State of Florida
DEPARTMENT of Transportation

EXHIBIT "A"

SCOPE OF SERVICES

INTEGRATED CORRIDOR MANAGEMENT OPERATIONS

I-95 & I-4 or I-75

FOR

FINANCIAL PROJECT NUMBERS:

435443-4-82-01, 435443-4-82-02, 435443-5-82-01,

435443-5-82-02, 435443-5-82-02, 435445-1-82-04, 435445-1-82-05,

435445-1-82-06, 440412-1-32-03, 440412-1-32-04, 440412-1-32-05, 440412-1-32-06

This Exhibit forms an integral part of the agreement between the State of Florida DEPARTMENT of Transportation (hereinafter referred to as the DEPARTMENT or FDOT) and [CONSULTANT Name or leave blank until CONSULTANT is selected] (hereinafter referred to as the CONSULTANT) relative to the transportation facility described as follows:

1.0 PURPOSE

The purpose of this procurement is to retain a qualified CONSULTANT for the management and operations of the Florida DEPARTMENT of Transportation (FDOT), District Five (D5), Transportation Systems Management and Operations (TSM&O) System. The DEPARTMENT actively works to modernize, maintain, and enhance its TSMO System and to connect to the systems of other agencies for the purpose of improving safety and optimizing utilization of capacity so as to enhance mobility.

The Scope of Services establishes which items of work will be the responsibility of the CONSULTANT and/or the DEPARTMENT. The CONSULTANT shall be aware that as this program develops, certain modifications to the scope may be required. The CONSULTANT shall incorporate these refinements into the Standard Operating Guidelines as anticipated and integral part of the work. This shall not be a basis for any supplemental fee request(s). The CONSULTANT shall demonstrate good project management practices while working on this contract. These include communication with the DEPARTMENT and others as necessary, management of time and resources, and documentation. CONSULTANTs are expected to know the laws and rules governing their professions and are expected to provide services in accordance with current regulations, codes and ordinances and recognized standards applicable to such professional services. The CONSULTANT shall provide qualified technical and professional personnel to perform to DEPARTMENT standards and procedures, the duties and responsibilities assigned under the terms of this agreement. The CONSULTANT shall minimize to the maximum extent possible the DEPARTMENT's need to apply its own resources to assignments authorized by the DEPARTMENT. The DEPARTMENT will provide contract administration, management services, and other services listed in this scope of services. The CONSULTANT shall be fully responsible for all work performed and work products developed under this Scope of Services.

2.0 DESCRIPTION

The CONSULTANT shall be responsible for providing services such as, but not limited to monitoring traffic conditions roadways via 3rd party applications, Closed Circuit Television (CCTV) cameras, and Vehicle Detection Systems (VDS), managing lane blocking and non-lane blocking incidents to include: disseminating traveler information via Dynamic Message Signs and Florida's 511 Advanced Traveler Information System, dispatching Road Ranger Service Patrol, and other incident management resources to crash or incident scenes, coordinating with other agencies/entities, monitoring and operating Express Lanes and ramp signals, monitoring and operating Adaptive Signal Control Technology, providing Information Technology support, retiming traffic signals, and Traffic Operations and TSM&O Engineering support services to the District. The services being sought can be categorized into fourteen (14) major areas and one (1) option service:

- Performance Management
- RTMC Operations (Freeways and Expressways)
- RTMC Operations (Arterials)
- RTMC Offline Operations (Retiming)
- RTMC Operations (Express Lanes)
- RTMC Operations (Ramp Signaling)
- Traffic Incident Management
- Road Ranger Program Oversite
- Rapid Incident Scene Clearance Program Oversite

- Special Event Management Coordination and Operations
- TSM&O Public Involvement
- ITS Information Technology Services
- Software Support and Enhancement
- Miscellaneous RTMC Support Services
- Part-Time Shoulder Use

For the geographic area that the CONSULTANT is responsible for please refer to Appendix A

3.0 DEFINITION OF TERMS USED IN THE AGREEMENT

3.1 DEPARTMENT/District Five/District/FDOT

The Florida DEPARTMENT of Transportation, District Five Office.

3.2 DEPARTMENT's Project Manager

The DEPARTMENT's staff member(s), manager(s), and/or consultant(s) with overall responsibility and authority to oversee the contractual services being provided by the CONSULTANT for the DEPARTMENT as described in this Agreement.

3.3 CONSULTANT's Project Manager

The CONSULTANT's staff member(s) or manager(s), with overall responsibility and authority to oversee the contractual services being performed/provided by the CONSULTANT for this Agreement.

3.4 Letter of Authorization/Task Work Order

A letter of authorization or task work order issued by the DEPARTMENT and/or the DEPARTMENT's Project Manager (or his/her designee) authorizing the CONSULTANT to commence work on a specific task in accordance with the contractual services being performed/provided by the CONSULTANT as described in this CONTRACT/AGREEMENT. Completion due dates and fees are specified in the Letter of Authorization or Task Work Order.

3.5 Written Notice

Written notice is herein define as notice in writing signed and may be a facsimile of the original.

3.6 DEPARTMENT Observed Holidays

The following holidays are observed by the DEPARTMENT**.** If any of these holidays fall on a Saturday, the preceding Friday is observed. If any fall on a Sunday, the following Monday is observed.

- New Year's Day
- Martin Luther King Day
- Memorial Day
- Independence Day
- Labor Day
- Veteran's Day
- Thanksgiving Day and the following day
- Christmas Day

3.7 DEPARTMENT Business Hours

Typically 8:00 A.M. through 5:00 P.M., Monday through Friday the DEPARTMENT conducts its routine business. The DEPARTMENT's Offices are typically closed at 5:00 P.M., on holidays and, weekends. The

FDOT District Five Regional Transportation Management Center (RTMC) operates twenty-four (24) hours a day, seven days a week, year-round

3.8 Meetings

The CONSULTANT shall be required to facilitate various meetings to support this contract. The CONSULTANT shall be responsible for coordinating all aspects of the meeting including but not limited to: arranging and scheduling the appropriate conference room within FDOT or selected venue; verifying arrangements for any special audio-visual (AV) needs of the presenters on the agenda. The CONSULTANT shall be responsible for preparing and distributing presentation-related handouts to attendees as appropriate.

The CONSULTANT shall prepare a draft agenda for each meeting as per input from the DEPARTMENT. The draft agenda shall be presented to the DEPARTMENT two weeks prior to the meeting for review and approval. Once comments are received from the DEPARTMENT, the CONSULTANT shall produce the final agenda, ready for copying and distribution to the meeting attendees. The CONSULTANT shall distribute the meeting agenda to attendees via email seven calendar days prior to the meeting date.

The CONSULTANT shall prepare meeting minutes for each meeting. The CONSULTANT shall provide a draft copy of the minutes to all attendees for review. The CONSULTANT shall produce the final minutes. The CONSULTANT shall distribute the final meeting minutes to all attendees via email 14 calendar days after the meeting.

The CONSULTANT shall track the status of the action items resulting from the meeting. This activity shall include follow-up with the individual and/or entity responsible for the action item. The CONSULTANT shall be responsible for identifying the availability (or lack thereof) of requested information or documents; determining status of action items; identifying the point of contact for the information and establishing initial contact with that individual or entity. The CONSULTANT shall be responsible for soliciting attendance, updating contact lists, and the like. The CONSULTANT shall be responsible for updating and maintaining the meeting attendees contact list.

The CONSULTANT shall bring copies of the agenda and the meeting minutes (from the preceding meeting) to the meeting for distribution to the attendees. The CONSULTANT shall also bring a sign-in sheet.

4.0 SERVICES TO BE PROVIDED BY CONSULTANT

The fourteen (14) services and one optional service to be provided under this Agreement are as follows:

- Performance Management
- RTMC Operations (Freeways and Expressways)
- RTMC Operations (Arterials)
- RTMC Offline Operations (Retiming)
- RTMC Operations (Express Lanes)
- RTMC Operations (Ramp Signaling)
- Traffic Incident Management
- Road Ranger Program Oversite
- Rapid Incident Scene Clearance Program Oversite
- Special Event Management Coordination and Operations
- TSM&O Public Involvement
- ITS Information Technology Services

- Software Support and Enhancement
- Miscellaneous RTMC Support Services
- Part Time Shoulder Use

While these services are described in separate sections it is not required for the services to be provided by different staff. The CONSULTANT can and is encouraged to improve efficiency by combining tasks and utilizing staff effectively.

4.1 Performance Management

The CONSULTANT shall maintain up to date SOPs for all aspects of the TMC for which they are responsible in accordance with the Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures. The CONSULTANT is expected to review the documents upon update and make any changes required of the SOPs as required.

SOPs are to govern the actions of the CONSULTANT staff. It is the CONSULTANT'S responsibility to provide oversight and insure adherence to the SOPs. The quality control process is an essential function of the RTMC Operations. To function in the most efficient manner, the errors which may occur in day-to-day operations need to be identified, collected, reviewed, addressed and ultimately corrected. The CONSULTANT will develop a process to ensure quality service as part of their SOPs.

The DEPARTMENT may also request updates to the SOGs from time to time, based on the growth of the system, new services coming online, or periodic updates.

The DEPARTMENT has developed statewide criteria for measuring performance. Additionally, there are contract specific performance measures in section 5. The CONSULTANT is responsible to meet the cited performance criteria from both. This may involve augmenting staffing, enhancing training, or taken other actions to ensure acceptable performance.

The CONSULTANT will provide performance reporting to the DEPARTMENT monthly or as specified in the specific performance measure, whichever is more frequent. The CONSULTANT will also aggregate performance measure into quarterly or annual reports as reflected for the performance measure.

The CONSULTANT will conduct monthly meetings with the DEPARTMENT to review the performance measures, document any deficiency, provide a performance improvement plan, as needed, summarize and present any changes to the SOP, provide a look ahead to upcoming changes, discuss unmet needs, and to review open items/in progress issues.

The CONSULTANT will also supply express lane reports as required for the opening and continued operation of express lanes, consistent with statewide direction.

4.1.1 Daily Reports

Daily reports shall be submitted by the CONSULTANT by 8:00 am on workdays, without weekly reports, the following day. The CONSULTANT shall be required to prepare and distribute the reports any notable events, including but not limited to events at the Regional Transportation Management Center (such as fire alarms, failed air conditioning, operator dismissal, water intrusion, etc.), Freeway (incidents involving first responder, bridge hits, emergency landings, management alerts, etc), Express Lanes (Maximum price by segment, any periods less that 45 mph, nonrevenue activities, Emergency Access Gate activations, crashes), Road Rangers (exceptional service, potential customer complaints, road ranger involved crashes, potential partner complaints, failure to respond, significant

out of beat activity, etc.), or anything that might make the news will be provided by the CONSULTANT to the DEPARTMENT.

4.1.2 Weekly Reports

Weekly reports shall be submitted by the CONSULTANT by 9:00 am on the first weekday following the weekend. The CONSULTANT shall be required to prepare and distribute the performance measures in the table below.

WEEKLY REPORT	
Area	**PERFORMANCE MEASURE**
AR	ASCT configurations maintained
RS	Record Ramp Signals Performance Measures from Section 4.6
PI	Public information inquiries

The will also include any notable events from the days not included in previous daily reports based on the criteria from the daily report.

4.1.3 Monthly Reports

Monthly reports shall be submitted by the CONSULTANT within 10 calendar days after the end of the month. The CONSULTANT shall be required to prepare and distribute the performance measures in the table below and website statistics.

MONTHLY REPORT	
Area	**PERFORMANCE MEASURE**
AR	Configure ATMS Alarm Status
AR	Communication Status
FW	TMC Operator Error to Event Ratio (Blocking)
FW	TMC Operator Error to Event Ratio (Non-blocking)
FW	DMS Usage
FW	Road Ranger Dispatch
FW	IDS Acknowledgement
FW	Event Confirmation
FW	DMS Response Plan
FW	Notifications
FW	Publish to 511
FW	Open Roads Time
FW	Roadway Clearance Time
FW	TTR
FW	Verify device entered in Maintenance Software when down
FW	Communication Status
AR	Respond to Arterial Alarms
AR	Report critical detection failures
AR	Log Complaints
AR	Acknowledge Complaints
AR	Calls to close Complaints
AR	ATMS/Detector Zone process for LA controlled locations configured correctly, or maintenance request generated

AR	Report ASCT detection failures
AR	Delay
AR	AoR
AR	TTR
AR	ICMS acknowledgement
AR	Detection/ped button outages reported to local agency
AR	ATMS/Detection Zone for FDOT controlled configured correctly or maintenance request generated
AR	Tickets issued per procedure to Maintenance Contract
AR	Alternative Route Flush Plans develop Configured/Maintained
AR	Transit Signal Priority
EX	DMS Usage
EX	TMC Operator Error to Event Ratio (Blocking)
EX	TMC Operator Error to Event Ratio (Non-blocking)
EX	DMS Usage
EX	Road Rangers Dispatching
EX	IDS Acknowledgement
EX	Event Confirmation
EX	DMS Response Plan
EX	Notifications
EX	Publish to 511
EX	Open Roads Time
EX	Roadway Clearance Time
EX	Verify device entered into Maintenance Software when down
EX	Communication Status
RS	Modify Parameters for metering to prevent queue spillback
RS	Verify device entered into Maintenance Software when down
RS	Communication Status
RR	Invoices
RR	Performance Evaluation
RR	Road Ranger Contractor(s) Monthly Meeting
RC	Scope Development
RC	Invoices
RC	Performance Evaluation
RC	Review compliance with RISC timeline/performance measures
SE	Special Events Premeeting (VIP, Speedway, Manned Launch, City of Orlando Venue, Orange Convention Center, Annual UCF Games, etc)
SE	Compliance with the Special Event Performance Measure
SE	After action debrief
PI	Respond
PI	Website Maintenance
IT	Sunguide ticket logging
IT	ATSPM Records Availability
IT	Incorporation of New Signals into ATSPM
IT	Ticket clearance
SS	Ticket clearance
MS	Review deliverables from Researchers
MS	Invoices

MS	FHP Invoices

4.1.4 Quarterly Reports

Quarterly reports shall be submitted by the CONSULTANT within 14 calendar days after the end of the quarter. The CONSULTANT shall be required to prepare and distribute the performance measures in the table below.

QUARTERLY REPORT	
Area	**PERFORMANCE MEASURE**
PM	External Quarterly Report
TI	Conduct TIM Meetings
TI	Post Incident Analysis (PIA) Conducted
TI	TIM Quarterly Newsletter
TI	Attendance at TIM Meeting
RR	Vehicle inspections
PI	SunGuide Disseminator

4.1.5 Annual Reports

Annually reports shall be submitted by the CONSULTANT by January 20, for the preceding calendar year. The CONSULTANT shall be required to prepare and distribute the performance measures in the table below.

Area	PERFORMANCE MEASURE
FW	Develop Response Plans
AR	Overcapacity Intersection, Segments Report
AR	Recommended Ops Improvement Ranking Report
AR	SIIA maintenance
AR	SIIA populated
EX	% of time below 45 mph by segment outside of incident duration
TI	Mutuallink Sharing of Images
RR	Scope Development
SE	Develop Special Event Performance Measure
IT	Sunguide Availability
IT	Sunguide Configuration up to date
SS	Enhancement
MS	Technician Program
MS	Technician Program, Local Agencies

Additionally throughout the year there are deliverables that have specific dates. They are provided in the table below.

ANNUAL OR DATE		
Area	**PERFORMANCE MEASURE**	**DATE**

SE	Separate IT Disaster Recovery Response Action Plan from Disaster Recovery Plan	15-Jan
SE	Update IT Disaster Recovery Response Action Plan	15-Jan
SE	Update Continuity of Operations Plan (Building outage, Pandemic)	15-Feb
SE	Separate Continuity of Operations Plan (Building outage, Pandemic) from Disaster Recovery Plan	15-Feb
SE	Develop VIP, City of Orlando Venue, Orange Convention Center, Annual UCF Games Plans, Fire Events, Sink Holes Plans	15-Mar
SE	Update Event Plans (Speedway, Manned Launch, VIP, City of Orlando Venue, Orange Convention Center, Annual UCF Games Plans)	15-Mar
RT	Retiming Report	16-Apr
SE	Update TMC Emergency Response Action Plans (ESU, Hurricane Recovery, Fire Events, Sink Holes)	15-May
RT	Retiming Implementation	16-May
RT	Before and After Report	31-May
RT	Conformance to Model Maintenance Plan	30-Jun
RT	Update Model Maintenance Plan	16-Jul
RT	Generate Annual 5 Year Signal Intersection Retiming Plan	16-Jul
RT	Data Plan for needed corridors	16-Aug
PM	External Annual Reports	16-Aug
TI	FHWA TIM Self- Assessment	20-Aug
TI	TIM Procedural Plan	1-Sep
AR	Operating Procedures	16-Oct
RT	Data Collection Report	16-Nov
PM	SOPs	30-Nov
RR	Annual Review of Zones, periods, and Number of Road Ranger per period per Zone	7-Dec
RC	SOGs	14-Dec

4.1.6 External Quarterly Reports

Quarterly reports shall be submitted by the CONSULTANT within 14 calendar days after the end of a quarter (i.e. first quarter report of the fiscal year due by 14th of October). The CONSULTANT shall be required to prepare and distribute the reports shown below (samples of these reports are included in Appendix "Y"):

- Performance Targets
  - TTI (AM)
  - TTI (PM)
  - PTI (AM)
  - PTI (PM)
  - Freeway Vol (AM)
  - Freeway Vol (PM)
  - Fatalities
  - Secondary Crashes
  - Open Roads Time
  - Road Ranger Response Time
  - RISC Clearance Time
- Travel Time Reliability of Managed Corridors
- Arterial Events Worked by issue by corridor
- Arterial Infrastructure Summary
- TSP requests and granted statistics

- Ontime Arrival Percentage for routes serving Sunrail
- Freeway Events Per Operator
- Total Number of Road Ranger Assists and activities
- Incident Clearance by Limited Access Facilities
- Roadway Clearance by Limited Access Facilities
- Open Roads Time by Limited Access Facilities
- Stories for Notable Events
- RISC Clearance Times
- R-ICMS performance by agency (to be developed)

4.1.7. External Annual Reports

Annual reports shall be submitted by the CONSULTANT by January 20. Annual reports shall be from January 1 through December 31. The CONSULTANT shall be required to prepare and distribute the reports shown below (samples of these reports are included in Appendix "Z"):

- Device Availability
- Mobility
  - TTI (AM)
  - TTI (PM)
  - PTI (AM)
  - PTI (PM)
  - Freeway Vol (AM)
  - Freeway Vol (PM)
  - TSP
- Safety
  - Fatalities
  - Secondary Crashes
  - Open Roads Time
  - Road Ranger Response Time
  - RISC Clearance Time
- Achievements
  - Project Deployment
  - Change in Agency Status

4.2 <u>RTMC Operations (Freeways and Expressways)</u>

The CONSULTANT shall monitor traffic conditions roadways via 3rd party applications, Vehicle Detection Systems (VDS), and Computer Aided Dispatch to find lane blocking events. They shall confirm the incidents with Closed Circuit Television (CCTV) cameras. They shall record this information in Sunguide, disseminate traveler information via Dynamic Message Signs and Florida's 511 Advanced Traveler Information System, dispatching Road Ranger Service Patrol, coordinate with arterial management and TIM personnel, and other incident management resources to crash or incident scenes, coordinating with other agencies/entities. The CONSULTANT is also responsible for ensuring accurate information related to truck parking is shared with the public.

