	180	3	2%	PASS	NA	NA	0.171
		NBT	18	18								0.000
		NBR	23	24								0.206

Table 15. Existing Year VISSIM Intersection Operation – Weekday Midday Peak Hour

Intersection	App.	Mov.	Field Volume (veh/h)	Model Volume (veh/h)	Approach Field Volume (veh/h)	Approach Model Volume (veh/h)	Volume Difference (veh/h)	Absolute Percent Difference (%)	Test 1 within 100 vph V<700	Test 2 within 15% 700<=V<=2700	Test 3 within 400 vph V>2700	Mvmt GEH
Eller Drive at Mcintosh Road	EB	EBL	29	30	874	879	5	1%	NA	PASS	NA	0.184
		EBT	640	663								0.901
		EBR	205	186								1.359
	WB	WBL	41	23	472	481	9	2%	PASS	NA	NA	3.182
		WBT	242	223								1.246
		WBR	189	235								3.159
	SB	SBL	50	48	79	76	-3	4%	PASS	NA	NA	0.286
		SBT	13	16								0.788
		SBR	16	12								1.069
	NB	NBL	229	225	315	321	6	2%	PASS	NA	NA	0.265
		NBT	48	55								0.975
		NBR	38	41								0.477

Table 16. Existing Year VISSIM Intersection Operation – Weekday PM Peak Hour

Intersection	App.	Mov.	Field Volume (veh/h)	Model Volume (veh/h)	Approach Field Volume (veh/h)	Approach Model Volume (veh/h)	Volume Difference (veh/h)	Absolute Percent Difference (%)	Test 1 within 100 vph V<700	Test 2 within 15% 700<=V<=2700	Test 3 within 400 vph V>2700	Mvmt GEH
Eller Drive at Mcintosh Road	EB	EBL	20	20	238	244	6	3%	PASS	NA	NA	0.000
		EBT	90	92								0.210
		EBR	128	132								0.351
	WB	WBL	30	30	363	370	7	2%	PASS	NA	NA	0.000
		WBT	281	287								0.356
		WBR	52	53								0.138
	SB	SBL	22	23	65	65	0	0%	PASS	NA	NA	0.211
		SBT	18	17								0.239
		SBR	25	25								0.000
	NB	NBL	239	243	286	293	7	2%	PASS	NA	NA	0.258
		NBT	31	33								0.354
		NBR	16	17								0.246

Table 17. Existing Year VISSIM Intersection Operation – Weekend AM Peak Hour

Intersection	App.	Mov.	Field Volume (veh/h)	Model Volume (veh/h)	Approach Field Volume (veh/h)	Approach Model Volume (veh/h)	Volume Difference (veh/h)	Absolute Percent Difference (%)	Test 1 within 100 vph V<700	Test 2 within 15% 700<=V<=2700	Test 3 within 400 vph V>2700	Mvmt GEH
Eller Drive at Mcintosh Road	EB	EBL	28	26	863	871	8	1%	NA	PASS	NA	0.385
		EBT	490	499								0.405
		EBR	345	346								0.054
	WB	WBL	13	13	950	950	0	0%	NA	PASS	NA	0.000
		WBT	456	459								0.140
		WBR	481	478								0.137
	SB	SBL	97	97	128	130	2	1%	PASS	NA	NA	0.000
		SBT	25	27								0.392
		SBR	6	6								0.000
	NB	NBL	32	30	69	68	-1	3%	PASS	NA	NA	0.359
		NBT	20	20								0.000
		NBR	17	18								0.239

Table 18. Existing Year VISSIM Intersection Operation – Weekend Midday Peak Hour

Intersection	App.	Mov.	Field Volume (veh/h)	Model Volume (veh/h)	Approach Field Volume (veh/h)	Approach Model Volume (veh/h)	Volume Difference (veh/h)	Absolute Percent Difference (%)	Test 1 within 100 vph V<700	Test 2 within 15% 700<=V<=2700	Test 3 within 400 vph V>2700	Mvmt GEH
Eller Drive at Mcintosh Road	EB	EBL	30	29	751	755	4	1%	NA	PASS	NA	0.184
		EBT	660	667								0.272
		EBR	61	59								0.258
	WB	WBL	18	17	563	573	10	2%	PASS	NA	NA	0.239
		WBT	312	321								0.506
		WBR	233	235								0.131
	SB	SBL	33	33	46	45	-1	2%	PASS	NA	NA	0.000
		SBT	2	2								0.000
		SBR	11	10								0.309
	NB	NBL	63	61	115	115	0	0%	PASS	NA	NA	0.254
		NBT	26	26								0.000
		NBR	26	28								0.385

Table 19. Existing Year VISSIM Intersection Operation – Weekend PM Peak Hour

Intersection	App.	Mov.	Field Volume (veh/h)	Model Volume (veh/h)	Approach Field Volume (veh/h)	Approach Model Volume (veh/h)	Volume Difference (veh/h)	Absolute Percent Difference (%)	Test 1 within 100 vph V<700	Test 2 within 15% 700<=V<=2700	Test 3 within 400 vph V>2700	Mvmt GEH
Eller Drive at Mcintosh Road	EB	EBL	11	11	109	109	0	0%	PASS	NA	NA	0.000
		EBT	83	83								0.000
		EBR	15	15								0.000
	WB	WBL	9	10	159	164	5	3%	PASS	NA	NA	0.324
		WBT	129	132								0.263
		WBR	21	22								0.216
	SB	SBL	13	12	47	43	-4	9%	PASS	NA	NA	0.283
		SBT	1	0								1.414
		SBR	33	31								0.354
	NB	NBL	51	49	73	75	2	3%	PASS	NA	NA	0.283
		NBT	16	19								0.717
		NBR	6	7								0.392

Existing Year 2023 Intersection Operations Analysis

Existing turning movement counts were used in operation. Traffic signal timing and phasing plans were obtained from BCTED. Study Intersection Operations results, including LOS, delay, and queue length, are summarized below. Delays and LOSs are provided for movement, approach, and intersection level. Queue lengths are provided for each movement.

The study intersection is currently operating at acceptable LOS C during peak hours for both weekday and weekend, except for the weekday Midday period with LOS D, experiencing an average delay of 51.57 seconds. Overall, the study intersection is experiencing longer delays during weekday peak hours than those of weekend peak hours. The longest delay is found during weekday midday peak, with three approaches operating at LOS E or F.

As shown in Table 20, during the weekday AM peak hour, the intersection is operating at LOS C with a delay of 28.05 seconds. Eastbound and westbound approaches are operating at acceptable LOS C and LOS B, respectively. Southbound and Northbound approaches are both operating at LOS E, with delays of 70.7 seconds and 55.2 seconds, respectively.

Table 20. Existing Year Operation Results - Weekday AM

Intersection	Movement	Movement				Approach		Intersection	
		Volume	Delay (sec)	Queue (ft)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Eller Drive at Mcintosh Road	EBL	56	77.0	147.8	E	27.5	C	28.05	C
	EBT	558	27.1	289.5	C				
	EBR	506	22.6	178.9	C				
	WBL	19	75.3	52.6	E	14.3	B		
	WBT	350	14.0	171.2	B				
	WBR	325	11.1	169.5	B				
	SBL	87	74.7	153.3	E	70.7	E		
	SBT	29	73.9	72.3	E				
	SBR	7	7.6	30.2	A				
	NBL	136	59.0	245.4	E	55.2	E		
	NBT	18	64.9	79.9	E				
	NBR	23	24.9	0.0	C				

During the weekday Midday peak hour, shown in Table 21, the intersection is operating at LOS D with delay of 51.27 seconds. Only the Westbound approach operates at acceptable LOS B with left-turning movement operating at LOS E with a delay of 76.7 seconds. Eastbound and Northbound approaches are both operating at LOS E, with delays of 62.6 seconds and 63.2 seconds, respectively. The Eastbound left-turning movement is operating at LOS F with a delay of 83.5 seconds. And the Southbound approach operates at LOS F with a delay of 82.4 seconds, in which the left-turning movement operates at LOS F with a delay of 108.7 seconds.

Table 21. Existing Year Operation Results - Weekday Midday

Intersection	Direction	Movement				Approach		Intersection	
		Volume	Delay (sec)	Queue (ft)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Eller Drive at Mcintosh Road	EBL	29	83.5	81.1	F	62.6	E	51.27	D
	EBT	640	79.1	392.2	E				
	EBR	205	8.0	164.6	A				
	WBL	41	76.7	77.0	E	16.0	B		
	WBT	242	11.0	128.1	B				
	WBR	189	9.3	165.2	A				
	SBL	50	108.7	105.5	F	82.4	F		
	SBT	13	73.0	42.6	E				
	SBR	16	7.8	39.9	A				
	NBL	229	60.7	339.7	E	63.2	E		
	NBT	48	65.3	190.2	E				
	NBR	38	75.8	85.9	E				

During the weekday PM peak hour, shown in Table 22, the intersection is operating at LOS C with delay of 31.25 seconds. Eastbound and westbound approaches are operating at acceptable LOS B. Southbound approach is operating at LOS D. Northbound approach is operating at LOS E, with a delay of 63.7 seconds.

Table 22. Existing Year Operation Results - Weekday PM

Intersection	Direction	Movement				Approach		Intersection	
		Volume	Delay (sec)	Queue (ft)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Eller Drive at Mcintosh Road	EBL	20	77.2	55.6	E	13.4	B	31.25	C
	EBT	90	11.2	89.4	B				
	EBR	128	4.9	17.7	A				
	WBL	30	75.6	141.6	E	13.9	B		
	WBT	281	9.0	124.4	A				
	WBR	52	4.4	60.6	A				
	SBL	22	77.1	78.4	E	51.5	D		
	SBT	18	77.1	118.2	E				
	SBR	25	10.5	72.7	B				
	NBL	239	67.1	316.9	E	63.7	E		
	NBT	31	55.8	89.4	E				
	NBR	16	27.3	62.8	C				

During the weekend AM peak hour, shown in Table 23, the intersection is operating at LOS C with delay of 23.18 seconds. Eastbound and Westbound approaches are operating at acceptable LOS B and LOS C, respectively. Southbound and Northbound approaches are both operating at LOS E, with delays of 61.3

seconds and 57.4 seconds, respectively.