The CONSULTANT shall provide the necessary staff to coordinate operations of the Road Ranger Service Patrol program and Rapid Incident Scene Clearance (RISC) program for FDOT District Five, including dispatching, monitoring, and communicating with the Incident Management resources in accordance with

the latest version of the FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures.

The CONSULTANT shall proactively monitor the field equipment and systems and report failures in accordance with FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures. The CONSULTANT shall identify gaps in coverage or other needed network improvements to advance operations in District 5.

The CONSULTANT will verify truck occupancy in rest areas and weight stations, updating counts via Sunguide as required.

Actively develop and expand the DEPARTMENT's ICM efforts through the development of response plans on limited access facilities supported by Priority Corridors allowing diversion activities.

4.2.1 Minimum RTMC Control Room Staffing Levels

At a minimum, the following positions shall be identified and scheduled for operations at the RTMC:

- RTMC Manager – full time on-site at the SunGuide RTMC
- Shift Supervisor – minimum one Shift Supervisor shall be scheduled for each shift on-site at the SunGuide RTMC at all times
- RTMC Operator – minimum two RTMC Operators shall be scheduled for operations on-site at the SunGuide RTMC at all times

4.3 RTMC Operations (Arterials)

The CONSULTANT is expected to work with local agencies to optimize arterial operations and expand the Integrated Corridor Management efforts in D5. The CONSULTANT will work within local agency signal ATMS. The CONSULTANT will always cultivate a positive relationship with the local agency and be respectful of their efforts to contribute to arterial operations. While different points of view are expected, the CONSULTANT will treat the local agency as part of the DEPARTMENT's team and seek to proactively come to solutions to shared challenges.

The CONSULTANT will provide maintenance information on a daily, biweekly (twice a week), or weekly basis depending on the local agencies preference for all detection related to smart signal operations or critical detection. Additionally, network state/system availability will be observed for Priority Corridors. Coordination with the local agency is expected when outages are observed. Detection and network metrics will be tracked followed up on with the agency and escalated within the DEPARTMENT to insure proper system maintenance. Automation through the ATMS should be pursued, but not at the expense of working with local agencies.

The CONSULTANT shall directly operate the DEPARTMENT's then current signal ATMS (MaxView or other) and then current Adaptive Signal Control System Deployments (US 92, SR46, US 17-92, SR 40, SR 421, SR 44, and others). This includes all aspects of operations. Staffing of the RTMC does not require an arterial operator 24 hours a day, 7 days per week, and 365 days per week

The CONSULTANT shall monitor traffic conditions roadways via 3rd party applications, Vehicle Detection Systems (VDS), and Computer Aided Dispatch to find lane blocking events. They shall confirm

the incidents with Closed Circuit Television (CCTV) cameras. They shall record this information in Sunguide, disseminate traveler information via Dynamic Message Signs and Florida's 511 Advanced Traveler Information System, dispatching Road Ranger Service Patrol, coordinate with arterial management and TIM personnel, and other incident management resources to crash or incident scenes, coordinating with other agencies/entities. They shall update patterns in coordination with local agencies in response to incidents as is warranted. Automation of these activities is encouraged to insure timely and technically supported decisions are being made. Coordinate with RTMC Offline Operations in the development of additional needed patterns to support nonrecurring congestion.

The CONSULTANT shall proactively monitor the field equipment and systems and report failures in accordance with FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures. The CONSULTANT shall identify gaps in coverage or other needed network improvements to advance operations in District 5.

The CONSULTANT shall note geometric or other operational limitations in the transportation network and make recommendations for remediation for DEPARTMENT consideration. This information shall be in a formal manner but does not require adherence to the Manual on Uniform Traffic Studies or extensive concept development. Rather the intent is to allow the DEPARTMENT the awareness of the needs and to use other resources to fully vet the alternatives.

Actively develop and expand the DEPARTMENT's ICM efforts through the use of and identification of needs for patterns on Priority Corridors to support diversion activities. The CONSULTANT will also be responsible to make sure data in the Signalized Intersection Inventory Application, or SIIA, is correct and up to date. Fields available at the TMC will be entered and maintained by the CONSULTANT. Field data collection will be tasked by the CONSULTANT to the DEPARTMENT'S maintenance contractor and be verified. This will be done by visiting intersections for verification in such a manner as 25% of signals on the state road system and a representative sample of off system are audited each year.

The CONSULTANT will also insure the appropriate operation of Transit Signal Priority. This includes insuring emitters and receivers are operational and configured. Also the CONSULTANT will obtain performance data from the transit agency and ensure timings are up to date including TSP settings.

4.4 RTMC Offline Operations (Retiming)

The DEPARTMENT is seeking to depart from the strict adherence to AM, Midday and PM timing plans on a regular basis, and instead is seeking to utilize data for the development of timings that reduce delay, increase throughput, and improve safety during peak, off peak, special events, and all other times. The DEPARTMENT recognizes this is an aspirational target, but one that will make a difference to the residents and visitors to the State of Florida. The CONSULTANT shall develop a five-year retiming plan for review and approval by the DEPARTMENT every summer. The plan will include a strategy for retiming prioritization. There are multiple areas/tiers that should be included within the plan:

- Immediate needs where data is available
    - The CONSULTANT shall review and outline the retiming strategy for areas where data is available (first two years only). Available databases and platforms can be used to aid this endeavor, such as, ATSPM, ICM devices, SunStore, etc.
- Deployment plan for areas with data gaps that can be closed (full five years)

    - The CONSULTANT shall outline a plan for equipment deployment to improve retiming throughout the District. The DEPARTMENT has made available limited funding for equipment deployment, as reflected in the current version of the Work Program. The CONSULTANT shall review the available data to determine the signal and signal groups by time of day and day of week to determine which locations, dates and times have the greatest need. This may include a focus on nonrecurring congestion as well as recurring congestion.
- Frequency based plan for locations without data and without likely future data equipment deployments
    - The CONSULTANT shall develop a ranking/prioritization system to identify corridors with the greatest operational need. The strategic elements that should be considered include: agency expressed priorities, time elapsed since last major retiming, coordination problems (travel times and delays), capacity projects, observed operational issues, public complaints, traffic volumes, types of controllers, evacuation/diversion routes, crash rates, land use changes and other factors. These elements should be assigned a weight to determine prioritization. Signals without data will be retimed in accordance with the scope in Appendix AA.
- Tracking of frequency-based timing for signals with data to understand when they would have been retimed under the traditional methodology.
    - To meet the frequency goals in the statewide guidance, the CONSULTANT will utilize available data in the current year for frequency based timing for signals with data to show characteristics of their existing performance, relative to the work that will be done. The CONSULTANT must clearly document that the greater need is being addressed and document the performance measurements. Acceptable performance measurements must be discussed and approved by the DEPARTMENT.

As part of the retiming effort, the CONSULTANT will actively develop and expand the DEPARTMENT's ICM efforts through the development of patterns on Priority Corridors to support diversion activities, ensure connectivity to devices, and work with local agencies to correct configurations and ensure repairs are done in a timely manner.

4.2.1 Model Use and Maintenance

The CONSULTANT shall develop a model management plan in coordination with Local Agencies. The CONSULTANT will review the DEPARTMENT's existing models (Active Arterial Management, Retiming Program, MetroPlan Orlando Retiming Program, Integrated Corridor Management Operations, and local agency models such as City of Orlando downtown model), excluding AIMSUN and demand models. The CONSULTANT will recommend how to avoid duplication of work, keep values up to date, and ensure consistency with the various efforts around the region in a cost effective manner, including any suggest software investments to support model management.

4.5 RTMC Operations (Express Lanes)

The CONSULTANT shall assume operations of the Express Lanes for I-4 Ultimate. The CONSULTANT shall: verify toll amount pricing, ensure pricing is occur correctly, make manual pricing adjustments, as required, monitoring traffic conditions roadways via 3rd party applications, Vehicle Detection Systems (VDS), and Computer Aided Dispatch to find lane blocking events and congestion events, confirm the incidents with Closed Circuit Television (CCTV) cameras. They shall record this information in Sunguide,

disseminate traveler information via Dynamic Message Signs and Florida's 511 Advanced Traveler Information System, dispatching Road Ranger Service Patrol, coordinate with Florida's Turnpike, Freeway Management, and TIM personnel, and other incident management resources to crash or incident scenes, coordinating with other agencies/entities

The CONSULTANT shall oversee the overall project performance to ensure it is meeting the intended results, evaluating and analyzing project related performance metrics, developing and implementing recommendations to mitigate performance measures degradation, conducting and overseeing operational analyses, providing projects related data and information to others (internal and external, but always through the DEPARTMENT), reviewing and updating operational parameters including but not limited to: I-4 Express Time of Day, Level of Service, and Traffic Density Delta tables.

The CONSULTANT shall proactively monitor the field equipment and systems and report failures in accordance with FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures, with special attention to paid to Vehicle Detection System. The CONSULTANT shall identify gaps in coverage or other needed network improvements to advance operations in District 5.

The CONSULTANT will work directly with the I-4 Concessionaire for Service Patrol, RISC, and device maintenance, but will not be responsible for contract administration of the I-4 Ultimate. The CONSULTANT will work with the DEPARTMENT to supply information that may be needed for the contract oversite.

Actively develop and expand the DEPARTMENT's ICM efforts through the development of response plans on express lane facilities.

4.6 RTMC Operations (Ramp Signaling)

The CONSULTANT shall assume operations of the Ramp Signals for I-4 Ultimate. The CONSULTANT shall: observe metering operation, ensure that signals are turning on and functioning appropriately, document performance measures such as queue length, queue storage, I-4 travel time, I-4 density, and make adjustments of metering rates to prevent arterial blockage and to optimize freeway performance.

The CONSULTANT shall proactively monitor the field equipment and systems and report failures in accordance with FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures, with special attention to paid to Vehicle Detection System. The CONSULTANT shall identify gaps in coverage or other needed network improvements to advance operations in District 5.

The CONSULTANT shall also coordinate with local signal maintaining agencies related ramp signaling operations, including monitoring arterial operations adjacent to ramps that are metered, reviewing the arterial signals plans to identify potential changes or improvements to better facilitate ramp metering operations, and working with the local agency and the Department to implement any identified changes that are needed.

The CONSULTANT will work directly with the I-4 Concessionaire for device maintenance but will not be responsible for contract administration of the I-4 Ultimate. The CONSULTANT will work with the DEPARTMENT to supply information that may be needed for the contract oversite.

Actively develop and expand the DEPARTMENT's ICM efforts through the development of response plans.

4.7 Traffic Incident Management

The CONSULTANT shall be responsible for providing program management services to support and coordinate all incident management programs and initiatives identified in the scope of services, in accordance with FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures.

The CONSULTANT shall maintain the Incident Management Operations of the RTMC SOGs. These SOGs documents the various Incident Management services as well as roles and responsibilities of the various entities providing Incident Management services. During the duration of this contract the CONSULTANT shall completely evaluate and update the Incident Management Operations SOGs to ensure that they are as efficient and effective as possible. Updates to the Incident Management Operations SOGs shall be approved by the DEPARTMENT prior to implementation.

The CONSULTANT shall create and maintain a TIM Procedural Plan, minimally annually. The TIM Procedural Plan provides the framework for guiding the District's Traffic Incident Management activities in the short term (6 – 24 months). The TIM Procedural Plan shall include identification of key stakeholder roles and responsibilities, agreements, performance measures, key focus areas for improvement, etc. The CONSULTANT shall completely evaluate and update the TIM Procedural Plan.

4.7.1 Traffic Incident Management (TIM) Teams

The DEPARTMENT has four Traffic Incident Management (TIM) Teams, the Greater Orlando Area, I-75 Area, I-95 North and I-95 South. These teams meet quarterly. The CONSULTANT shall coordinate, conduct and support these meetings. The CONSULTANT shall be responsible for updating and maintaining the contact list; and sending welcome emails to new members. Participation at the TIM meetings is a critical performance measure for the effectiveness of the program.

The CONSULTANT will work directly with the Asset Maintenance for incident response but will not be responsible for contract administration of any Asset Maintenance contract. The CONSULTANT will be asked to assist in updating Asset Maintenance Contract language to ensure optimal performance in spill remediation, incident clearing, coordination, and maintenance of traffic. The CONSULTANT will work with the DEPARTMENT to supply information that may be needed for the contract oversite.

4.7.1.1 Post Incident Analysis (PIA)

The CONSULTANT shall organize, coordinate and participate in Post Incident Analysis (PIA) with all agencies and entities involved in managing major traffic incidents.

4.7.2 TIM Self-Assessment

The CONSULTANT shall be responsible for conducting, documenting, and submitting the Federal Highway Administration (FHWA) Traffic Incident Management (TIM) Self-Assessment for the TIM Teams.

4.7.3 TIM Coordination

The CONSULTANT shall be a key link between freeway and arterial operations and law enforcement. The TIM group shall actively work to expand data and information sharing with partner agencies in electronic formats at the RTMC in an automated and efficient manner to support operations. Further the CONSULTANT will work to use FDOT provided platforms such as Mutuallink, iVDS and Teams to share data with first responders for those responders to see the benefit of working with the DEPARTMENT. The CONSULTANT will look for win-win solutions for improving coordination.

4.8 Road Ranger Program Oversite

The CONSULTANT shall be responsible for developing the scope, overseeing the procurement, managing the funds, recommending the use of sponsorship funds, managing the assignment of units, optimizing the beats, insuring contract compliance, and handling supplied materials for the then current Road Ranger Contract. Safety Tow/Arterial Road Rangers will continue to be developed as part of the Road Ranger Program. The CONSULTANT shall develop and maintain Road Ranger SOGs, minimally annually. The CONSULTANT shall modify and maintain the Road Ranger Contract and SOGs as needed to conform with FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures.

4.9 Rapid Incident Scene Clearance Program Oversite

The CONSULTANT shall be responsible for providing developing the scope, overseeing the procurement, managing the funds, managing the activation, recording performance measures, and insuring contract compliance for the then current Rapid Incident Scene Clearance Contract. The CONSULTANT shall develop and maintain Rapid Incident Scene Clearance SOGs, minimally annually. The CONSULTANT shall modify and maintain the Rapid Incident Scene Clearance Contract and SOGs as needed to conform with FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures.

The CONSULTANT will insure a positive working relationship with FHP and other law enforcement agencies and address their concerns to the extent feasible with the RISC program.

4.10 Special Event Management Coordination and Operations

The Central Florida Area has several special events including but not limited to:

- Daytona Races
- Space Launches
- Elected Official Visits
- Orange County Convention Center Events
- Orlando Venues
- UCF Football Games
- Hurricane Evacuations including Emergency Shoulder Use
- Hurricane Recovery
- Pandemic

- Other Disasters

The CONSULTANT is to create, update, and maintain the following documents to ensure readiness and coordination for special events.

- Continuity of Operations Plan
- Disaster Recovery Plan
- Daytona Races Plan
- Space Launch Plan
- Convention Center Event Plan
- Orlando Venues Plans
- Emergency Shoulder Use Plan
- Hurricane Aftermath Response Action Plan
- Elected Official Visit Plan
- UCF Football Game Event Plan

The CONSULTANT shall participate and support special event transportation management to ensure stakeholders for each event are working together towards the safety and efficient movement of people and goods. The CONSULTANT shall be responsible for updating and maintaining the contact list for each event, taking meeting notes, coordinating RTMC participation, conducting after action debriefs with stakeholders, and updating and improving the plans. The CONSULTANT will work other DEPARTMENT offices, consultants, and contractors to ensure internal coordination.

4.11 <u>TSM&O Public Involvement</u>

The CONSULTANT will maintain the DEPARTMENT'S website, CFLSmartRoads.com. The website servers as a landing page for many applications, design guidance, design specific ways of conducting business, knowledge exchange, interagency coordination, data sharing, and public involvement. The DEPARTMENT will provide most of the content for posting on the site. The CONSULTANT will ensure the content is placed in a logical location and aesthetically pleasing manner, consistent with DEPARTMENT manuals or procedures. The CONSULTANT periodically will be needed to augment or generate website content.

The CONSULTANT shall submit an article every other month to the Disseminator, an FDOT trade publication published statewide that raises awareness about initiatives surrounding the TSM&O Program. The newsletter is published electronically.

The CONSULTANT will receive calls from the public about any number of concerns. These complaints are to documented and followed up on in an expeditious and professional manner in accordance with FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures.

The CONSULTANT will work directly with the District Public Involvement Office when new services are offered, Express Lane expertise is needed, or significant incidents occur. The CONSULTANT is not responsible to serve as the Public Involvement CONSULTANT but is to supply accurate and timely information that may be needed and always to represent the DEPARTMENT in a positive and professional manner.

The CONSULTANT will provide internal incident messaging, providing critical information to leadership, maintenance, bridge maintenance, traffic operations, and other offices via email in accordance with FDOT District Five SOGs, Statewide SOGs, and any governing FDOT manuals or procedures.

4.12 ITS Information Technology Services

The DEPARTMENT will provide the following full time positions to staff the RTMC.

- IT Supervisor
- Network Administrator/Firewall Administrator
- Security Administrator
- Server Administrator
- Workstation Support

The CONSULTANT will provide additional staffing as needed to support the RTMC. The following positions are anticipated.

- Database Administrator (Part-Time)
- Sunguide Administrator
- ATSPM Administrator (Part-Time)
- GIS Coordinator (Part-Time)

The CONSULTANT will manage the DEPARTMENT's SQL database infrastructure, ensuring efficient performance and providing any needed correction to stored data. The CONSULTANT will be responsible to configure the DEPARMENT's Sunguide instance for their contract. The CONSULTANT will be responsible to manage the DEPARTMENT's ATSPM instance, with one administrator. Maintain the DEPARTMENT's GIS instance including but not limited to license management, needs assessment for current and future deployments, and patch management. Additionally GIS detour routes as needed by ICM Operations will also be added from time to time. The CONSULTANT will ensure consistency with FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures.

The CONSULTANT will support the DEPARTMENT's Connected Vehicle program by managing field devices remotely from the Transportation Management Center, including pushing firmware versions, ensuring top offs are occurring, assisting in the enrollment and disenrollment of devices, data management, and other support activities.

4.13 Software Support and Enhancement

The table below reflects the software currently in use at the RTMC. The CONSULTANT will utilize the DEPARTMENT's existing software or develop alternative software to provide the same or similar functionality to those listed below. The CONSULTANT's role is also reflected in the table along with the availability of the source code to the District. The DEPARTMENT will make available to the CONSULTANT District Retained source code.

	CONSULTANT Role	D5 Retains Source Code
Activu	Configure	
ASCT Software	Configure	
ATSPM	Configure, Enhance, and Maintain	Open Source
Blank Out Sign Software	Configure, Enhance, and Maintain	X

Bluetooth	Configure	
CAV Applications	Configure, Enhance, and Maintain	
Cloud ATSPM	Configure	
CMS	Configure	
Data Picker	Configure, Enhance, and Maintain	X
Hope Graphical Traffic Views	Configure, Enhance, and Maintain	X
InService	Configure, Enhance, and Maintain	X
ITSIQA	Configure, Enhance, and Maintain	X
iVDS	Configure, Enhance, and Maintain	X
LA Signal ATMS	Configure	
MaxView	Configure	
MIMS	Configure, Enhance, and Maintain	
MMA/MDP	Configure, Enhance, and Maintain	X
NOEMI	Configure, Enhance, and Maintain	X
OTM	Configure	
Regional Applications Just on Phone	Configure, Enhance, and Maintain	X
RICMS	Configure	X
Route and Mode Choice	Configure, Enhance, and Maintain	Open Source
RTMC Map	Configure, Enhance, and Maintain	X
RWIS Software	Configure	
SELS	Configure	
SIIA	Configure, Enhance, and Maintain	X
Sunguide	Configure	
SunStore	Configure, Enhance, and Maintain	X
TIM Application	Configure, Enhance, and Maintain	X
TPAS Software	Configure	

The CONSULTANT will provide staff to continue to configure, enhance, maintain, and develop software to support the RTMC and TSM&O Program. The CONSULTANT will be responsible maintain the DEPARTMENT's source code repository. The CONSLTANT's work will conform with the laws and rules governing of the State of Florida, and any governing FDOT manuals or procedures.

4.14 Miscellaneous RTMC Support Services

Traffic Signal Technician Program

The Central Florida region has identified qualified technicians as the top shortfall of the current TSM&O program. As such the CONSULTANT will insure the continued development of maturation of signal technicians in Central Florida. This includes knowledge transfer to completely unexperienced personnel to filling in gaps with seasoned technicians. The CONSULTANT will attempt to make the work as scalable as possible using video recording and video editing as appropriate. The work includes identifying knowledge gaps, development of curriculum, delivering knowledge transfer, providing documentation, coordinating needed hardware/software available, scheduling, and other logistic activities.

FHP Contract Management

The CONSULTANT shall be responsible for supporting FDOT Personnel with providing management oversight for the FHP contract. Some of the activities that the CONSULTANT shall be responsible for, but not limited to are: reviewing monthly invoices, preparing invoice package for FDOT's Project Manager review and approval, performing quality control on vehicle and personnel logs submitted as part of the invoice packages, reviewing information provided as part of the invoice package, maintaining and reviewing all required documentation, archiving/filing all contract related documents, etc. The CONSULTANT shall be responsible for projecting contract expenditures based on existing and future operational needs.

TSM&O Research Support

The CONSULTANT will oversee tasks with Universities. The CONSULTANT will assist in scope development, review technical documents, serve as a liaison to provide needed data, under how the scope fits with program objectives, insure the resulting research is implementable for operations, obtain and file deliverables including reports, software, and hardware, participate in close out meetings and advise on next steps.

4.15 OPTIONAL SERVICES: <u>RTMC Operations (Part Time Shoulder Use)</u>

The CONSULTANT shall assume operations of the Part Time Shoulder Use (PTSU) application implemented in D5. The Central Florida Expressway Authority is in the process of implementing PTSU on portions of SR 429 and SR 417 (see Appendix AB) with a current scheduled opening shown in Appendix AC. The system includes Lane Control Signs (LCS), Variable Speed Limit (VSL) signs, supplementary Incident DMS, and various detection devices. The CONSULTANT shall: monitor and implement PTSU to optimize expressway performance using 3rd party applications according to the ConOps document included in Appendix XX. This shall include the operation of LCS, VSL and supplementary DMS to facilitate the opening and closing of the shoulder within the designated corridor. They shall coordinate as necessary with Road Rangers, FHP and CFX Maintenance staff to confirm the availability of the shoulder prior to opening. In addition, the CONSULTANT shall monitor traffic conditions for respective roadways via 3rd party applications, Vehicle Detection Systems (VDS), and Computer Aided Dispatch to find lane blocking events and congestion events and confirm the incidents with Closed Circuit Television (CCTV) cameras. They shall record this information in Sunguide, disseminate traveler information via Dynamic Message Signs and Florida's 511 Advanced Traveler Information System, dispatch Road Ranger Service Patrol, dispatch Rapid Incident Scene Clearance contractors, coordinate with Florida's Turnpike, Freeway Management, and TIM personnel, and other incident management resources to crash or incident scenes and coordinate with other agencies/entities as necessary. In addition, the CONSULTANT shall observe PTSU operation, ensure that signs are turning on and functioning appropriately, document performance measures such as queue length, travel time along PTSU corridors and density along PTSU corridors.

The CONSULTANT shall oversee the overall project performance to ensure it is meeting the intended results, evaluating and analyzing project related performance metrics, developing and implementing recommendations to mitigate performance measures degradation, conducting and overseeing operational analyses, providing projects related data and information to others (internal and external, but always through the DEPARTMENT & CFX), reviewing and updating operational parameters including but not limited to: Level of Service, Volume Thresholds, Peak Periods and Speed Thresholds.

The CONSULTANT shall proactively monitor the field equipment and systems and report failures in accordance with the CFX PTSU ConOPS document (Appendix XX), FDOT District Five SOGs, Statewide SOGs, the laws and rules governing of the State of Florida, and any governing FDOT manuals or

procedures. The CONSULTANT shall identify gaps in coverage or other needed network improvements to advance operations on the PTSU corridors.

The CONSULTANT will work directly with the CFX ITS Maintenance Contractor for device maintenance but will not be responsible for contract administration of the CFX ITS Maintenance Contract. The CONSULTANT will work with the DEPARTMENT to supply information that may be needed for the contract oversite.

Actively develop and expand the DEPARTMENT's ICM efforts through the development of response plans.

5.0 CONSULTANT PERFORMANCE RATINGS

The CONSULTANT shall develop a methodology that is approved by the DEPARTMENT for collecting performance data. The performance measures shown in the following tables reflect the minimum performance indicators. The CONSULTANT will develop the appropriate remediation and report point accumulation as part of their reporting requirements to the DEPARTMENT. The DEPARTMENT reserves the right to modify the amount of points per event and to lessen the threshold for performances at its sole discretion.

The DEPARTMENT may use the performance data as part of its review of the CONSULTANT. Financial penalties or cost adjustments are not part of this contract. The CONSULTANT shall keep all appropriate/verifiable data to support the performance rating calculations during the duration of the contract.

5.1 Performance Management

Below is the table of performance measures for Performance Management. The performance measures from the other tables are to brought forward in the reports below for internal reporting. External reporting will occur via posting to the DEPARTMENT's then current website, currently CFLSmartRoads.com, only after review and approval by the DEPARTMENT.

PERFORMANCE MANAGEMENT			
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**
Daily Reports	Each Occurrence	Daily by 8 AM on weekdays without weekly reports	0.25
Weekly Reports	Each Occurrence	By 9 a.m. First weekday of following week	0.25
Monthly Reports	Each Occurrence	≤ 10 calendar days after the end of the month	0.25
Quarterly Reports	Each Occurrence	≤ 10 calendar days after the end of a quarter	0.5
External Quarterly Report	Each Occurrence	≤ 10 calendar days after the end of a quarter	0.5
Annual Reports	Each Occurrence	On January 20, each year	0.5
External Annual Reports	Each Occurrence	On December 20, each year	0.5
SOPs	Minimum Annual Update	On November 30, each year	1

5.2 RTMC Operations (Freeways and Expressways)

Below is the table of performance measures for RTMC Operations (Freeways and Expressways).

FREEWAY				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
TMC Operator Error to Event Ratio	Monthly ratio for all TMC staff managing events	≤ 0.20 (travel lane blocking events)	4	16
		≤ 0.20 (non-travel lane blocking events)	2	8
DMS Usage	Monthly Percentage	≥ 95.00%	5	20
Road Rangers Dispatching	Monthly average for all travel lane blocking event	≤ 2 minutes from event detection	2	8
IDS Acknowledgement	Monthly average for all events	≤ 2 minutes from event detection	2	8
Event Confirmation	Monthly average for all events	≤ 2 minutes from event detection	2	8
DMS Response Plan	Monthly average for all events	≤ 3 minutes from event confirmation	2	8
Notifications	Monthly average for all events	≤ 3 minutes from event confirmation	2	8
Publish to 511	Monthly average for all events	≤ 7 minutes from event confirmation	2	8
Open Roads Time	Monthly time calculated for all events by county	Below or within 10% of the time for the year prior to execution, by quarter, by county	4	16
Roadway Clearance Time	Monthly time calculated for all events by county	Below or within 10% of the time for the year prior to execution, by quarter, by county	4	16
TTR	Monthly time calculated for all events by county	Below or within 5% for the year prior to execution	4	16
Verify device entered in Maintenance Software when down	Each Event, summarized monthly	Within 12 hours of outage, if not automated	1	4
Develop Response Plans	Percentage of devices, missing at contract execution added, annual	25% of missing fields at the time of contract execution	1	4
Communication Status	Each Event, summarized monthly	Within 30 minutes of outage, if not automated	1	4

5.3 RTMC Operations (Arterials)

Below is the table of performance measures for RTMC Operations (Freeways and Expressways).

ARTERIAL				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
Operating Procedures	Annual Update	On October 16, each year	1	4
Respond to Arterial Alarms	Monthly by Corridor	<1 hour, average	1	4
Configure ATMS Alarm Status	Each event, summarized monthly by corridor	>98% configured for systems with access, within 5 days	1	4
Report critical detection failures	Each event, summarized monthly	< 30 minutes	1	4
Log Complaints	Each event, summarized monthly	< 30 minutes	1	4
Acknowledge Complaints	Each event, summarized monthly	< 1 day	1	4
Calls to close Complaints	Each event, summarized monthly	< 7 days	1	4
Communication Status	Each event, summarized monthly by corridor	Within 24 hours of outage, if not automated	0.5	2
ATMS/Detector Zone process for LA controlled locations configured correctly, or maintenance request generated	Monthly	100% of detection configured within 7 days of installation or replacement	0.5	2
SIIA maintenance	Existing Configuration Correctly maintained, annually	95% of field entries verified correctly	4	16
SIIA populated	Percentage of devices, missing at contract incitation added, annual	25% of missing fields at the time of contract execution	4	16
ASCT configurations maintained	Weekly by corridor	100% of ASCT devices configured based on existing detection	2	8
Report ASCT detection failures	Each Event, summarized monthly	Within 12 hours of outage, if not automated	1	4
Delay	Monthly average for managed roadways, per corridor	Below or within 5% for the year prior to execution	4	16
AoR	Monthly average for managed roadways, per corridor	Below or within 5% for the year prior to execution	4	16
TTR	Monthly average for managed roadways, per corridor	Below or within 3% for the year prior to execution	4	16
ICMS acknowledgement	Monthly time calculated for all events by county	< 5 minutes from ERE recommendation	2	8
Detection/ped button outages reported to local agency	Monthly	Within 12 hours of outage	1	4
ATMS/Detection Zone for FDOT controlled configured correctly or maintenance request generated	Monthly	100% of detection configured within 7 days of installation or replacement	1	4
Tickets issued per procedure to Maintenance Contract	Each Event, summarized monthly	Within 12 hours of outage, if not automated	1	4
Alternative Route Flush Plans develop Configured/Maintained	Per Corridor, per month	100% of controllers configured within 14 days of installation or replacement	4	16
Transit Signal Priority	Per Corridor, per month	100% of controllers configured within 14 days of installation or replacement	2	8
Overcapacity Intersection, Segments Report	By Intersection, annually	Document level of congestion by intersection for 100% of intersections on system, by December 21	2	8
Recommended Ops Improvement Ranking Report	By Intersection, annually	Provide recommended concept for top 10 most congested intersections rural and top 10 most congested intersections urban (20 unique intersection by year), by January 1	2	8

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5.4 RTMC Offline Operations (Retiming)

Below is the table of performance measures for RTMC Offline Operations (Retiming).

Retiming				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
Generate Annual 5 Year Signal Intersection Retiming Plan	Annual deliverable	By July 16, each year	4	16
Data Plan for needed corridors	By Corridor	By August 16, each year	1	4
Data Collection Report	By Corridor	By November 16, each year	1	4
Retiming Report	By Corridor	By April 16, each year	1	4
Retiming Implementation	By Corridor	By May 16, each year	4	16
Before and After Report	By Corridor	By May 31, each year	1	4
Update Model Maintenance Plan	Annual deliverable	By July 16, each year	0.5	2
Conformance to Model Maintenance Plan	Annual Verification	By June 30, each year ensure all models maintained in accordance with plan	1	4

5.5 RTMC Operations (Express Lanes)

Below is the table of performance measures for RTMC Operations (Express Lanes).

EXPRESS LANES				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
DMS Usage	Monthly Percentage	≥ 100%	5	20
TMC Operator Error to Event Ratio	Monthly ratio for all TMC staff managing events	≤ 0.10 (travel lane blocking events)	4	16
		≤ 0.10 (non-travel lane blocking events)	2	8
DMS Usage	Monthly Percentage	≥ 95.00%	5	20
Road Rangers Dispatching	Monthly average for all travel lane blocking event	≤ 1 minutes from event detection	2	8
IDS Acknowledgement	Monthly average for all events	≤ 1 minutes from event detection	2	8
Event Confirmation	Monthly average for all events	≤ 1 minutes from event detection	2	8
DMS Response Plan	Monthly average for all events	≤ 2 minutes from event confirmation	2	8
Notifications	Monthly average for all events	≤ 2 minutes from event confirmation	2	8
Publish to 511	Monthly average for all events	≤ 4 minutes from event confirmation	2	8
Open Roads Time	Monthly time calculated for all events by county	Below or within 10% of the time for the year prior to execution, by quarter, by county	4	16
Roadway Clearance Time	Monthly time calculated for all events by county	Below or within 10% of the time for the year prior to execution, by quarter, by county	4	16
% of time below 45 mph by segment outside of incident duration	Annual, by segment	Less than 1% by segment	4	16
Verify device entered into Maintenance Software when down	Each Event, summarized monthly	Within 12 hours of outage, if not automated	1	4
Communication Status	Each Event, summarized monthly	Within 30 minutes of outage, if not automated	1	4

5.6 RTMC Operations (Ramp Signaling)

Below is the table of performance measures for RTMC Operations (Ramp Signaling).

RAMP SIGNALING				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
Modify Parameters for metering to prevent queue spillback	Monthly report of modification for queuing events	100% of queuing events	4	16
Record Ramp Signals Performance Measures from Section 4.6	Weekly report of modification of measures	100% of performance measure data	2	16
Verify device entered into Maintenance Software when down	Each Event, summarized monthly	Within 12 hours of outage, if not automated	1	4
Communication Status	Each Event, summarized monthly	Within 30 minutes of outage, if not automated	1	4

5.7 Traffic Incident Management

Below is the table of performance measures for Traffic Incident Management.

TIM				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
TIM Procedural Plan	Annual deliverable	By September 1 each year	0.5	2
Conduct TIM Meetings	Quarterly per TIM Team	Meeting Held, Attended, Minutes, Invitation Sent, Quarterly	0.5	2
Post Incident Analysis (PIA) Conducted	Coordinate and conducted	PIA conducted with effected incident responders	2	8
FHWA TIM Self- Assessment	Annual deliverable	≥ 5 calendar days prior to FHWA submittal deadline	0.25	1
TIM Quarterly Newsletter	Quarterly deliverable	≤ 14 calendar days after the end of quarter	0.25	1
Mutuallink Sharing of Images	Annual deliverable	Maintain existing agency coordination and add 1 agency per year until build out	1	4
Attendance at TIM Meeting	Quarterly per TIM Team	TIM Attendance greater than or within 10% of attendance for that team from previous year	2	8

5.8 Road Ranger Program Oversite

Below is the table of performance measures for Road Ranger Program Oversite.