Table 23. Existing Year Operation Results - Weekend AM

Intersection	Direction	Movement				Approach		Intersection	
		Volume	Delay (sec)	Queue (ft)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Eller Drive at Mcintosh Road	EBL	28	77.1	58.7	E	11.1	B	23.18	C
	EBT	490	11.0	166.3	B				
	EBR	345	5.8	12.6	A				
	WBL	13	76.3	33.2	E	26.3	C		
	WBT	456	9.8	145.0	A				
	WBR	481	40.6	412.2	D				
	SBL	97	63.4	172.6	E	61.3	E		
	SBT	25	65.9	87.8	E				
	SBR	6	7.0	37.8	A				
	NBL	32	65.0	111.9	E	57.4	E		
	NBT	20	73.1	70.8	E				
	NBR	17	24.8	0.0	C				

During the weekend Midday peak hour, shown in Table 24, the intersection is operating at LOS C with delay of 23.94 seconds. Eastbound and westbound approaches are operating at acceptable LOS C and LOS A, respectively. Southbound and Northbound approaches are both operating at LOS E, with delays of 66.5 seconds and 61.0 seconds, respectively.

Table 24. Existing Year Operation Results – Weekend Midday

Intersection	Direction	Movement				Approach		Intersection	
		Volume	Delay (sec)	Queue (ft)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Eller Drive at Mcintosh Road	EBL	30	74.8	62.7	E	26.1	C	23.94	C
	EBT	660	26.1	175.3	C				
	EBR	61	2.5	5.4	A				
	WBL	18	72.5	45.0	E	8.4	A		
	WBT	312	6.1	103.3	A				
	WBR	233	6.6	109.6	A				
	SBL	33	86.7	70.2	F	66.5	E		
	SBT	2	64.1	14.6	E				
	SBR	11	6.0	58.9	A				
	NBL	63	64.6	132.3	E	61.0	E		
	NBT	26	69.9	96.0	E				
	NBR	26	43.7	0.0	D				

During the weekend PM peak hour, shown in Table 25, the intersection is operating at LOS C with a delay of 20.25 seconds. Eastbound, Westbound, and Southbound approaches are operating at acceptable

LOS B, LOS A, and LOS C respectively. The Southbound through movement is operating at LOS F with a delay of 100.5 seconds. The Northbound approach is operating at LOS E, with a delay of 64.4 seconds.

Table 25. Existing Year Operation Results – Weekend PM

Intersection	Direction	Movement				Approach		Intersection	
		Volume	Delay (sec)	Queue (ft)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Eller Drive at Mcintosh Road	EBL	11	74.1	32.5	E	10.2	B	20.25	C
	EBT	83	3.3	54.0	A				
	EBR	15	1.3	0.0	A				
	WBL	9	67.4	36.0	E	6.7	A		
	WBT	129	2.9	51.9	A				
	WBR	21	4.0	38.4	A				
	SBL	13	67.8	46.2	E	24.7	C		
	SBT	1	100.5	4.0	F				
	SBR	33	5.5	67.1	A				
	NBL	51	67.6	72.8	E	64.4	E		
	NBT	16	70.5	55.7	E				
	NBR	6	21.1	0.0	C				

6 Intersection Traffic Demand Forecasting

The future intersection truck and passenger traffic forecasts were developed for opening year 2028 and design year 2045 using two methods: 1) FDOT District 4's TM Tool, and 2) growth factors developed from 2018 market analysis completed for 2018 PEV Master/Vision Plan Update. This chapter presents development and results of intersection traffic demand forecasting using the two methods.

Future Year Intersection Volumes Development Using TM Tool

Historical traffic volume data was obtained from FDOT traffic count stations from 2022 Florida Traffic Online (FTO). Historical Trend and Historical + Model Trend analyses were performed for Eller Drive and I-595 from available historical AADT and SERPM model volumes. Note that 2020 and 2021 AADTs were excluded due to impacts from the pandemic. Growth rates are summarized in Table 26. Based on the Trend analyses results, an average growth rate of 1% is recommended for the study intersection. Detailed Trend analysis results are included in **Appendix E**.

The TM Tool worksheet was developed for years including 2025, 2035, and 2045. Turning movement volumes for the analysis year 2028 were interpolated based on the data from 2025 and 2035. Detailed development of 2028 turning movement volumes can be found in **Appendix E**.

Table 26. Intersection Growth Rate Summary

Location	FDOT Historical Counts (AADT)					SERPM 2045	Historical GR	H+M GR	Recom-mended
	2016	2017	2018	2019	2022				
Eller E of Int (866201)	10,000	14,000	21,550	21,550	10,200	8501	-0.56%	-2.10%	1%
I-595 W of Int (864508)	15,200	19,150	17,950	17,400	20,700	13,010	3.70%	-1.09%	1%
Eller N of Int (869002)	-	3,500	3,500	3,500	2,500	3752	-6.81%	0.64%	1%
McIntosh S of Int (NA)	-	-	-	-	-	2360	-	-	1%

Future intersection tuning movement volumes are estimated by using District 4's TM Tool with 2023 traffic volumes and the 1% growth rate. Truck percentages are assumed consistent with the existing conditions, as shown in Figure 35 and Figure 36. Forecasted truck and passenger vehicle turning movement volumes are presented in Figure 37 through Figure 48. Detailed TM Tool analysis and results are included in **Appendix E**.