ROAD RANGER MANAGEMENT				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
Scope Development	Each Occurrence, Summarized Annually	Development of Scope Document 6 months prior to existing contract expiring	4	16
Invoices	Monthly	< 5 working days from invoice submittal by Road Ranger Contractors	1	4
Performance Evaluation	Monthly	≤ 10 calendar days after the end of the month	0.25	1
Vehicle inspections	Quarterly	25% vehicles quarterly	4	16
Road Ranger Contractor(s) Monthly Meeting	Conduct meeting as per SOG	Meeting Held, Attended, Minutes, Invitation Sent, Monthly	1	4
Annual Review of Zones, periods, and Number of Road Ranger per period per Zone	Annual deliverable	By December 7, each year	2	8

5.9 Rapid Incident Scene Clearance Program Oversite

Below is the table of performance measures for Rapid Incident Scene Clearance Program Oversite

RISC MANAGEMENT				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
Scope Development	Each Occurrence, summarized monthly	Development of Scope Document 6 months prior to existing contract expiring	4	16
Invoices	Each Occurrence, summarized monthly	< 5 working days from invoice submittal by RISC Contractors	1	4
Performance Evaluation	Monthly	≤ 10 calendar days after the end of the month	0.25	1
SOGs	Annual deliverable	By December 14, each year	1	4
Review compliance with RISC timeline/performance measures	Each Event, summarized monthly	Provide RISC Events and the performance measure by vendor	0.5	2

5.10 Special Event Management Coordination and Operations

Below is the table of performance measures for Special Event Management Coordination and Operations.

SPECIAL EVENT COORDINATION AND OVERSITE				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
Special Events Premeeting (VIP, Speedway, Manned Launch, City of Orlando Venue, Orange Convention Center, Annual UCF Games, etc)	Conduct/Attend meeting; Summary Monthly, if occurred	Meeting Held, Attended, Minutes, Invitation Sent, Quarterly	1	4
Develop Special Event Performance Measure	Developed within 1 year of contract execution	Develop a performance measure for VIP Vists, Speedway Events, Manned Launch Events, City of Orlando Venue Events, Orange Convention Center Events, UCF Football Games, ESU, and sinkholes	4	16
Compliance with the Special Event Performance Measure	Conduct/Attend meeting; Summary Monthly, if occurred	Show performance relative to performance measures	0.5	2
After action debrief	Conduct/Attend meeting; Summary Monthly, if occurred	Meeting Held, Attended, Minutes, Invitation Sent, Quarterly	1	4
Separate IT Disaster Recovery Response Action Plan from Disaster Recovery Plan	Developed within 1 year of contract execution	On January 15	4	16
Separate Continuity of Operations Plan (Building outage, Pandemic) from Disaster Recovery Plan	Developed within 1 year of contract execution	On February 15	4	16
Develop VIP, City of Orlando Venue, Orange Convention Center, Annual UCF Games Plans, Fire Events, Sink Holes	Developed within 1 year of contract execution	On March 15, each year	4	16
Update TMC Emergency Response Action Plans (ESU, Hurricane Recovery, Fire Events, Sink Holes)	Annual deliverable	On March 15, each year	1	4
Update IT Disaster Recovery Response Action Plan	Annual deliverable	On January 15, each year	1	4
Update Continuity of Operations Plan (Building outage, Pandemic)	Annual deliverable	On February 15, each year	1	4
Update Event Plans (Speedway, Manned Launch, VIP, City of Orlando Venue, Orange Convention Center, Annual UCF Games Plans)	Annual deliverable	On April 15 each year	1	4

5.11 TSM&O Public Involvement

Below is the table of performance measures for TSM&O Public Involvement.

PUBLIC INVOLVEMENT				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
Public information inquiries	Acknowledge, Summarized Weekly	≤ 2 working days from inquiry	0.5	2
Respond	Respond, Summarized Monthly	≤ 5 working days from inquiry	0.5	2
SunGuide Disseminator	Bimonthly deliverable	≤ 10th day of the month	0.25	1
Website Maintenance	Each Event, summarized monthly	Update upon request within 5 business days	0.25	1

5.12 ITS Information Technology Services

Below is the table of performance measures for ITS Information Technology Services.

ITS INFORMATION TECHNOLOGY SERVICES				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
Sunguide Availability	Annual deliverable	99% uptime	1	4
Sunguide Configuration up to date	Per Event Summarized Annually	≤ 5 working days show cleared tickets for Sunguide action	1	4
Sunguide ticket logging	Per Event Summarized Monthly	Show status of tickets to SwRI and status	1	4
ATSPM Records Availability	Monthly deliverable	CONSULTANT will demonstrate the availability of all records generated, provide update on number of records	1	4
Incorporation of New Signals into ATSPM	Monthly deliverable	% and number of signals with connectivity and ATC controller in ATSPM; 5 signal increase until saturation	1	4
Ticket clearance	Monthly deliverable	≤ 5 working days show cleared tickets for all items	1	4

5.13 Software Support and Enhancement

Below is the table of performance measures for Software Support and Enhancement.

ITS INFORMATION TECHNOLOGY SERVICES				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
Ticket clearance	Monthly deliverable	≤ 5 working days show cleared tickets for all items	1	4
Enhancement	Annual summation	Provide 1,500 hours of enhancements to existing software annually	0	0

5.14 Miscellaneous RTMC Support Services

Below is the table of performance measures for Miscellaneous RTMC Support Services.

MISCELLANEOUS RTMC SUPPORT SERVICE				
PERFORMANCE MEASURE	**CRITERION**	**REQUIREMENT**	**Self Reported**	**FDOT Reported**
Review deliverables from Researchers	Per Event Summarized Monthly	≤ 5 working days provide comments to researchers	2	8
Invoices	Each Occurrence, summarized monthly	< 5 working days from invoice submittal by Researchers	2	8
Technician Program	Number of Graduates, summarized annually	>4 per year	10	40
Technician Program, Local Agencies	Number of Technicians trained and number of subjects, summarized annually	>25 technicians trained; >2 videos produced	10	40
FHP Invoices	Each Occurrence, summarized monthly	< 5 working days from invoice submittal by FHP	1	4

5.15 Part Time Shoulder Use

Performance Measures will be determined at the time of execution of PTSU services. Generally an understanding of the frequency of activation, impact of implementation of PTSU, and the effectiveness of implementation by TMC staff will be measured.

6.0 CONSULTANT RESPONSIBILITIES

The CONSULTANT shall provide the services described in this Agreement through careful planning, assignment, coordination, inspections, quality control, field operations, reporting, and other forms of administrative management techniques that shall optimize the CONSULTANT's performance.

6.1 Project Management

The CONSULTANT shall provide the DEPARTMENT with a Project Manager (full time on-site at the SunGuide RTMC) for the term of the Agreement. Any changes to the CONSULTANT's Project Manager or any of the other indicated personnel in charge of the work shall be subject to review and approval by the DEPARTMENT.

The CONSULTANT Project Manager shall also be responsible for notifying the DEPARTMENT of any and all emergencies and problems.

The CONSULTANT Project Manager shall be available to meet with the DEPARTMENT's Project Manager at a mutually convenient time for both parties during regular "business hours" to discuss work requirements prior to the CONSULTANT assuming the responsibilities of this Agreement. This time spent shall not be billable to the DEPARTMENT.

6.2 Sub-CONSULTANT(s)

The CONSULTANT shall be fully responsible for the satisfactory completion of all subcontracted work. The CONSULTANT shall be responsible for the management, scheduling, and administration of all Sub-CONSULTANT(s), including invoice processing and payment of the Sub-CONSULTANT(s).

Appendix A

D5 Software Overview

Activu – This software controls the RTMC walls in Sanford and the walls in the remote offices, including all Operations yards and the District Office.

Adaptive Signal Control Technology Software – software running on controllers or field services that adjust splits, offsets, and cycle length to react to traffic demand.

Automated Traffic Signal Performance Measures is a suite of performance measures, data collection and data analysis tools to support objectives and performance based approaches to traffic signal operations, maintenance, management and design to improve the safety, mobility and efficiency of signalized intersections for all users. This software pulls files off of traffic controllers and then calculates and displays analytics. This software is used for records retention purposes.

Blank Out Sign Software – Developed for the Daytona races this software manages detour routes and events routes for the event using blank out signs. It also contains a work flow for ensure device responsiveness and allowing operators to confirm message displays with cameras.

Bluetooth – This software matchs MAC addresses from Bluetooth devices in the field to generate travel times and travel patterns

CAV Applications – Applications running on Road Side Units that actuate traffic management responses

Cloud ATSPM – See ATSPM above. This is the version used for operations.

Central Management Software – this system monitors preemption and priority requests via Opticom devices. This is used to manage our TSP installs but also EVP troubleshooting.

Data Picker – System to make data available from Sunstore to partners allowing easy measurement of travel time, volume, and other common factors.

Hope Graphical Team View – This software monitors Sunguide and when an event is created it places the nearest cameras on single feed customized for a geographic area (Districtwide or County) and labels the event, changing color by freshness, allowing easy access of information to our operations yards and the District Office.

InService – This is Road Ranger dispatch and data entry software. It also provides sitational awareness to Road Rangers.

ITSIQA – This software cleans vehicle detection data and creates tickets for misbehaving detectors. It also normalizes information spatially and temporary with 3rd party data feeds and allows for aggregation of the data.

iVDS – Provides video to those outside of the Department's network via a credentialed web application

Local Agency Signal Advance Traveler Management System – Some of our local maintaining agencies use a vendor specific software to control the signal system. This is the vendor specific software. Examples include Centrax, ATMS.now, and Tactics.

MaxView – This is the DEPARTMENT's vendor specific software. It is used to control signals outside of local agency ATMS and Ramp Signals.

MIMS – This is the DEPARTMENT's maintenance tasking and inventory tracking software. It is used to track almost 8,000 pieces of hardware and allows operators to place tickets into the software. It also allows FDOT to track and issue TWO for the repair of devices to our contractor by contract type.

Maintenance Mobile Application – This is a software used by maintenance to document work needs and major closures. The software serves as a way to trunk communication through the RTMC for traffic impacting events.

Maintenance Data Portal – This software provides an overall view of the reported information from MMA.

NOEMI – This software monitors the state mature and connected vehicle readiness of the signal system. It link to data from SIIA.

Operations Task Manager – This software is used for quality control purposes, including generating some of the performance measures mentioned in this contract.

Regional Applications Just on Phone (RAJ-P) – This software is meant to turn a phone into an onboard unit, allowing for quick scalability of connected vehicle.

Regional Integrated Corridor Management Software – This software is used to inform operators on suggested actions that integrates arterial and freeway response to events.

Route and Mode Choice – This software provides trip choices to users, including walking, biking, transit, rail hailing, and driving.

Regional Traffic Management Center Map – This software uses analytics 3rd party data and ATSPM data to look for incidents on arterial roadways.

Regional Weather Information System Software – This software provide data to fire responders, the EOC, and bridge maintenance about wind speed, bridge icing, and water level.

Statewide Express Lanes Software – This software is used to price and confirm pricing on Express Lanes in Florida.

Signalized Intersection Inventory Application – This application allow data gathering about signalized intersections.

Sunguide – This system provides command and control of most traffic control features.

SunStore – This software store data for the Central Florida area. It provides API to allow accessibility to the records.

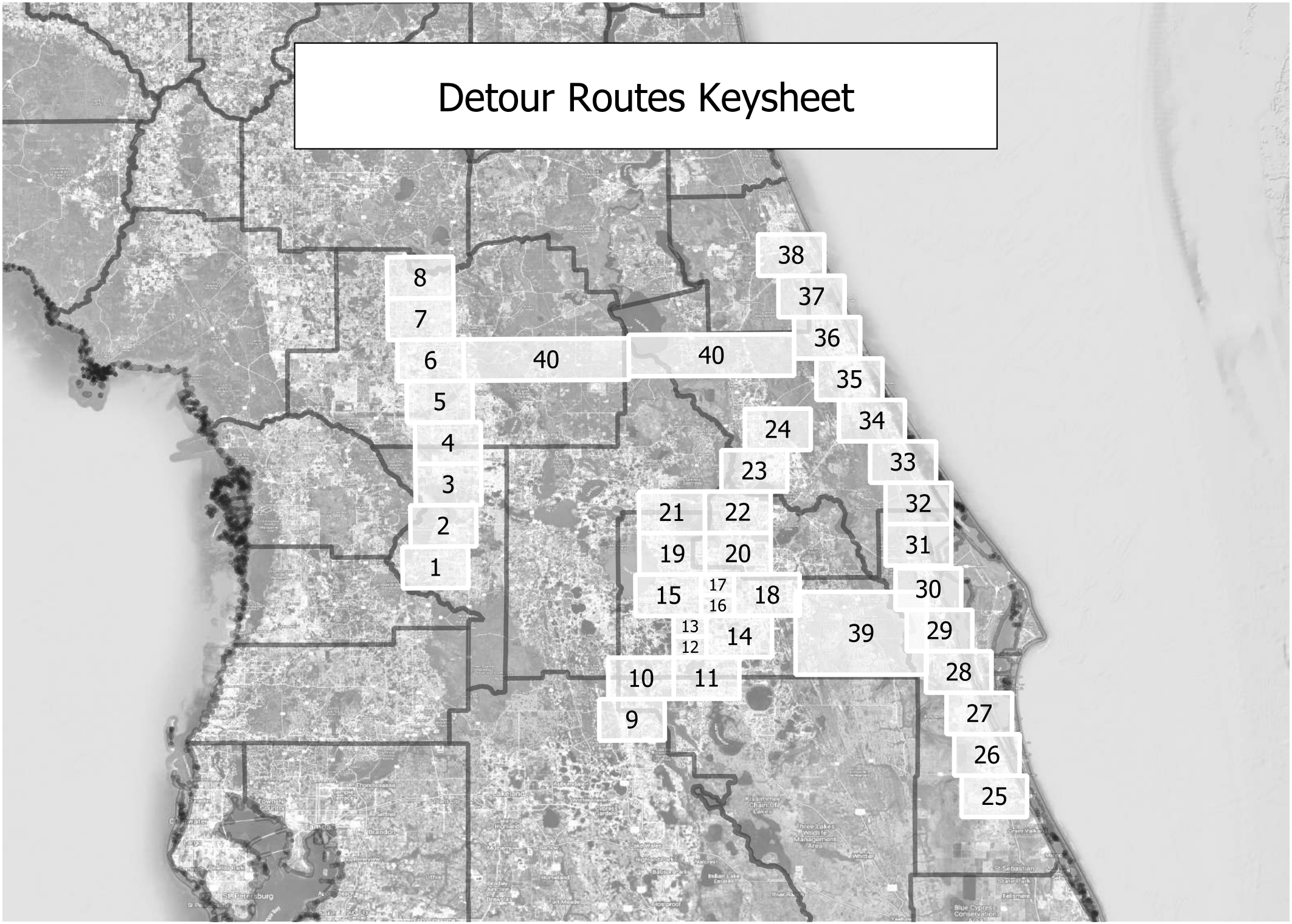
Traffic Incident Management Application – This dashboard provides insights on the current state of TIM.

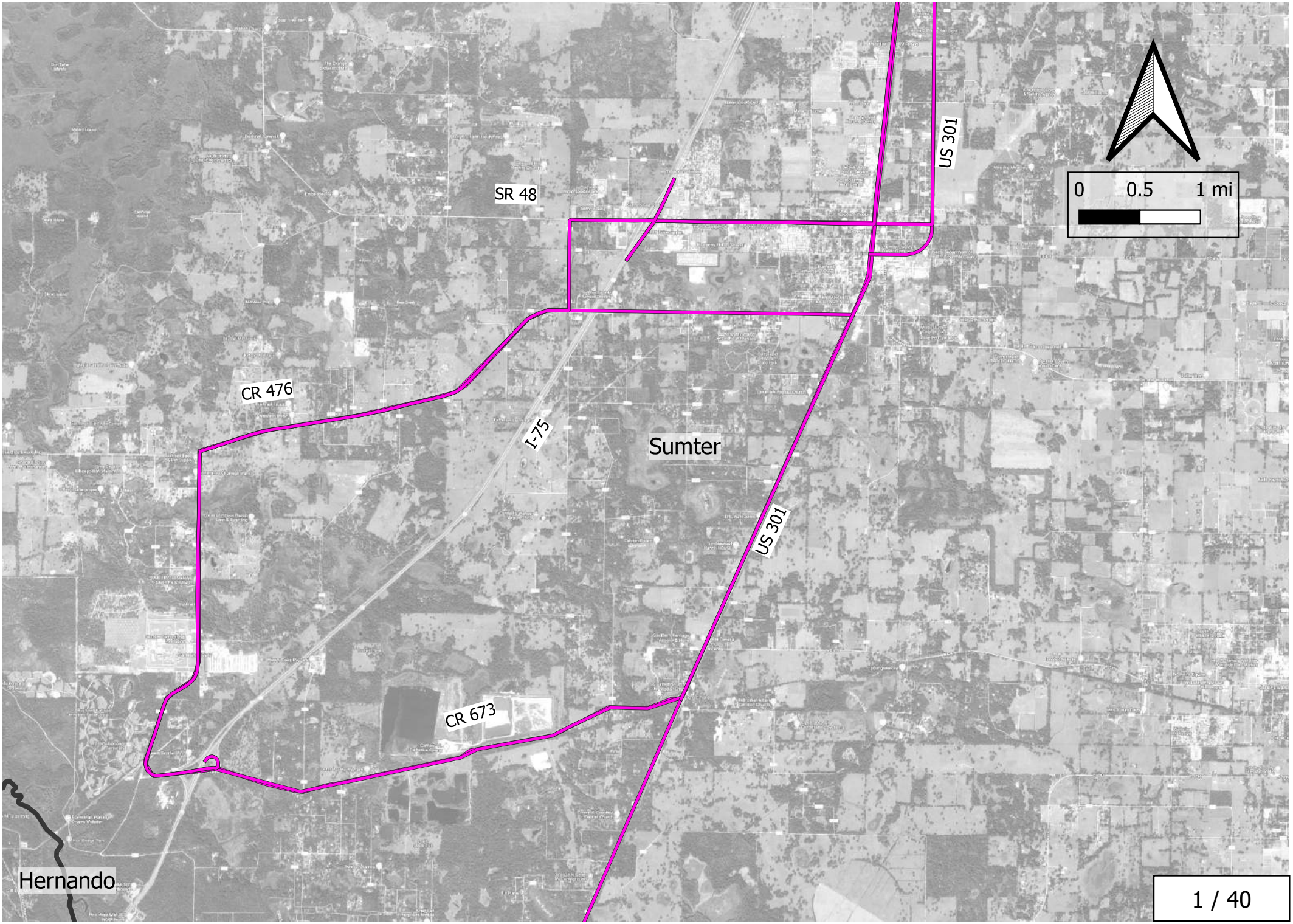
Truck Parking Availability System Software – This software serves as a middleman between Sunguide and sensor in rest areas to show what hardware has gone bad and to provide occupancy information to Sunguide.

Appendix B

Map of Priority Corridors

Detour Routes Keysheet

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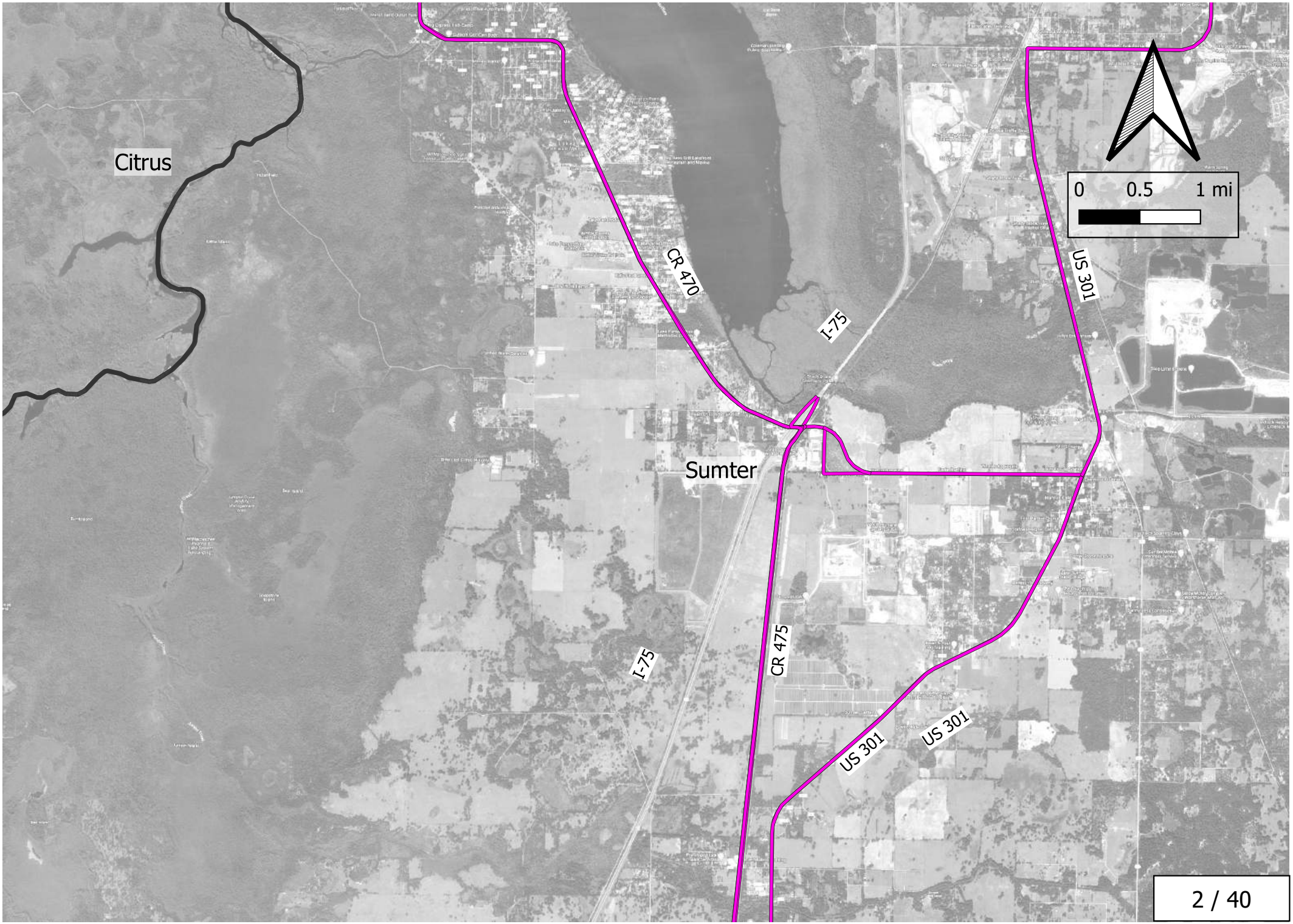
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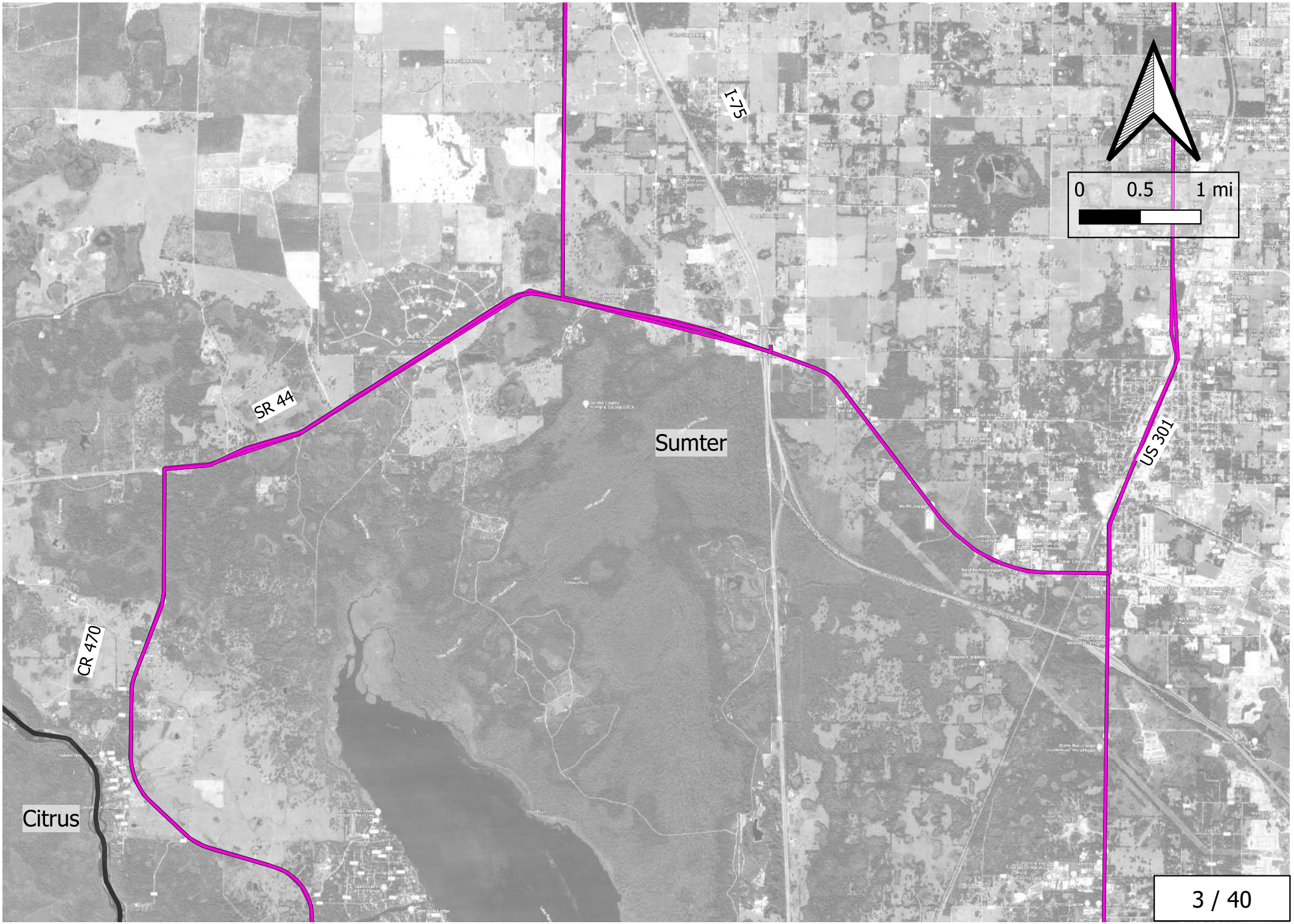
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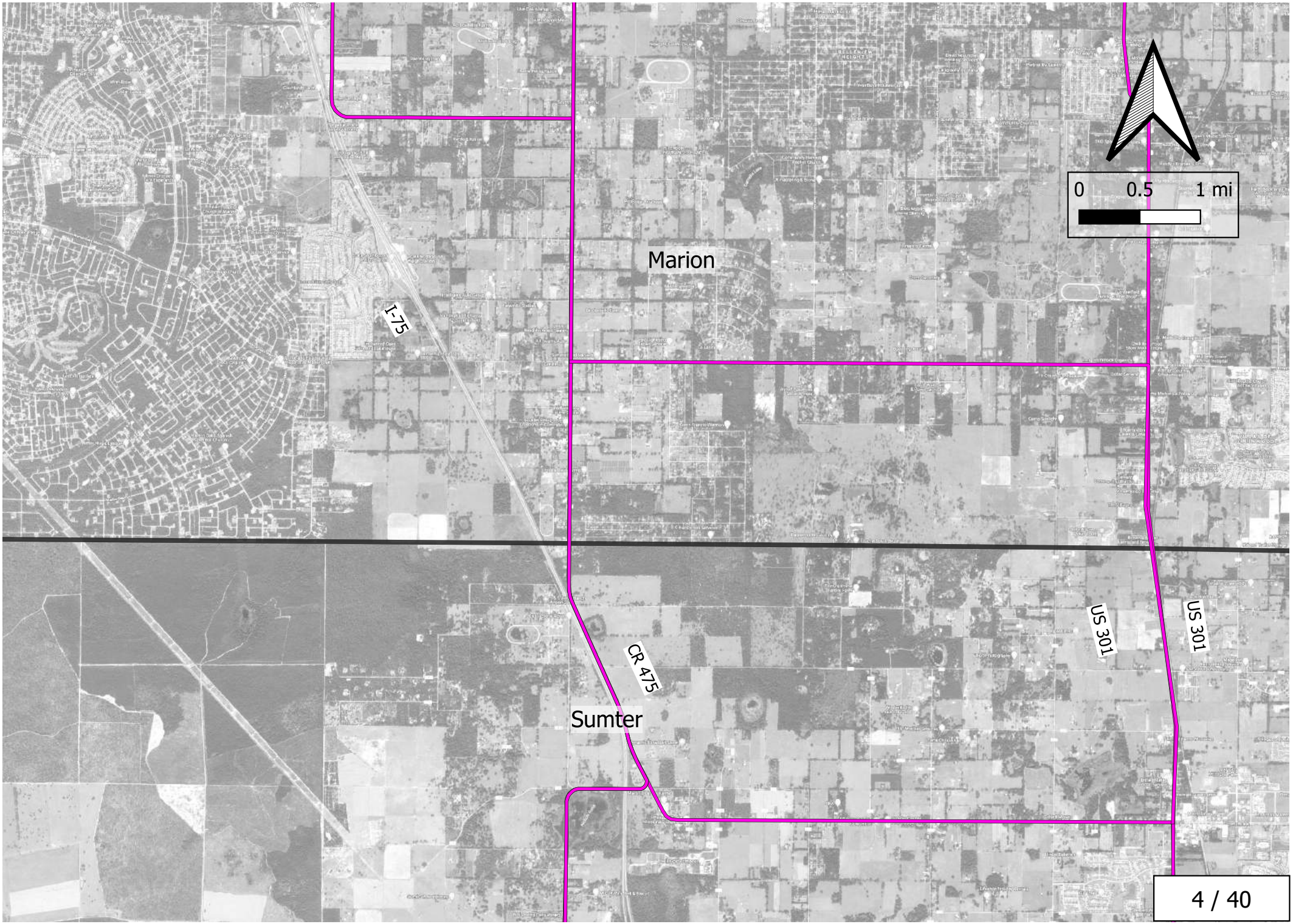
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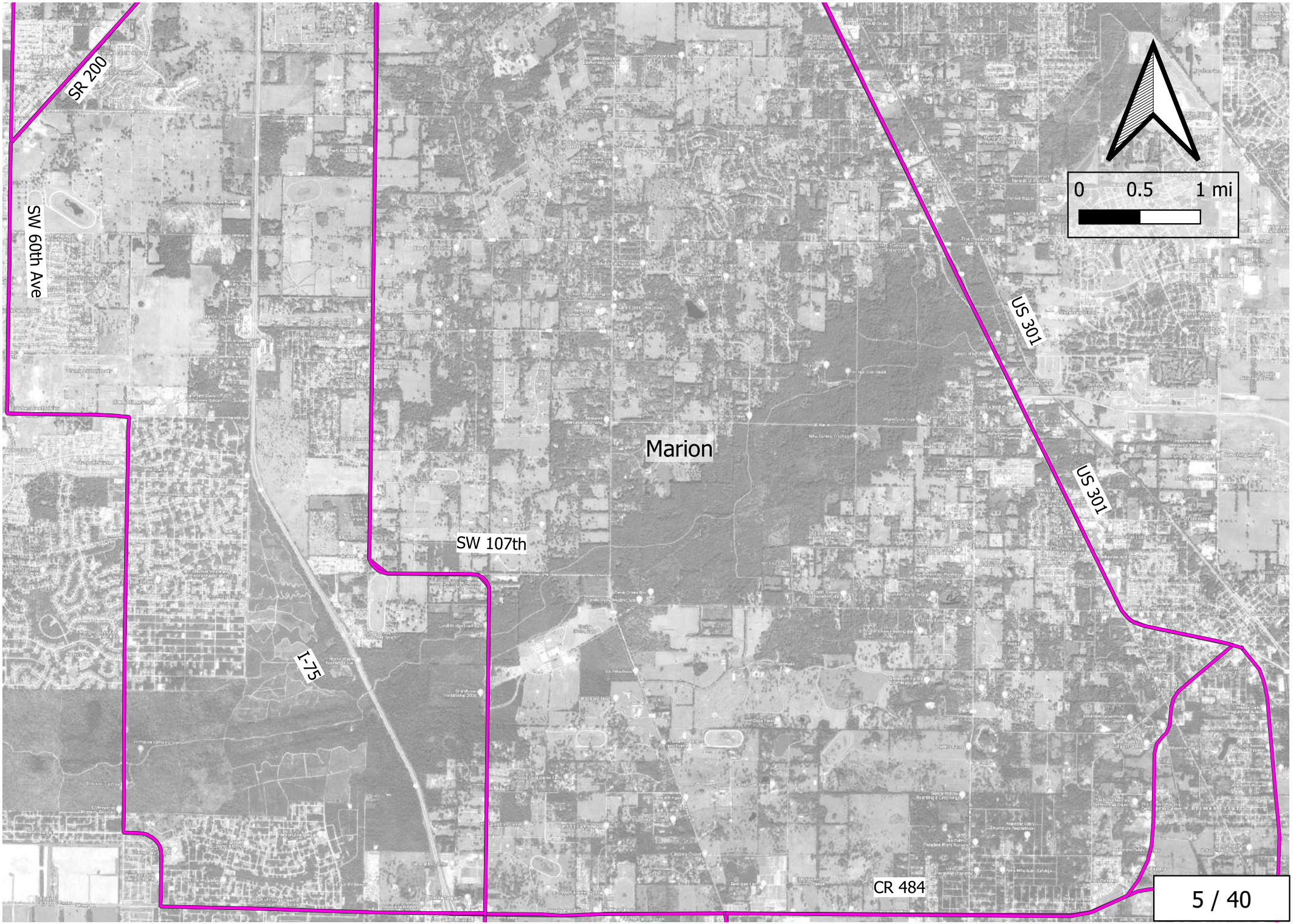
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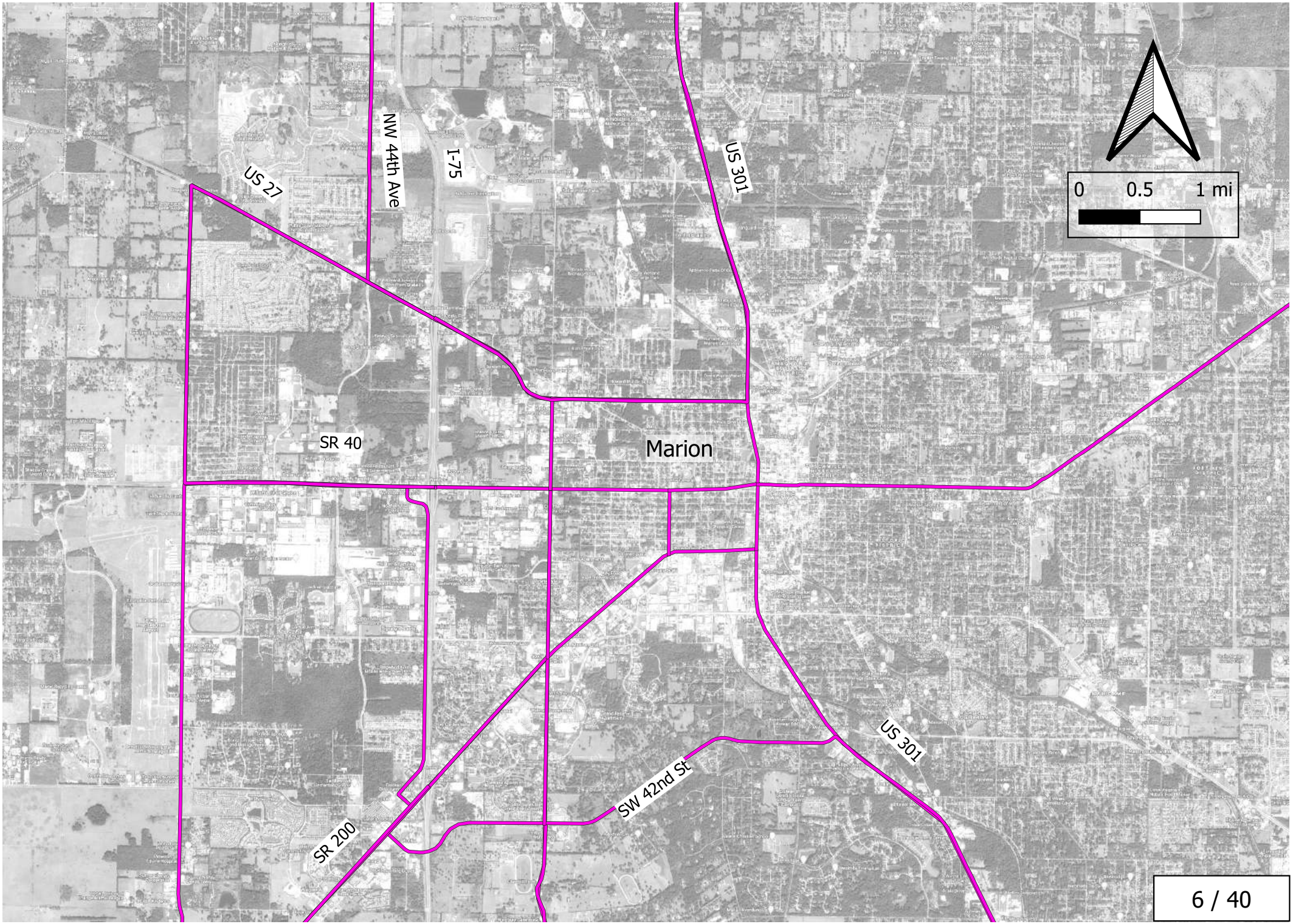