Figure 35. Truck Percentage - Weekday

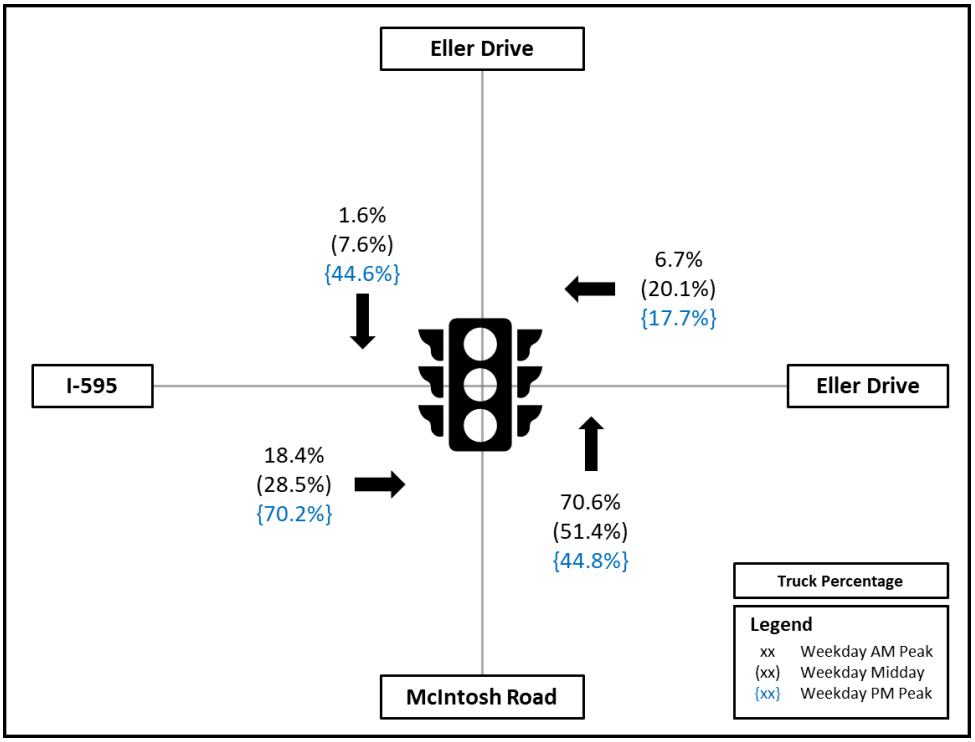


Figure 36. Truck Percentage - Weekend

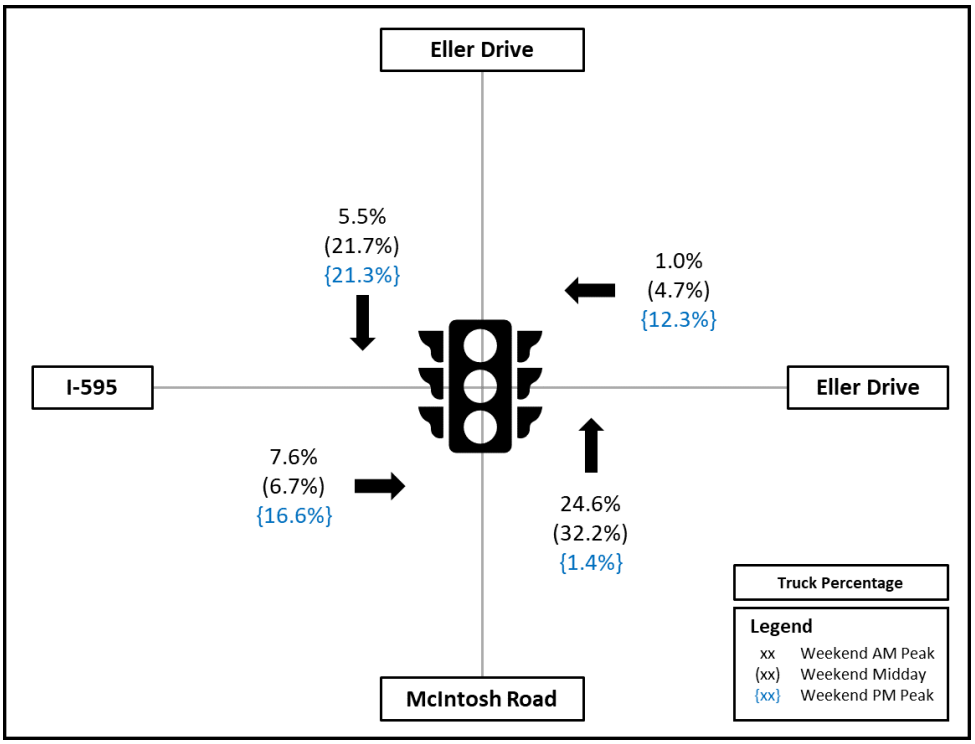


Figure 37. Opening Year 2028 Total Turning Movement Volumes-Weekday

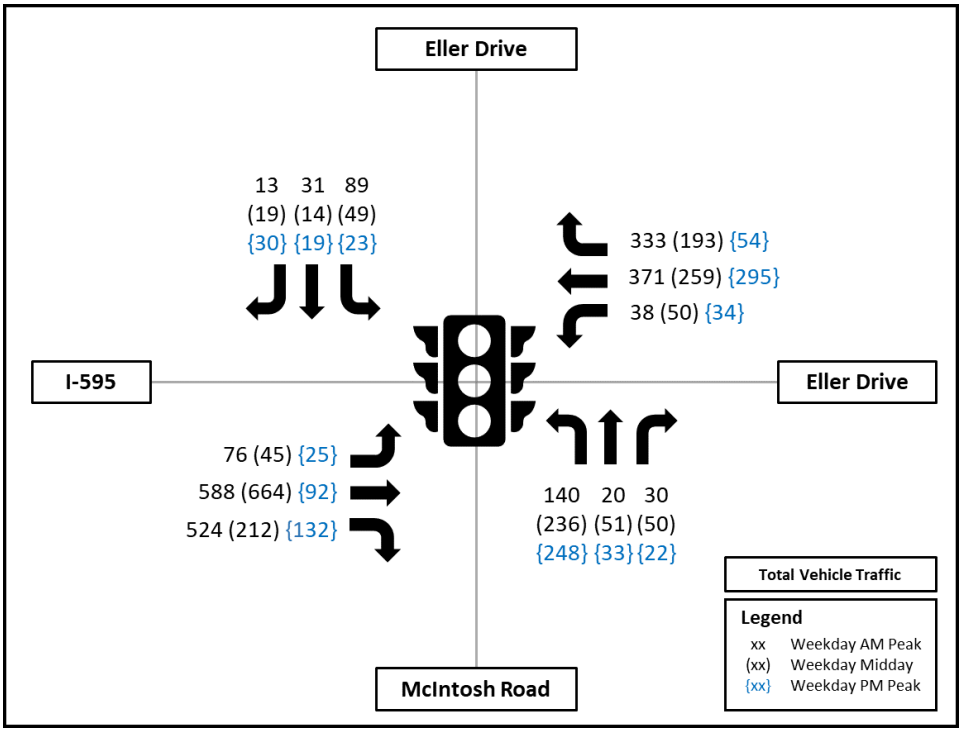


Figure 38. Opening Year 2028 Truck Turning Movement Volumes-Weekday

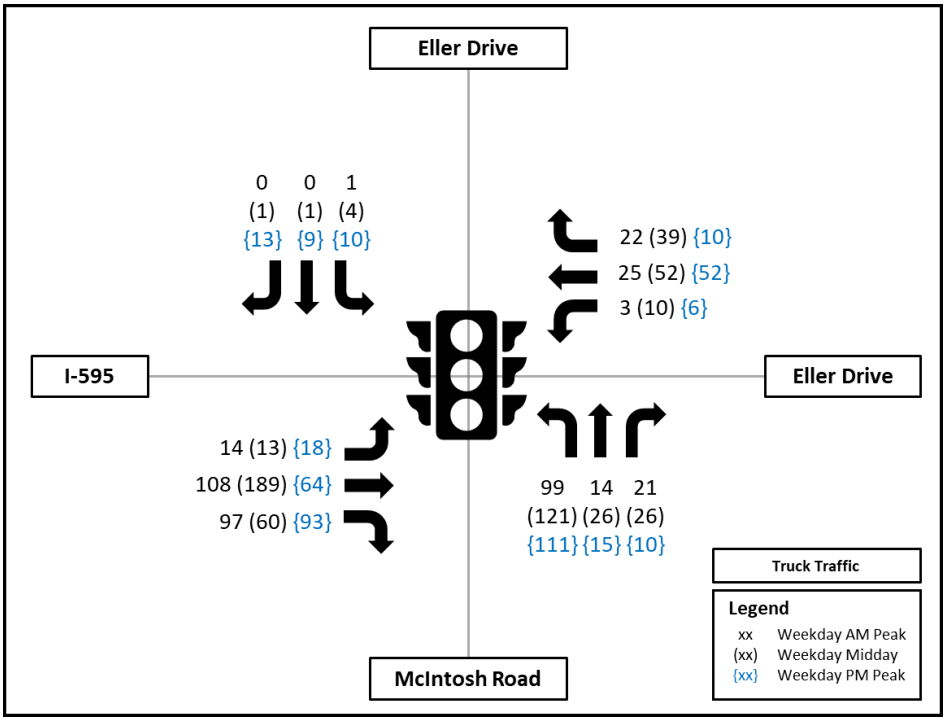


Figure 39. Opening Year 2028 Passenger Vehicle Turning Movement Volumes-Weekday

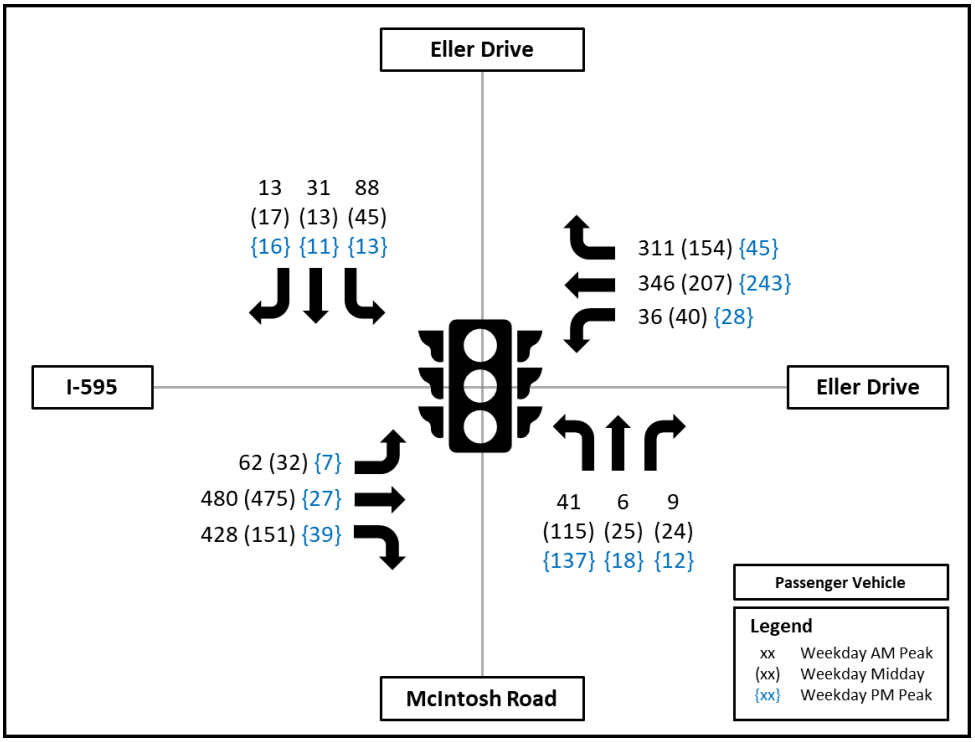


Figure 40. Opening Year 2028 Total Turning Movement Volumes-Weekend

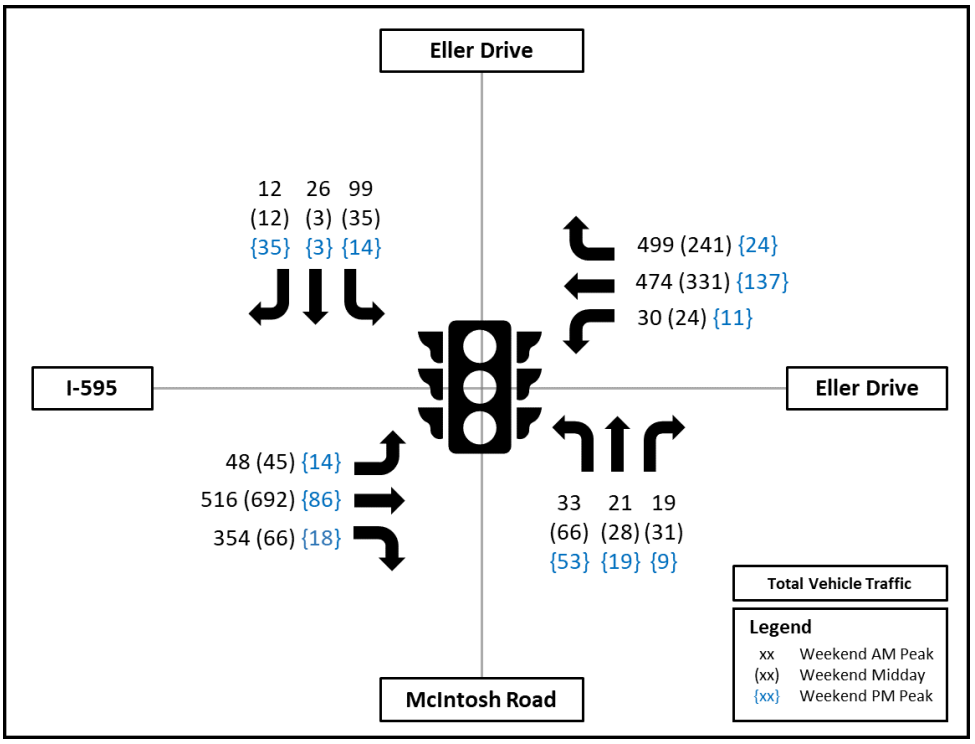


Figure 41. Opening Year 2028 Truck Turning Movement Volumes-Weekend

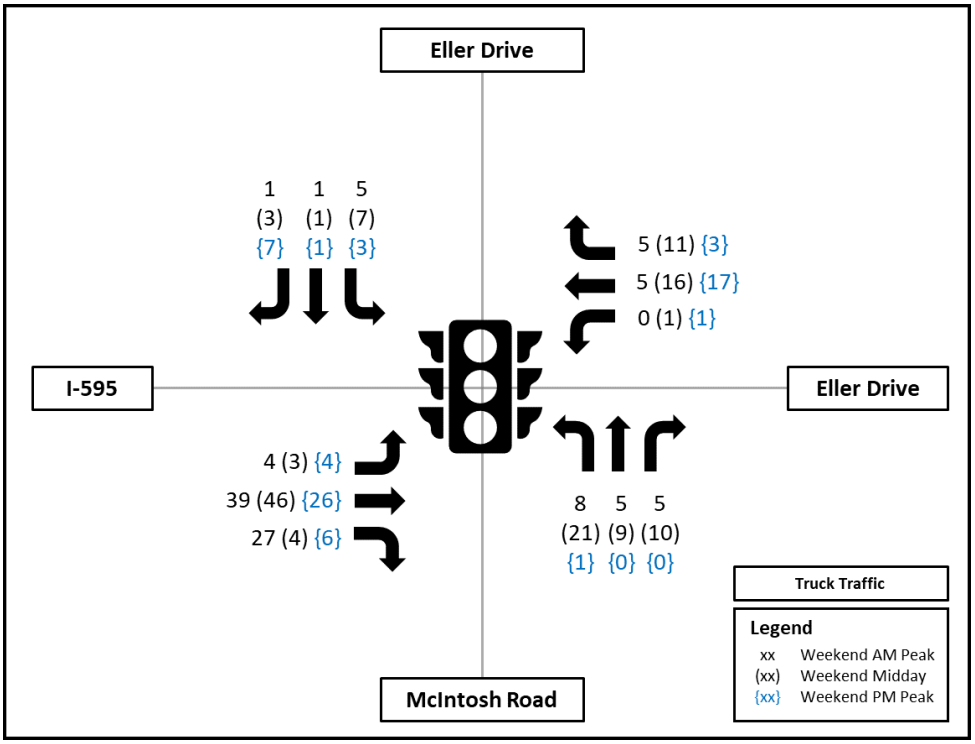


Figure 42. Opening Year Passenger Vehicle Turning Movement Volumes-Weekend

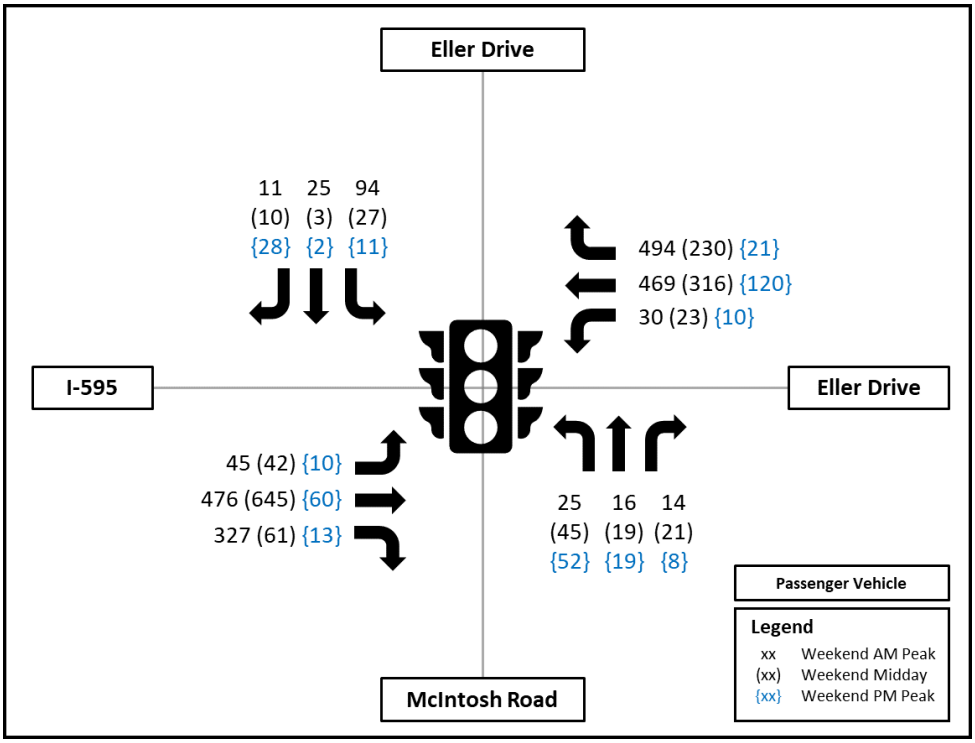


Figure 43. Design Year 2045 Total Turning Movement Volumes-Weekday

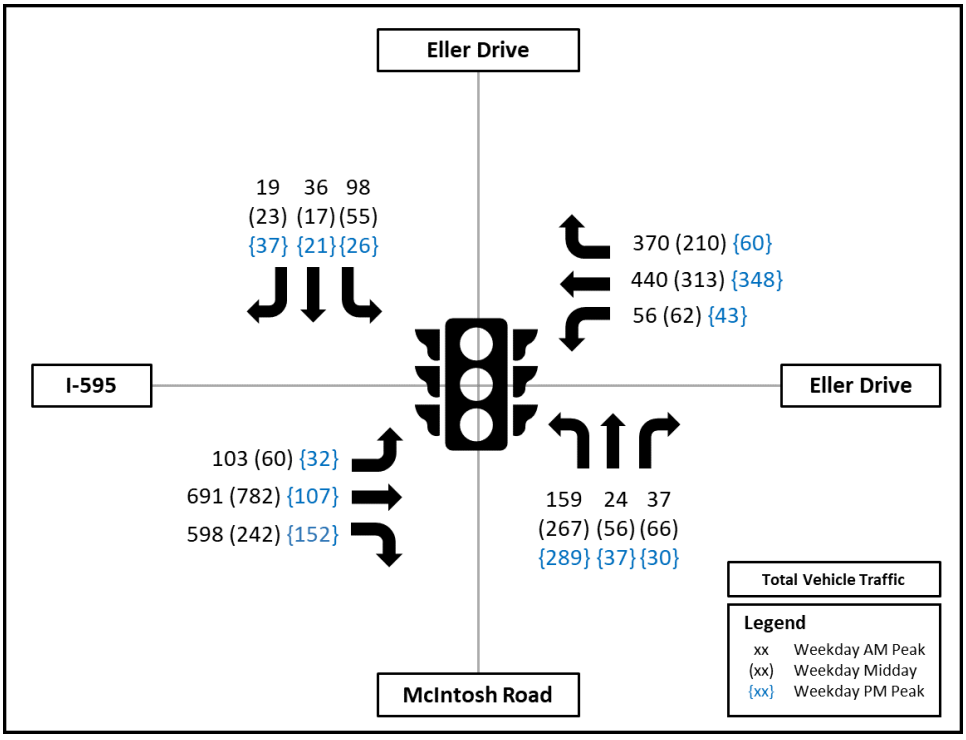


Figure 44. Design Year 2045 Truck Turning Movement Volumes-Weekday

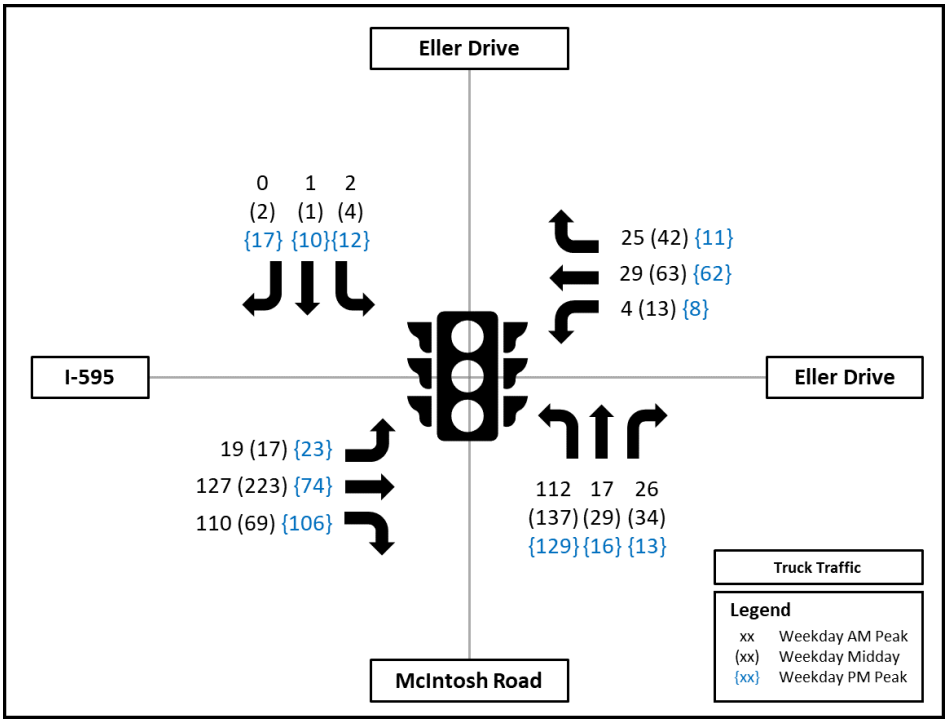


Figure 45. Design Year 2045 Passenger Vehicle Turning Movement Volumes-Weekday

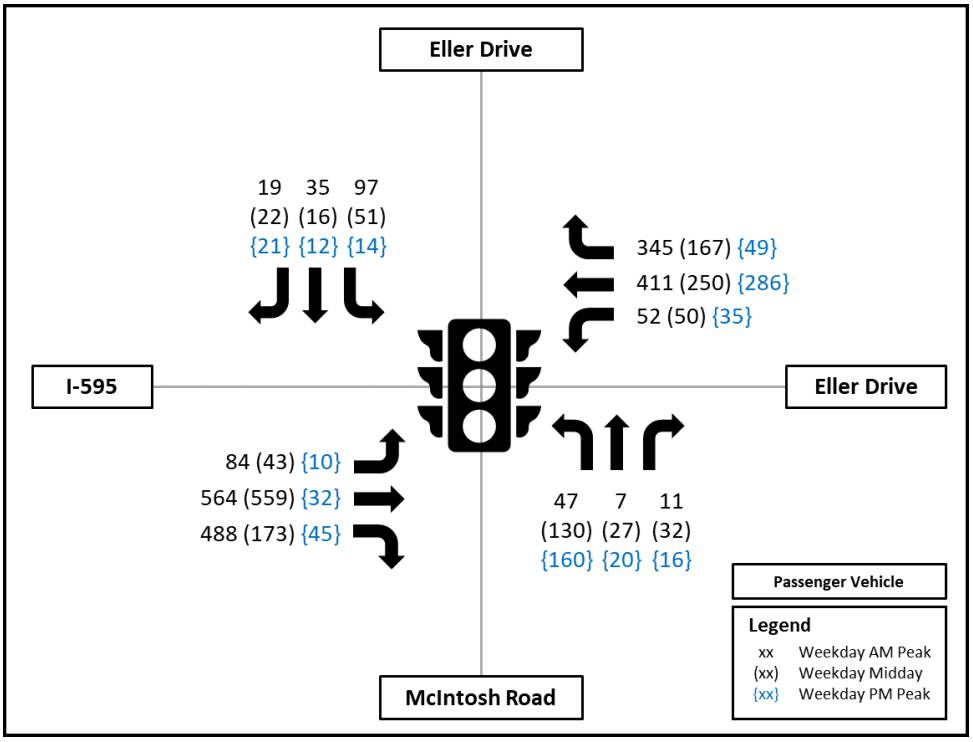


Figure 46. Design Year 2045 Total Turning Movement Volumes-Weekend

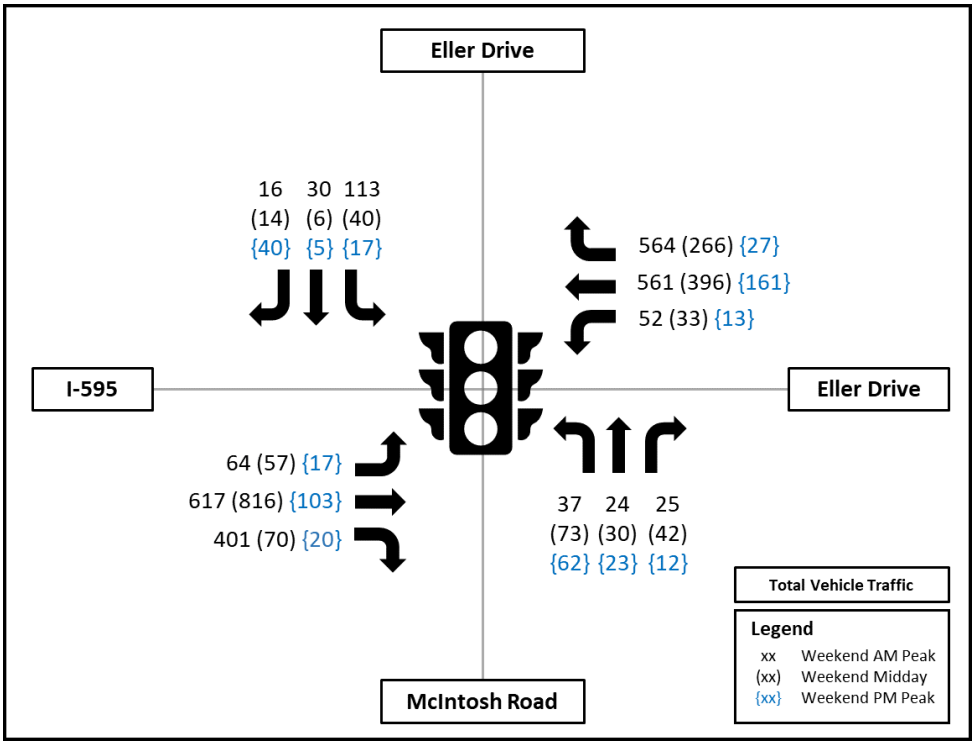


Figure 47. Design Year 2045 Truck Turning Movement Volumes-Weekend

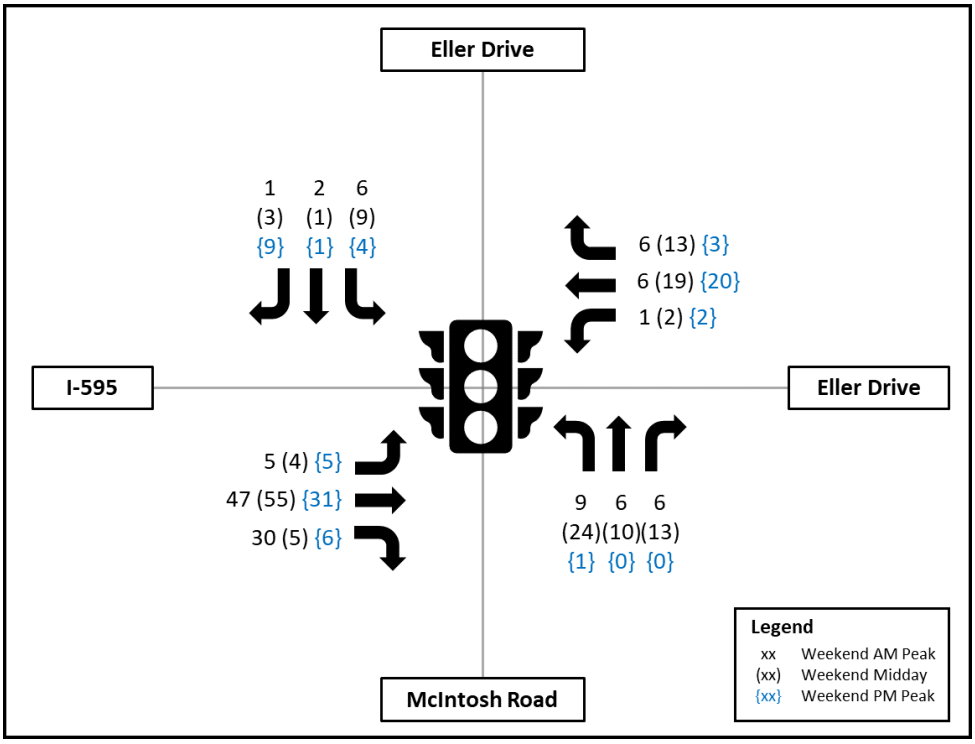
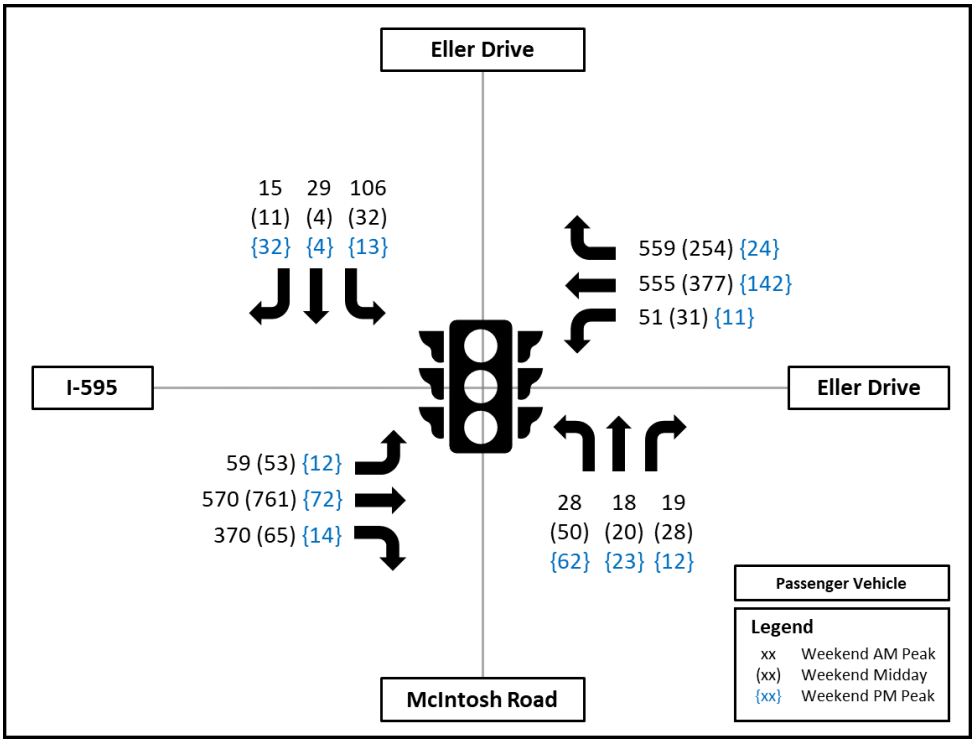


Figure 48. Design Year 2045 Passenger Vehicle Turning Movement Volumes-Weekend