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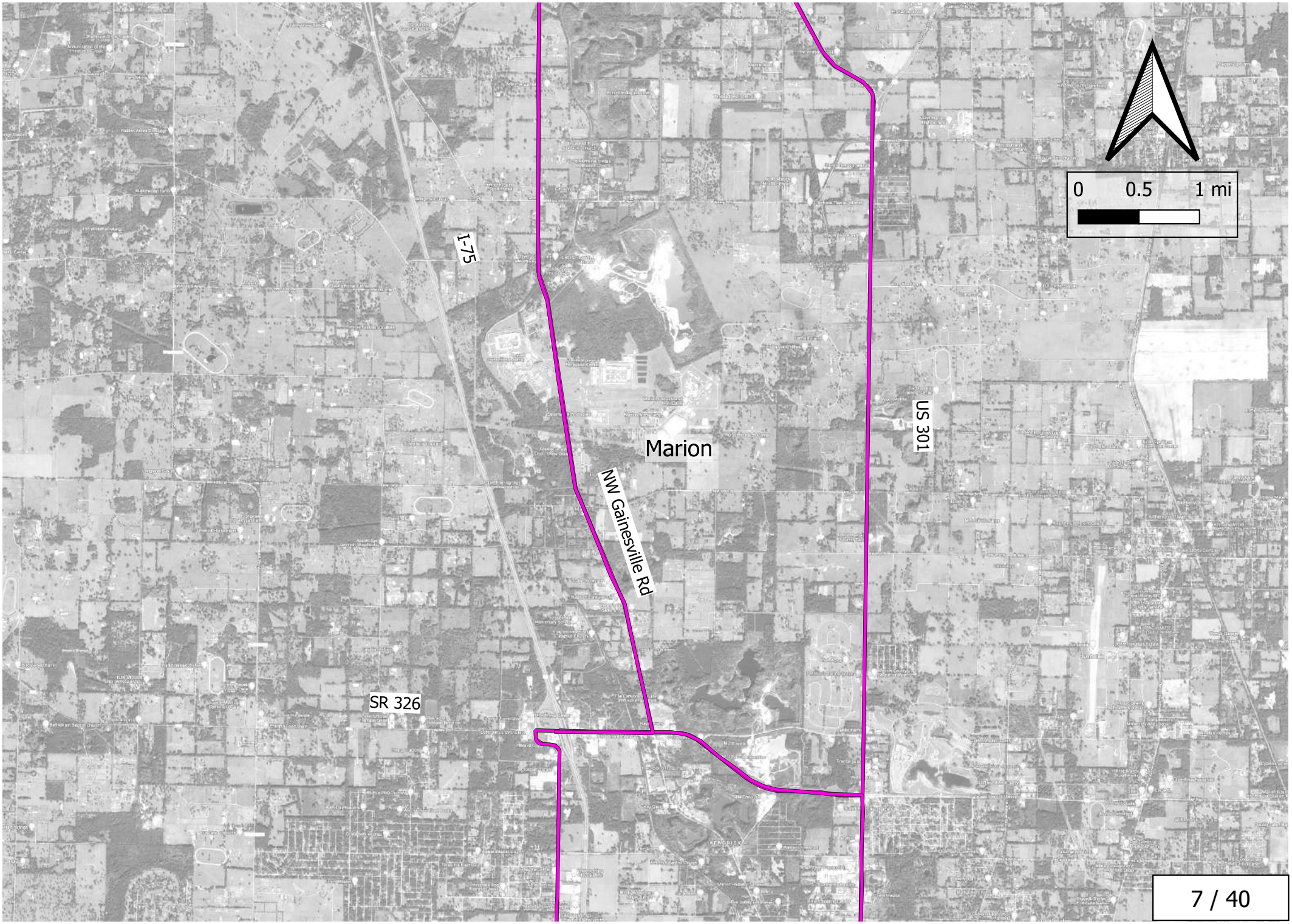
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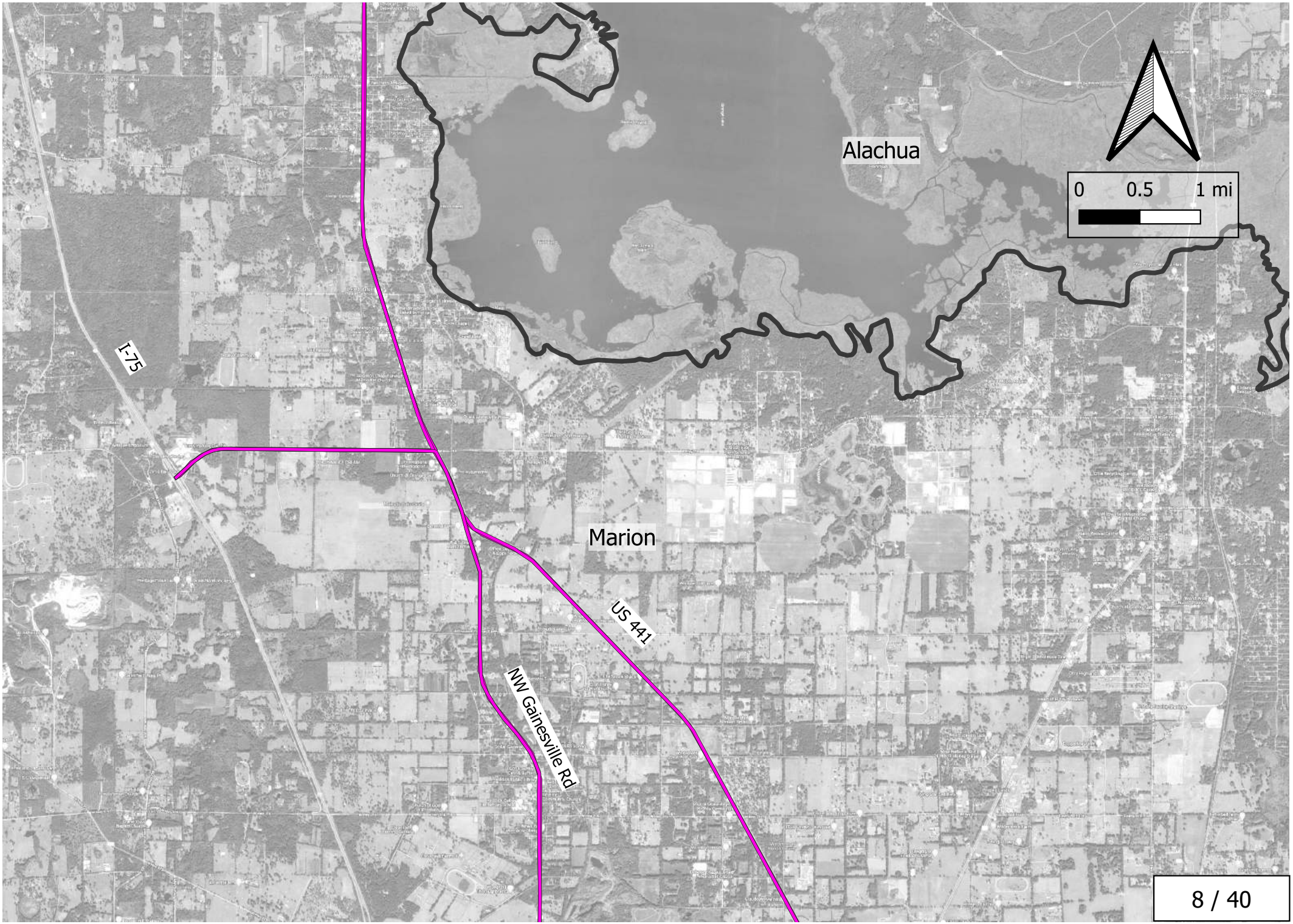
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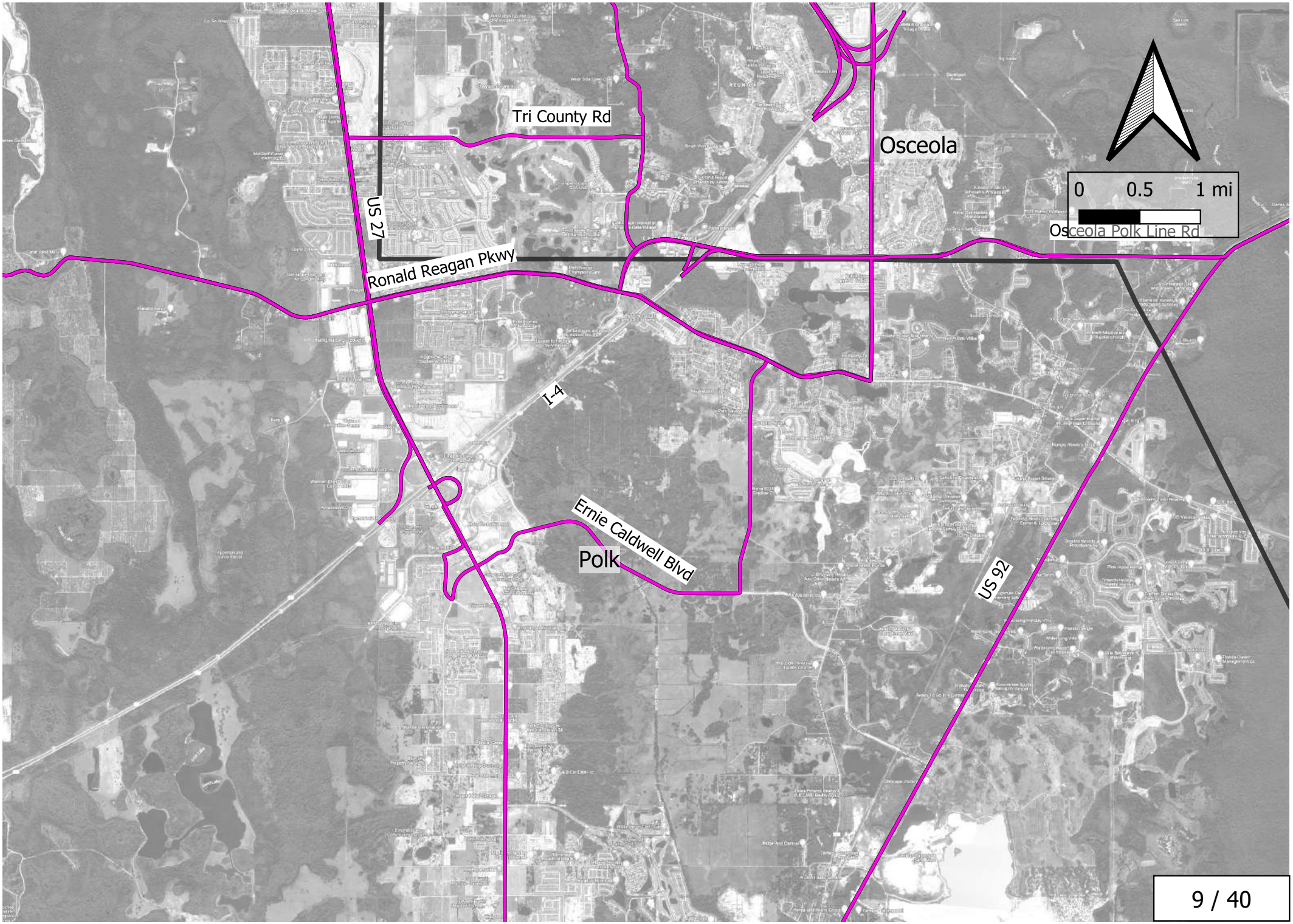
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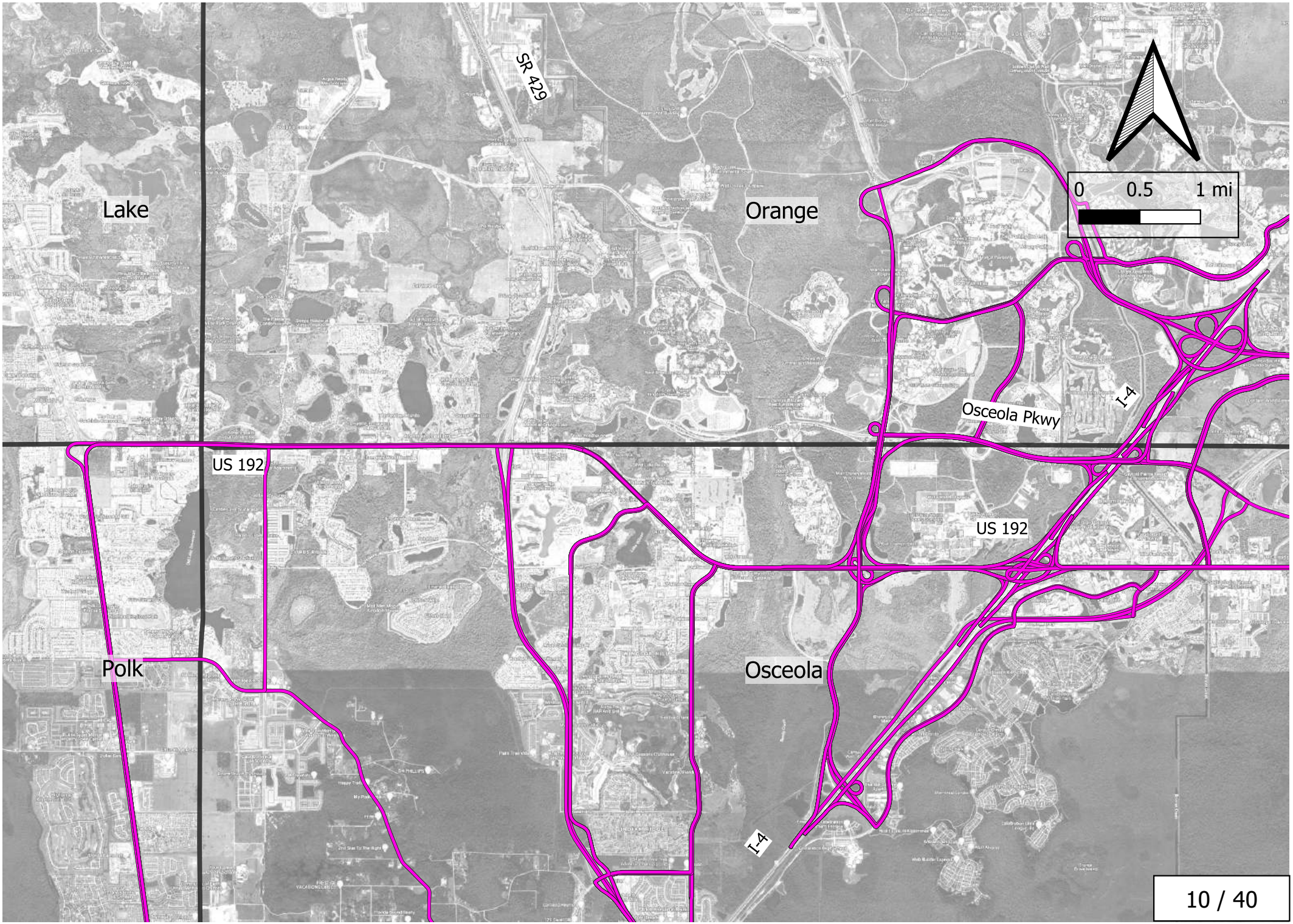
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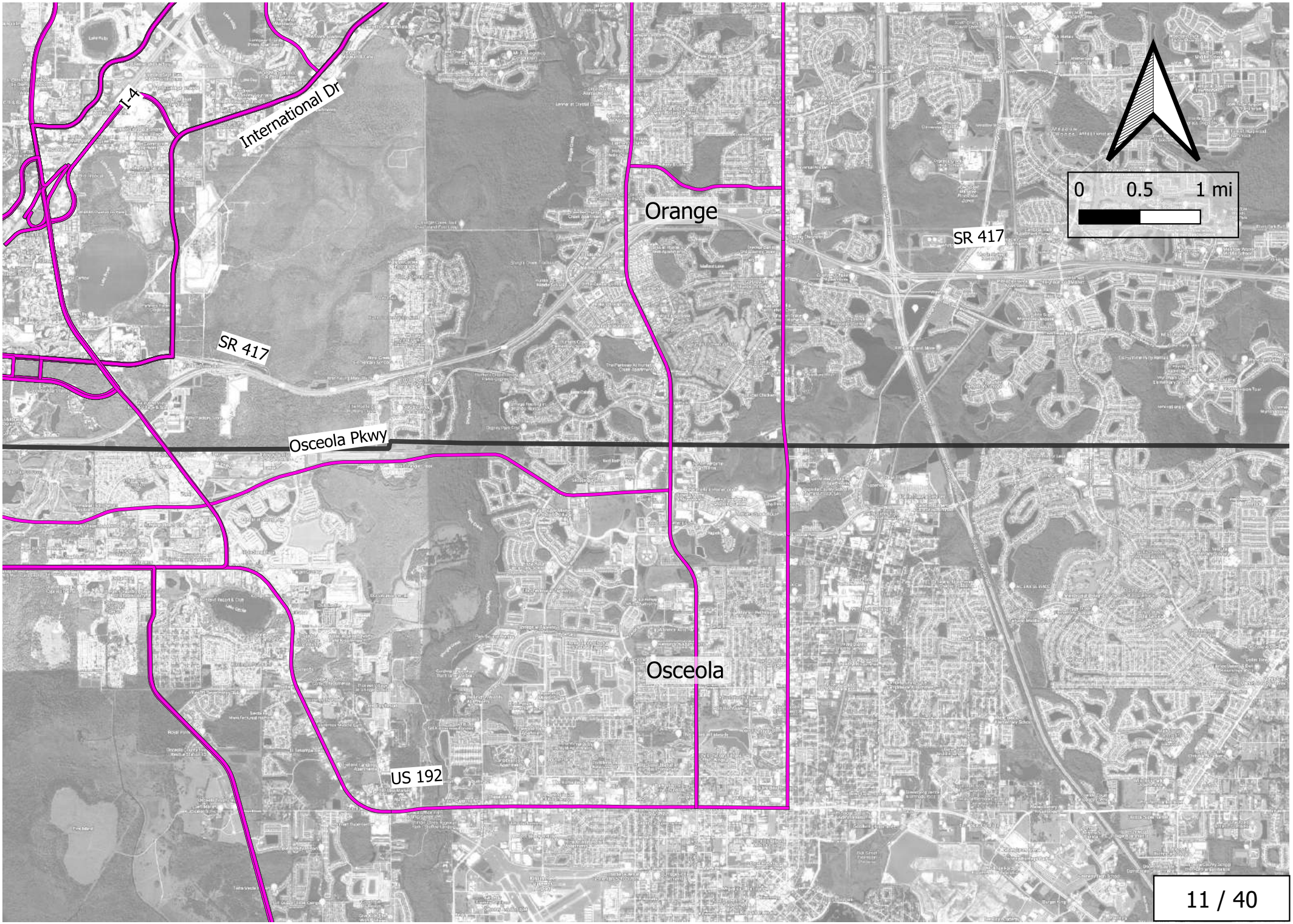
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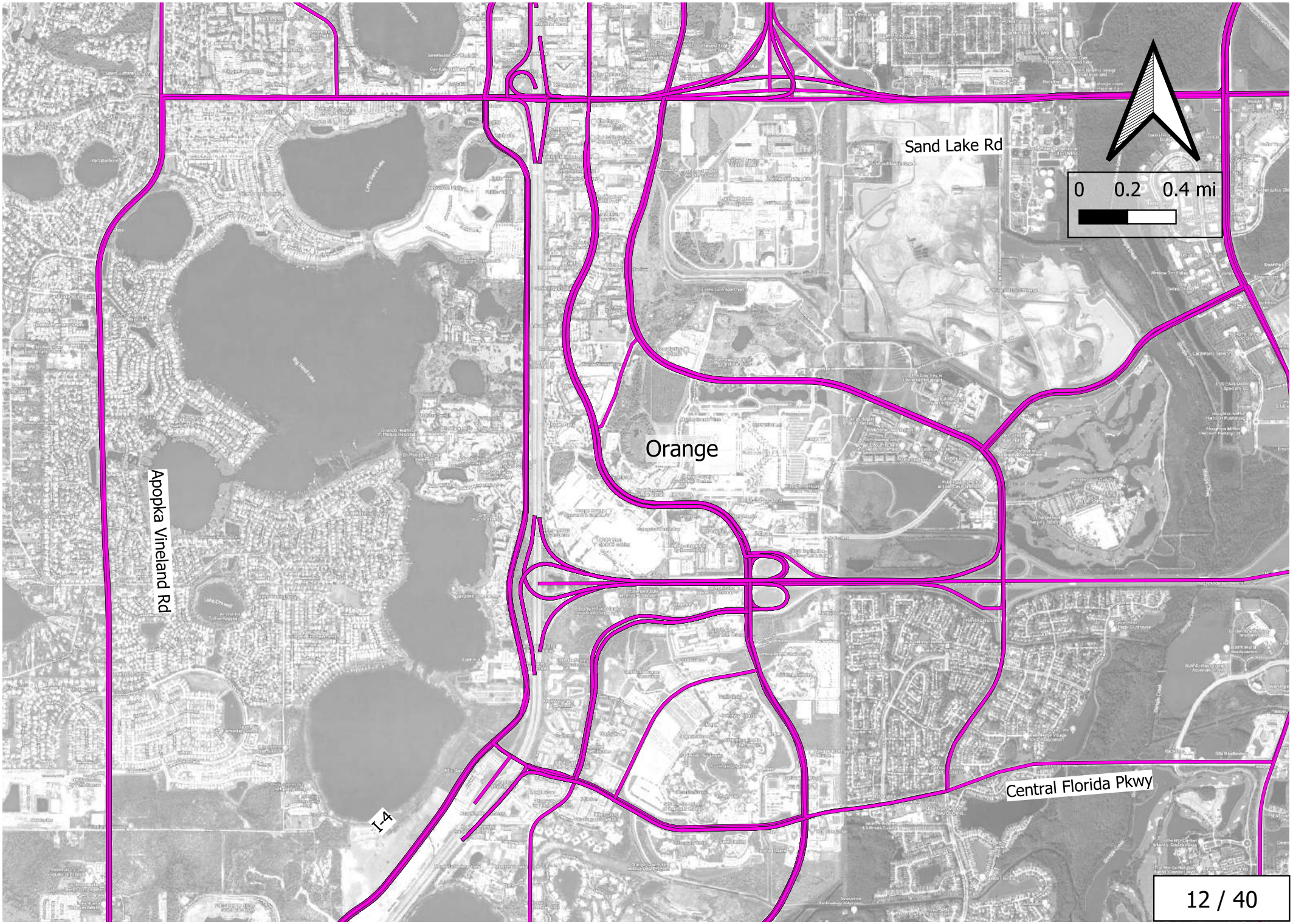
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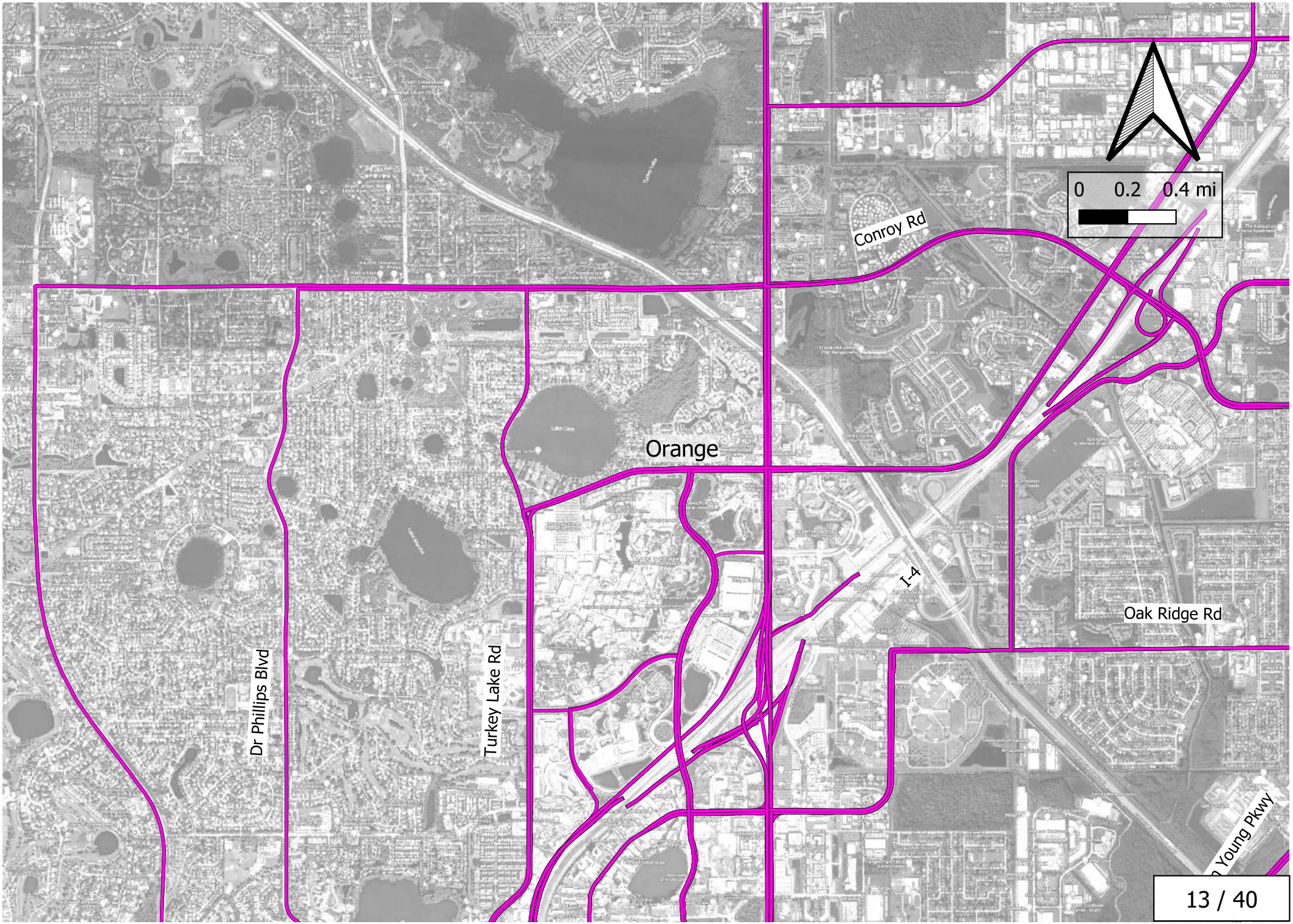
Central Florida Pkwy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Turkey Lake Rd
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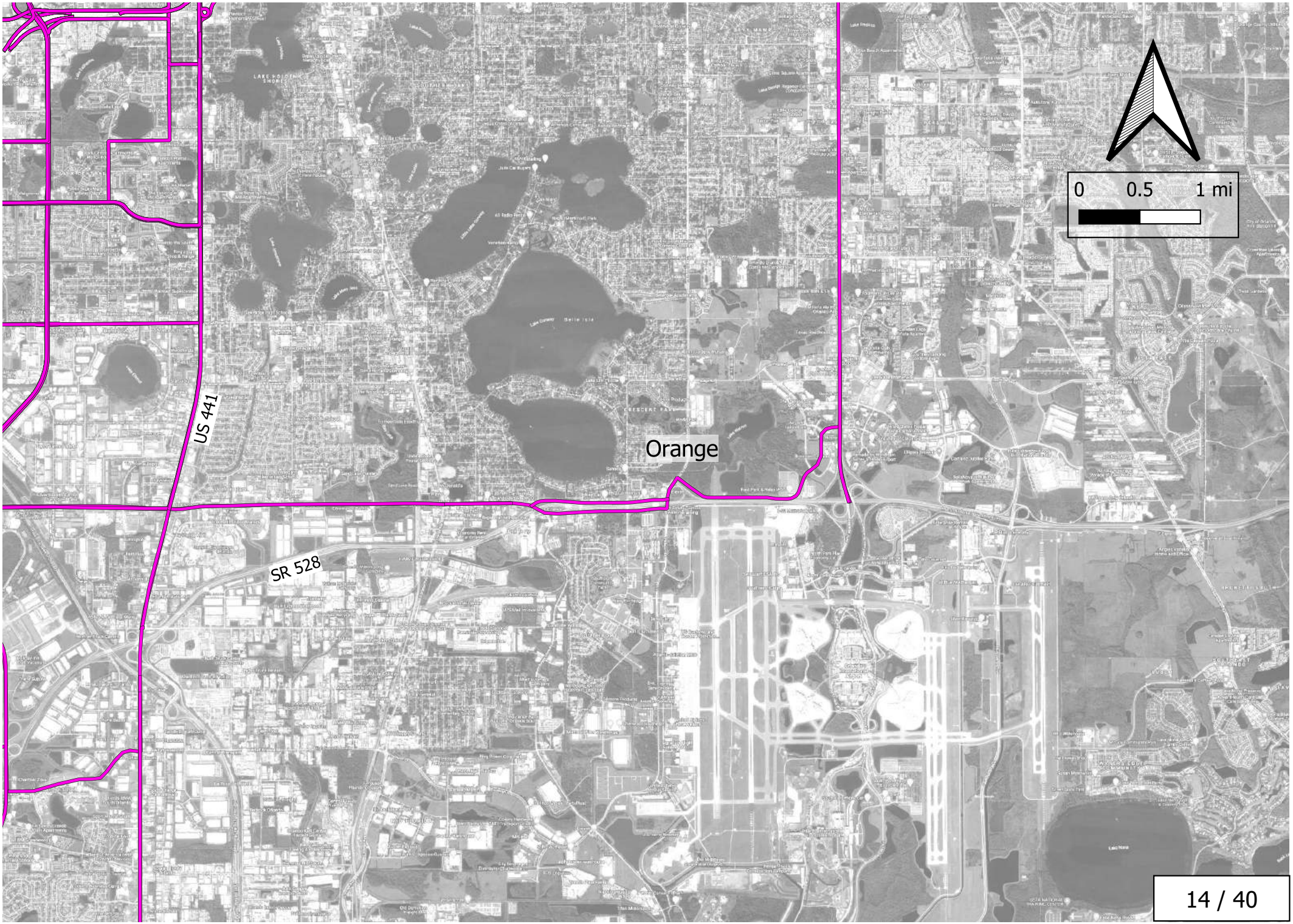
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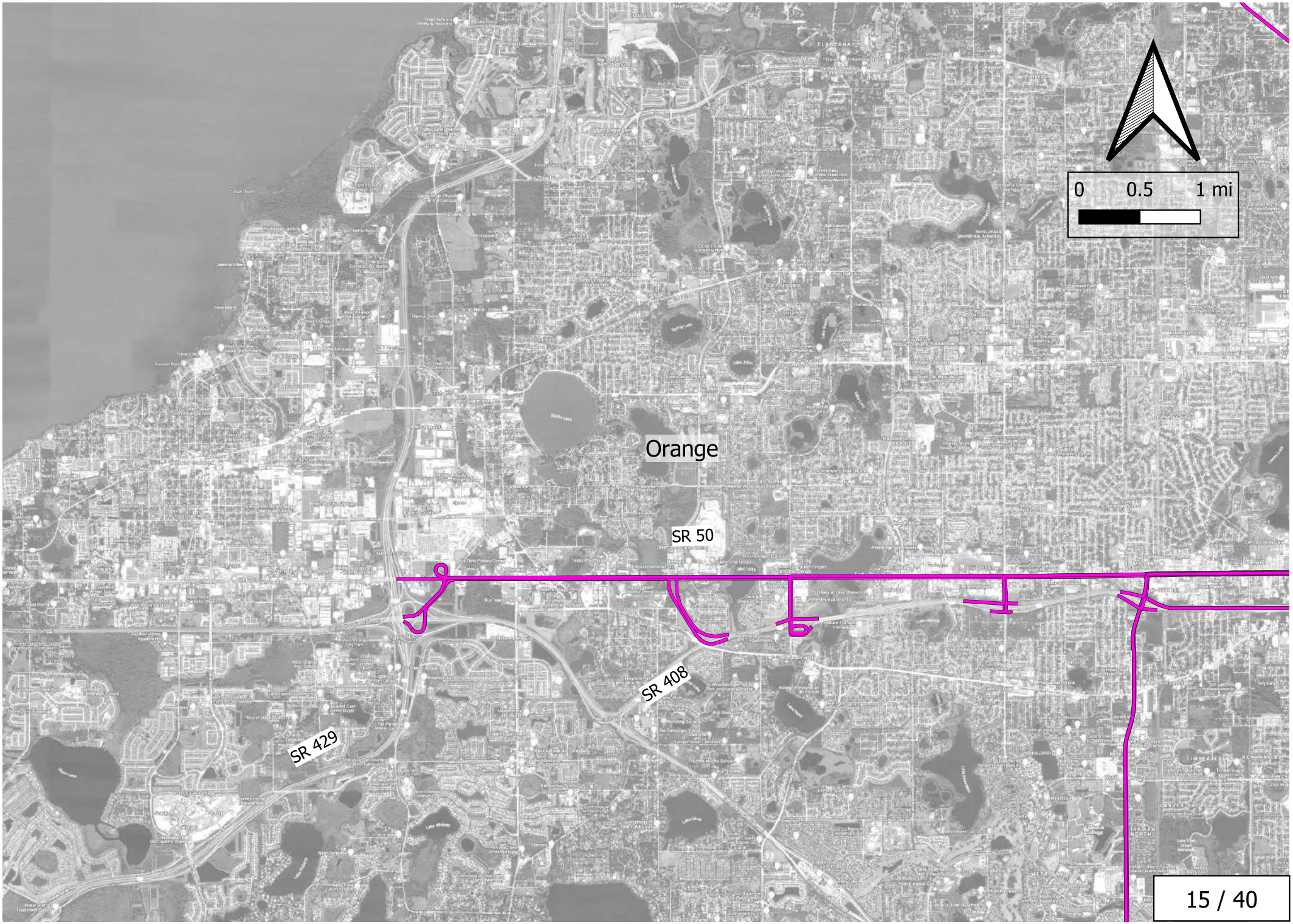