Future Year Intersection Volumes Development Using 2018 Market Analysis

Future truck and cruise traffic projections were developed from a comprehensive market analysis that was part of the 2018 PEV Master/Vision Plan Update. The market analysis considered factors like future site locations, operational strategies, expected activity levels at container facilities and cruise terminals, traffic projections for petroleum shipments, diverse cargo operations, and the operation of perimeter security gates. The detailed market analysis is included as part of **Appendix B**.

Truck and passenger traffic are estimated separately. Table 27 presents the truck traffic for the year 2023, along with the projected truck traffic for the opening year 2028 and the design year 2045 on Eller Drive and McIntosh Road. The table also displays the volume ratios between future truck traffic and the existing truck traffic. For consistent analysis purpose, the weekly truck traffic for both 2028 and 2045 on McIntosh Road Gate has been determined using a Compound Annual Growth Rate (CAGR) of 2.45%. And the weekly truck traffic for both 2028 and 2045 on Eller Drive Gate has been determined using a CAGR of 0.88%. As an illustration, the volume for 2028 on McIntosh Road Gate is 19,754, resulting in a ratio of 19,754/17,502=1.129.

Table 27. Gate Truck Forecast

Gates	Weekly Truck Traffic			Truck Traffic Ratio vs. 2023		CAGR
	2023	2028	2045	2028	2045	
McIntosh Road Gate	17,502	19,754	29,809	1.129	1.703	2.45%
Eller Drive Gate	20,499	21,417	24,857	1.045	1.213	0.88%

Source: 2018 Market Analysis

Table 28 presents the passenger traffic for the 2023, along with the projected passenger traffic for the opening year 2028 and the design year 2045. The table also displays the volume ratios between future passenger traffic and the existing passenger traffic. For consistent analysis purpose, the passenger vehicle traffic for both 2028 and 2045 have been determined using a CAGR of 3.00%. For example, the volume for 2028 is 178,542, resulting in a ratio of 178,452/153,934=1.159.

Table 28. Passenger Traffic Forecast

Passenger Vehicle Traffic			Passenger Vehicle Traffic Ratio vs. 2023		CAGR
2023	2028	2045	2028	2045	
153,934	178,452	294,954	1.159	1.916	3.00%

Source: 2018 Market Analysis

For future turning movements entering and existing the study intersection, volume ratios from market analysis were used to estimate 2028 and 2045 truck and passenger vehicle turning volumes. Table 29 presents the growth factor used to estimate future turning movements for both trucks and passenger vehicles.

Table 29. Truck and Passenger Growth Factors for Turning Movement Volumes

Vehicle Type	Gate	2028	2045
Truck Growth Factor	McIntosh Road Gate	1.129	1.703
	Eller Drive Gate	1.045	1.213
Passenger Vehicle Growth Factor		1.159	1.916

Source: 2018 Market Analysis

Truck volumes and passenger vehicle volumes were estimated separately for opening year 2028 and

design year 2045. Forecasted truck and passenger vehicle turning movement volumes are shown in Figure 49 through Figure 60.

Figure 49. Opening Year 2028 Total Turning Movement Volumes-Weekday

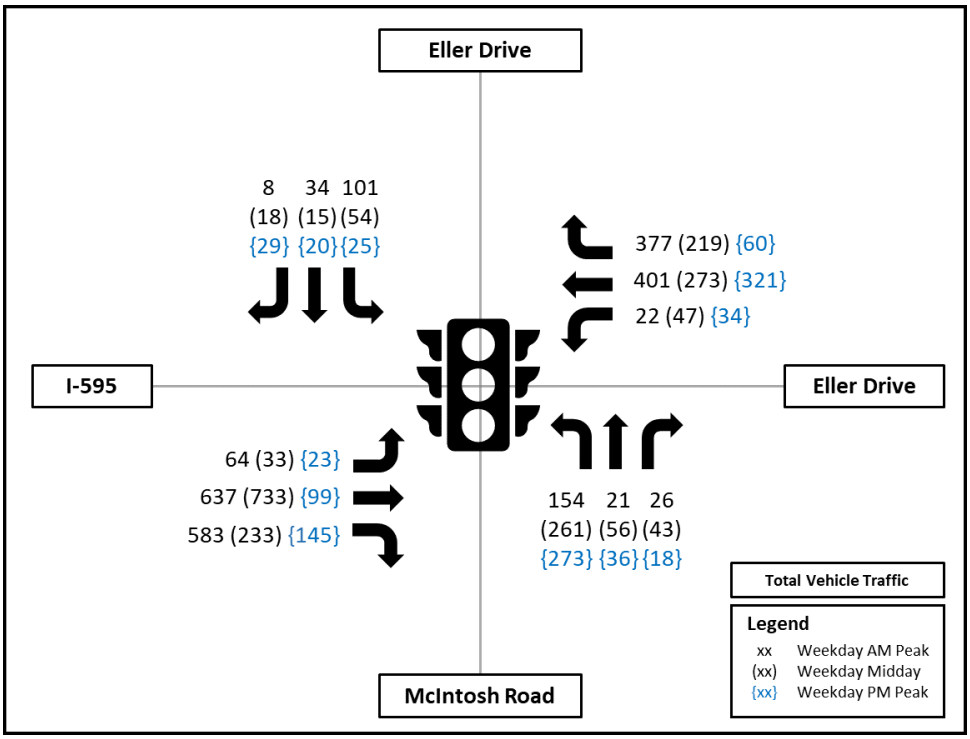


Figure 50. Opening Year 2028 Truck Turning Movement Volumes-Weekday

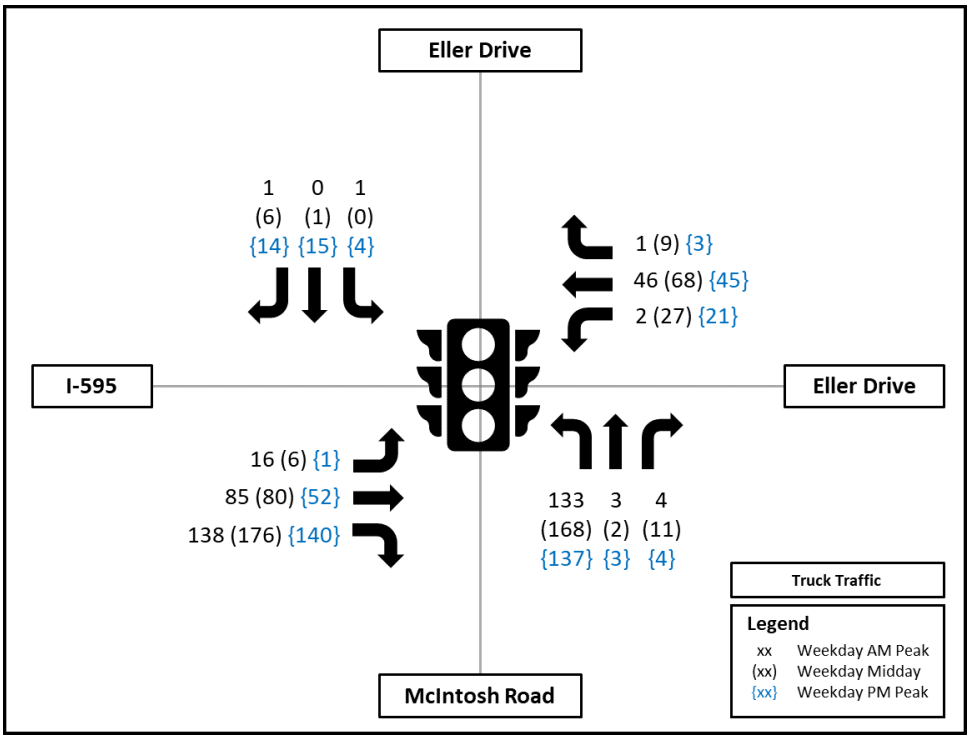


Figure 51. Opening Year 2028 Passenger Vehicle Turning Movement Volumes-Weekday

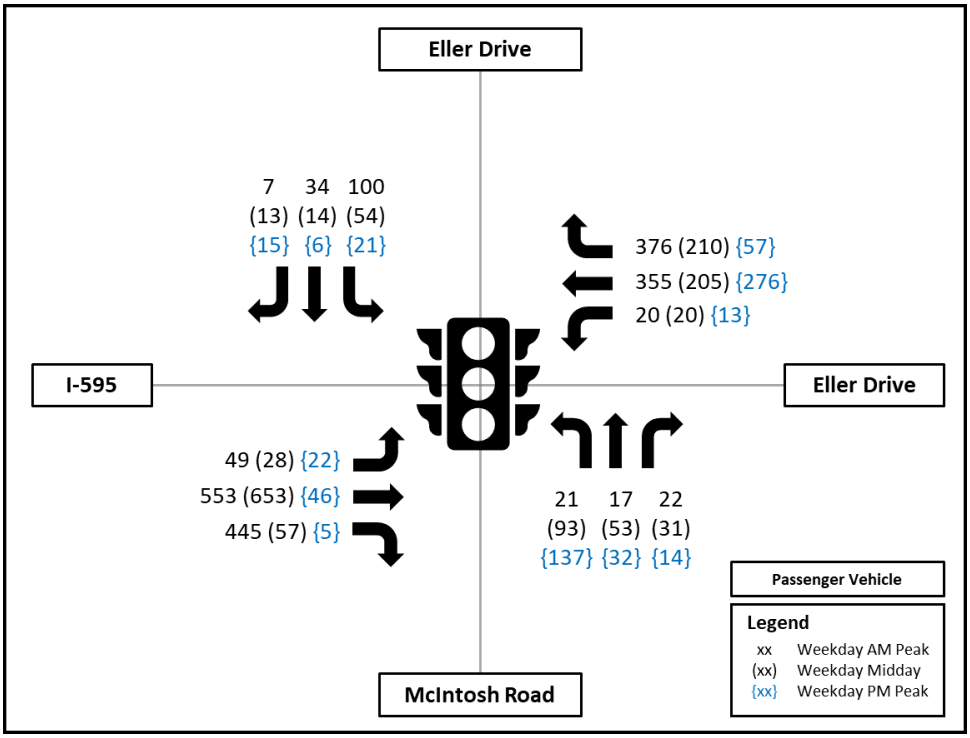


Figure 52. Opening Year 2028 Total Turning Movement Volumes-Weekend

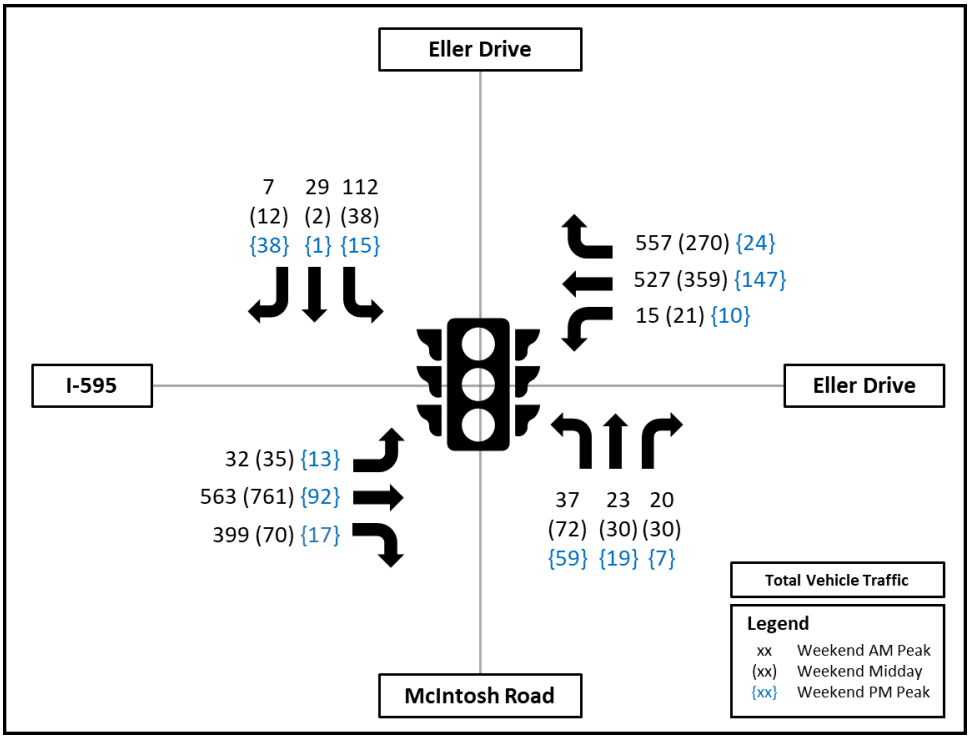


Figure 53. Opening Year 2028 Truck Turning Movement Volumes-Weekend

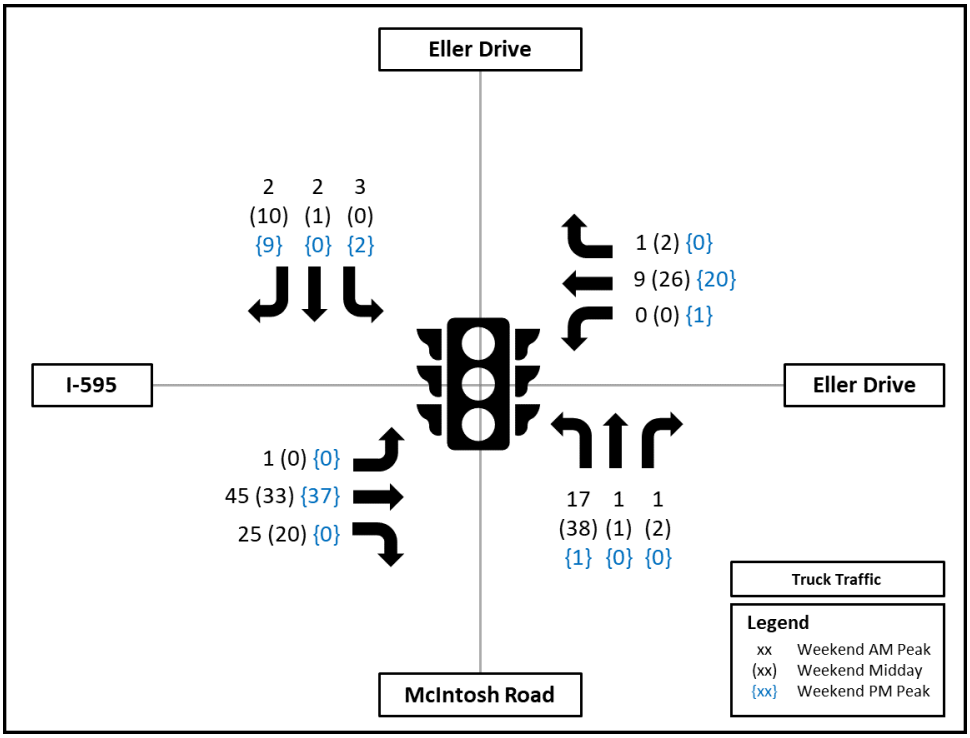


Figure 54. Opening Year 2028 Passenger Vehicle Turning Movement Volumes-Weekend

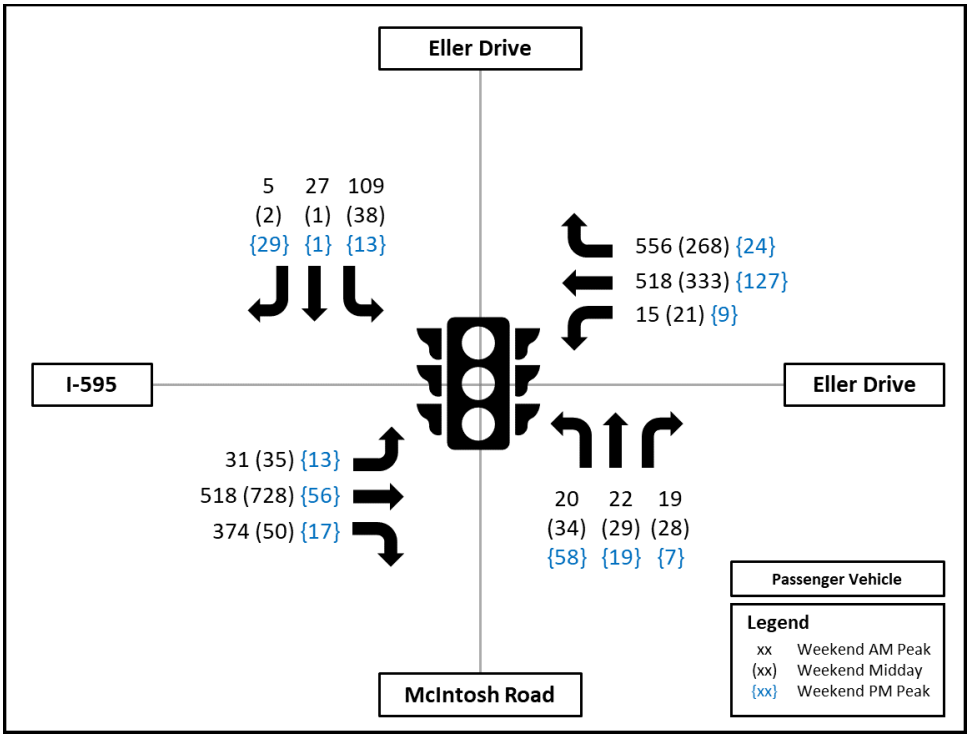


Figure 55. Design Year 2045 Total Turning Movement Volumes-Weekday

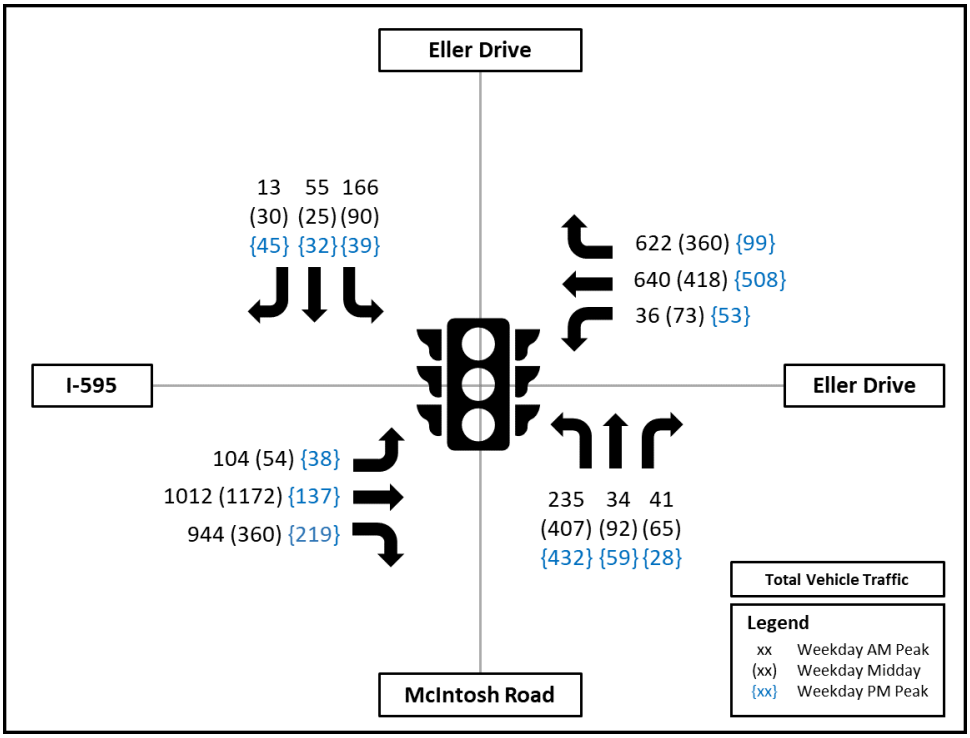


Figure 56. Design Year 2045 Truck Turning Movement Volumes-Weekday

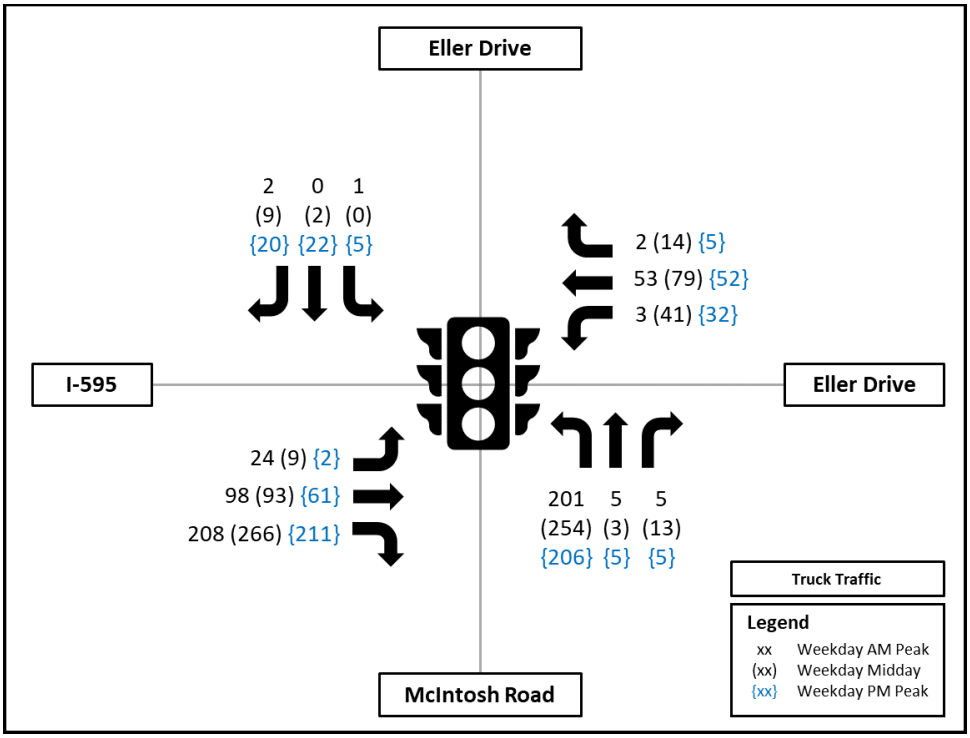


Figure 57. Design Year 2045 Passenger Vehicle Turning Movement Volumes-Weekday

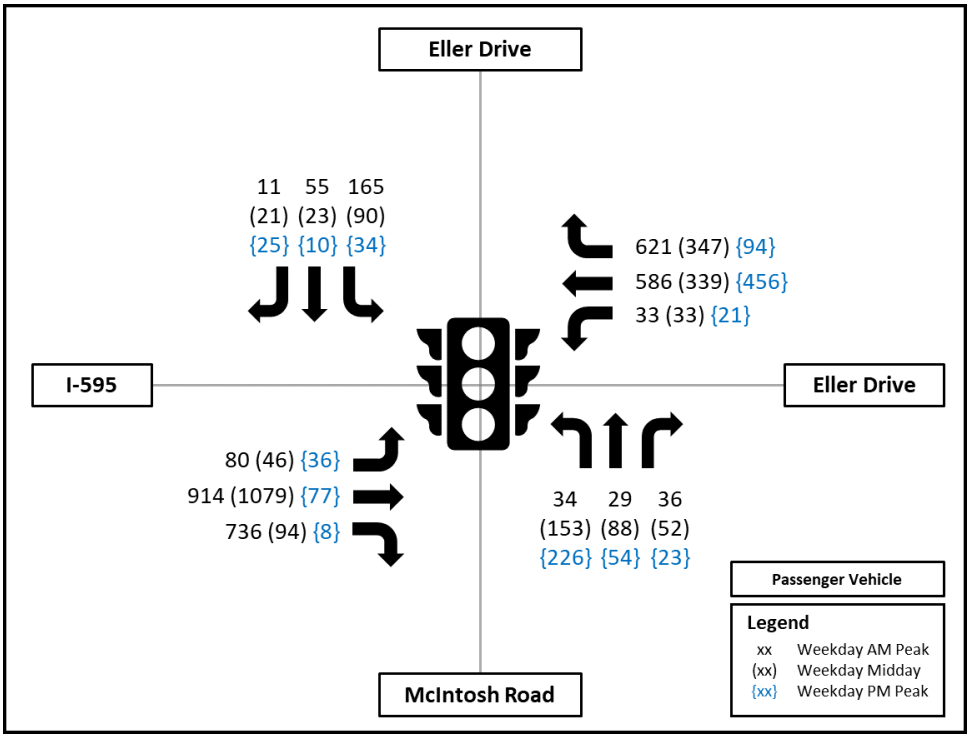


Figure 58. Design Year 2045 Total Turning Movement Volumes-Weekend

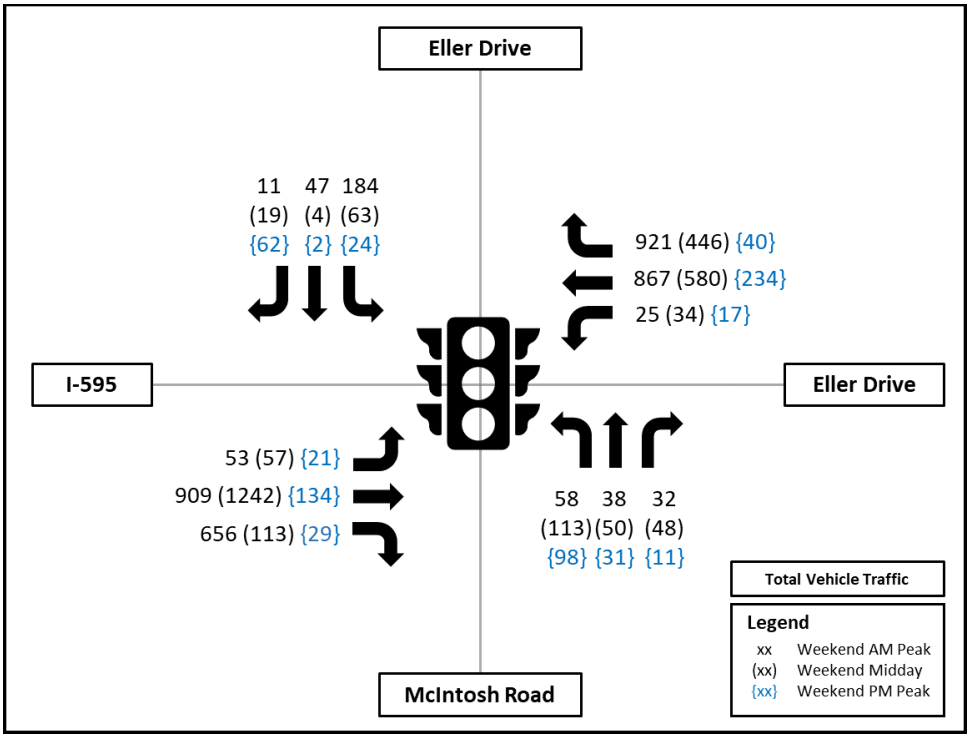


Figure 59. Design Year 2045 Truck Turning Movement Volumes-Weekend

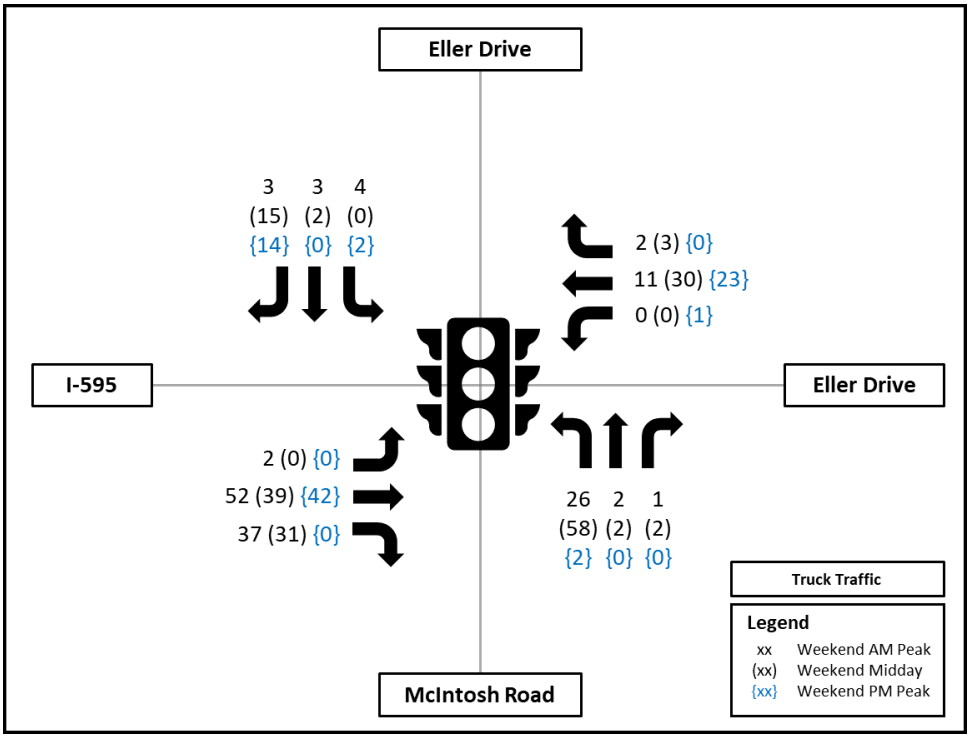
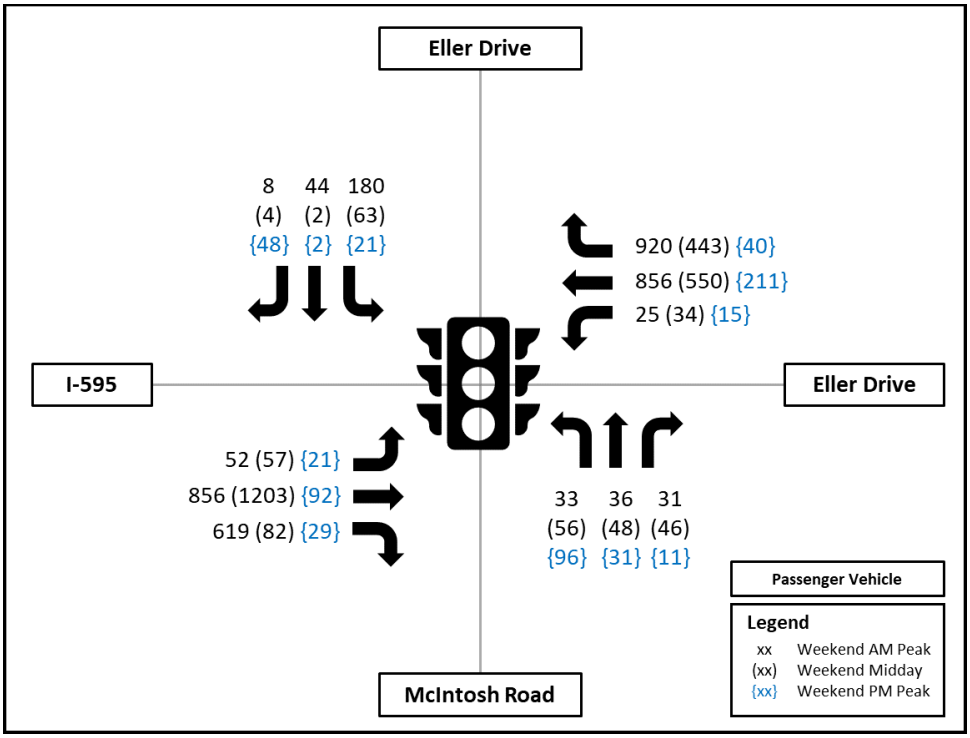


Figure 60. Design Year 2045 Passenger Vehicle Turning Movement Volumes-Weekend



Proposed Volume Projection

The difference in methodology has led to significant differences in future year volume projection results between the two analyses. The application of the 2018 Market Analysis produces higher estimated future intersection volumes compared to the TM Tool analysis.

The TM Tool approach relies on existing intersection counts, historical data, and regional travel demand model outputs, while the market analysis approach incorporates more comprehensive future cargo and cruise passenger growth alongside existing intersection counts.

For alternative analysis, we propose utilizing the volume projection results from the market analysis approach. This adjustment aims to ensure a more comprehensive understanding of growth opportunities at PEV.

7 Summaries

This Existing Conditions Report provides findings from the following work tasks:

Field Review and Observations: The consultant team has conducted multiple field reviews and observations. Key observations include heavy truck traffic at the intersection, intersection blockages caused by traffic queue from the Eller Drive security gate, long headway and intersection passage time by trucks, and eastbound right-turn truck traffic spilled back onto I-595 likely caused by Southport cargo terminal and/or McIntosh Road security gate operations rather than deficiencies of intersection capacity or operation. Roadway characteristics, such as intersection geometries, traffic control, posted speeds, existing right-of-way, context classification, are also documented in this section.

Existing and Future Conditions: The study team reviewed and documented findings from various related projects such as the 2019 PETA study, Airport-Seaport-Convention Center Connector, Griffin Road Extension/ NE 7th Avenue Improvements/McIntosh Road Realignment Project, Port Everglades By-Pass Road Improvements Project, Southbound US 1 to Westbound I-595 On-Ramp, and etc. Other conditions including traffic composition, traffic volume, roadway LOS, current and future land use, environmental conditions, and project stakeholders have been documented in section.

Crash Data and Analysis: Five-year crash data from the Signal Four Analytics have been obtained and analyzed. There are 74 crashes occurred in the study area. The study intersection and the Eller Drive segment between the study intersection and the Eller Drive security gate are identified as crash hotspots potentially due to delays and lane changes at the security gate. Crash statistics and crash diagrams are provided in this chapter.

Existing Conditions Traffic Operations Analysis: Intersection turning movement volumes and truck percentages were collected during weekday and weekend peak periods in late November and early December. VISSIM microsimulation models have been developed and calibrated to evaluate traffic operations at the study intersection. Operations results show that the study intersection is currently operating at acceptable LOS C or D during weekday and weekend peak periods. The most extended delays occur during weekday midday peak period between 11AM and 1PM with three intersection approaches (eastbound from I-595, southbound from Eller Drive, and northbound from McIntosh Road) operating at LOS E or F.

Intersection Traffic Demand Forecasting: Future truck and passenger traffic forecasts at the intersection were developed for opening year 2028 and design year 2045. Two distinct methods were applied: 1) FDOT District 4's TM Tool, and 2) growth factors derived from 2018 market analysis as part of the 2018 PEV Master/Vision Plan Update. Trucks and passenger cars turning movement volumes have been developed separately. Difference in methodology has led to significant differences in future year volume projection results between the two analyses. The application of the 2018 Market Analysis produced higher estimated future intersection volumes compared to the TM Tool analysis. For alternative analysis, volume results from the market analysis approach were proposed.