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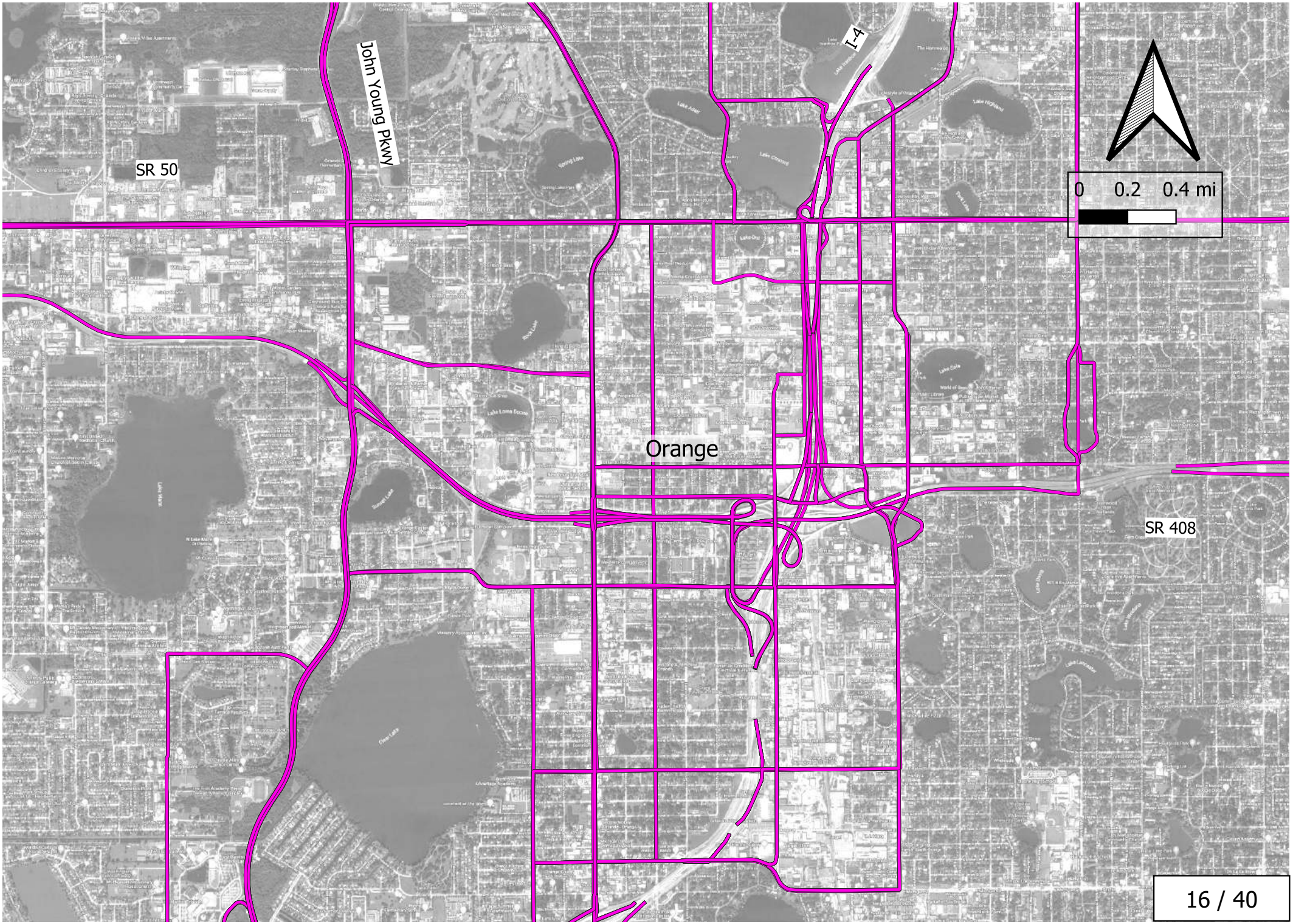
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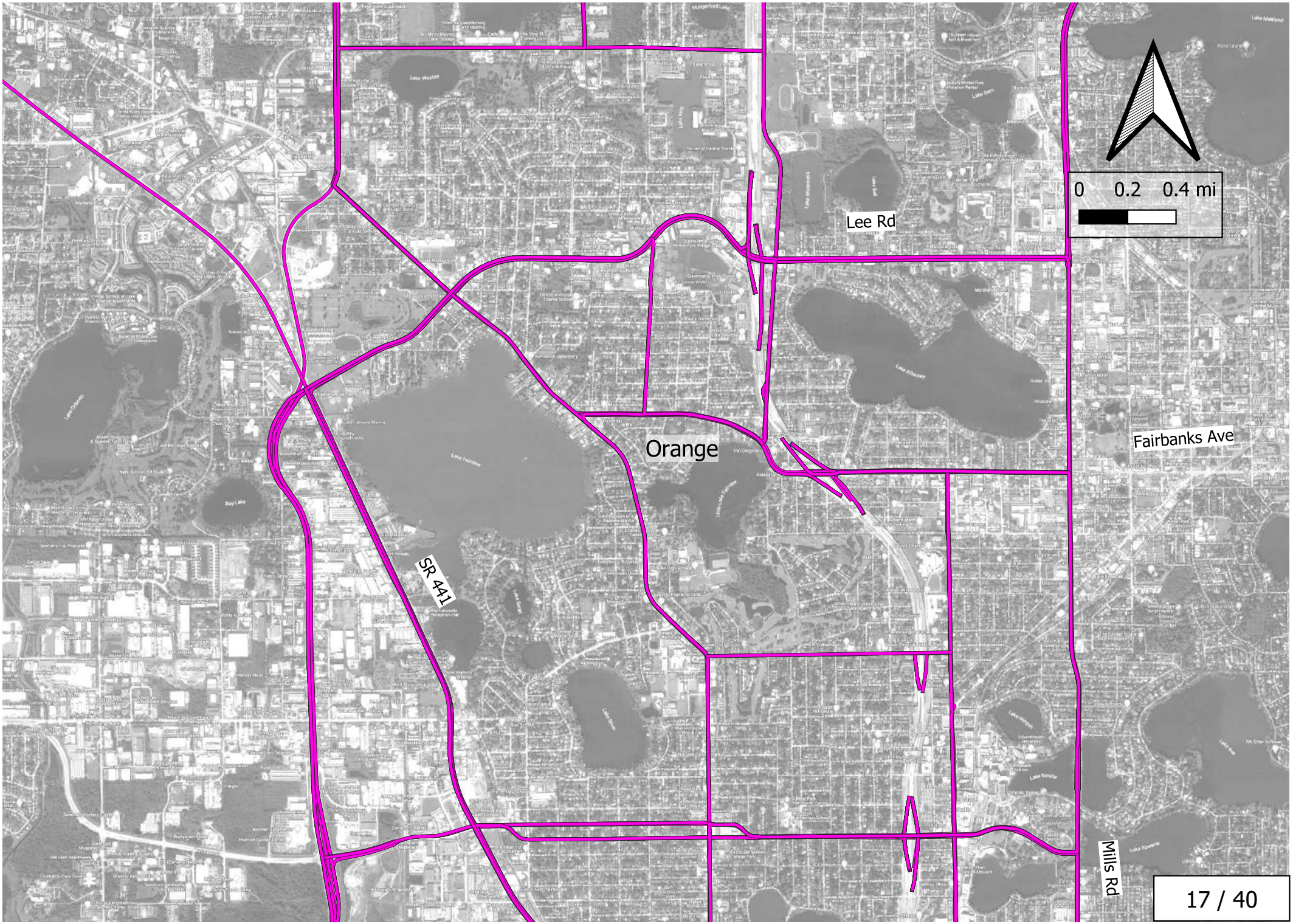
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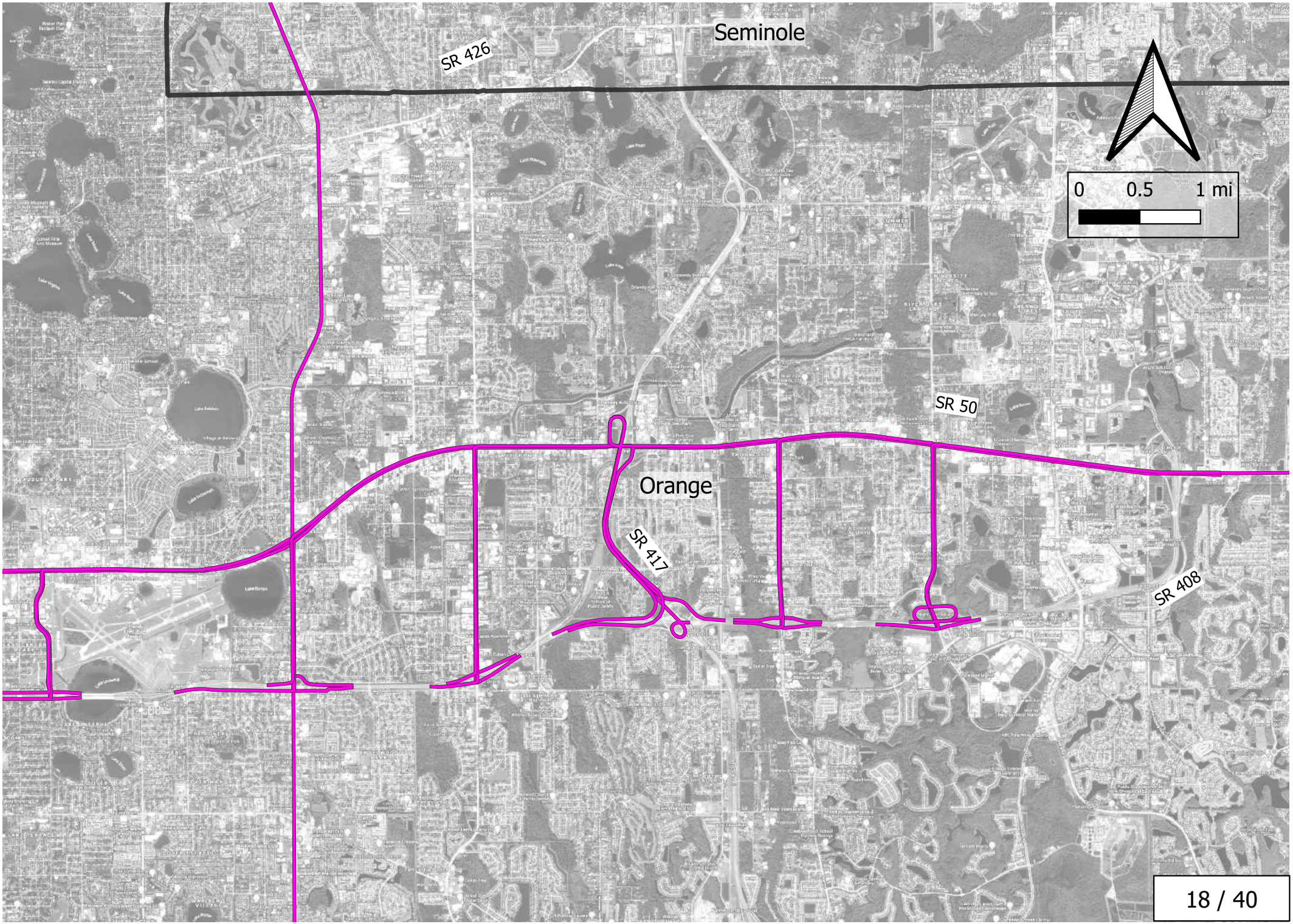
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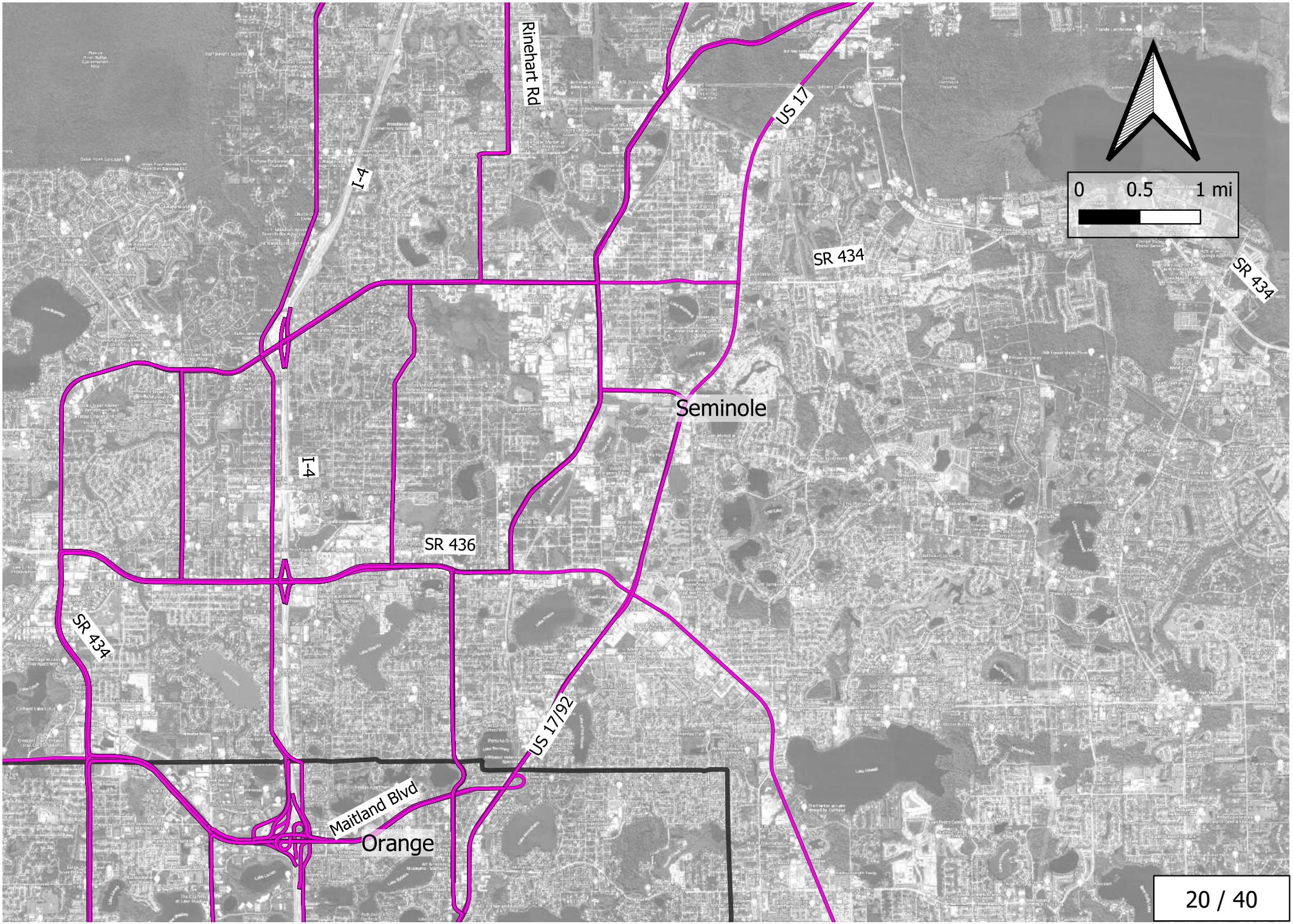
SR 429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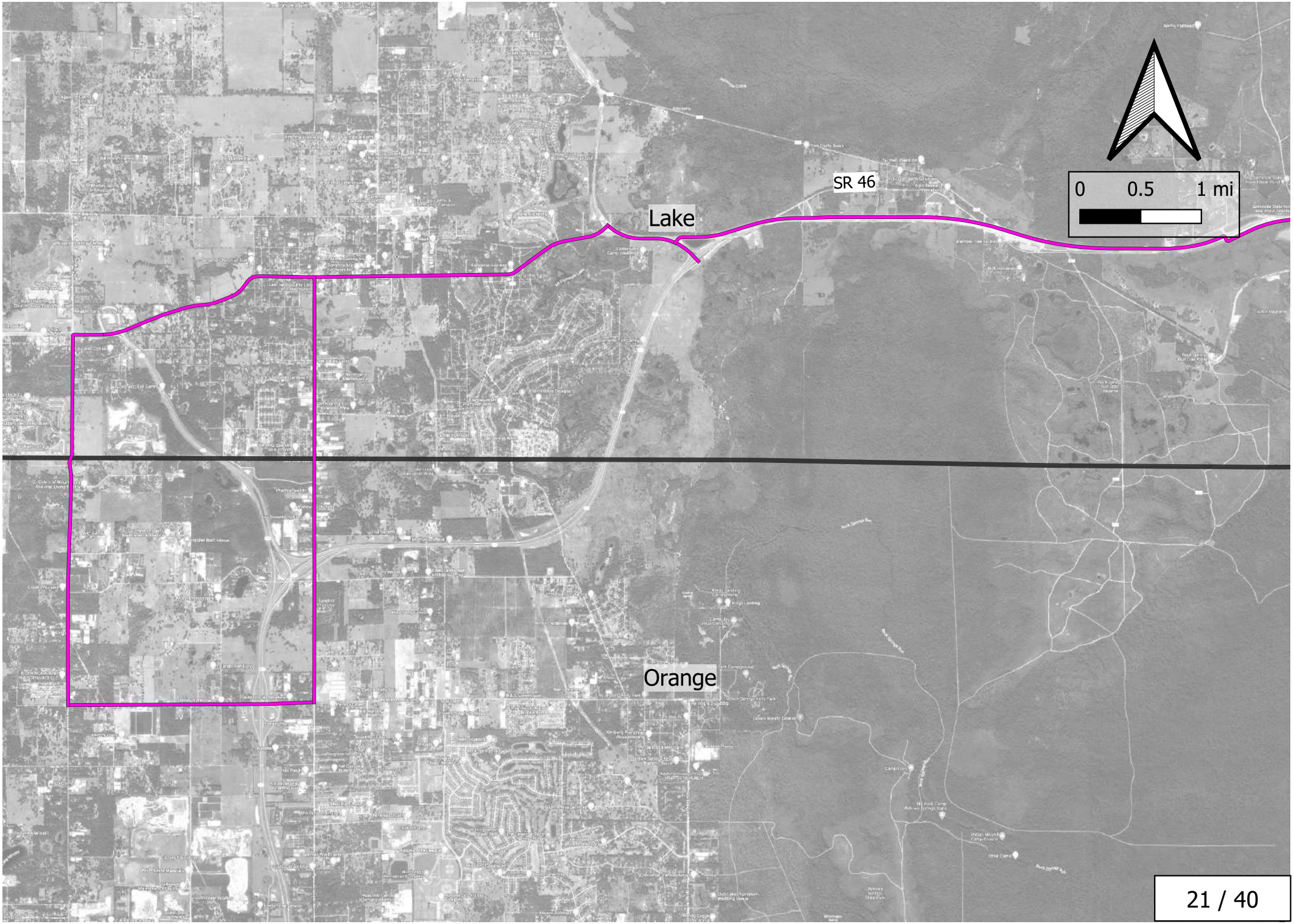
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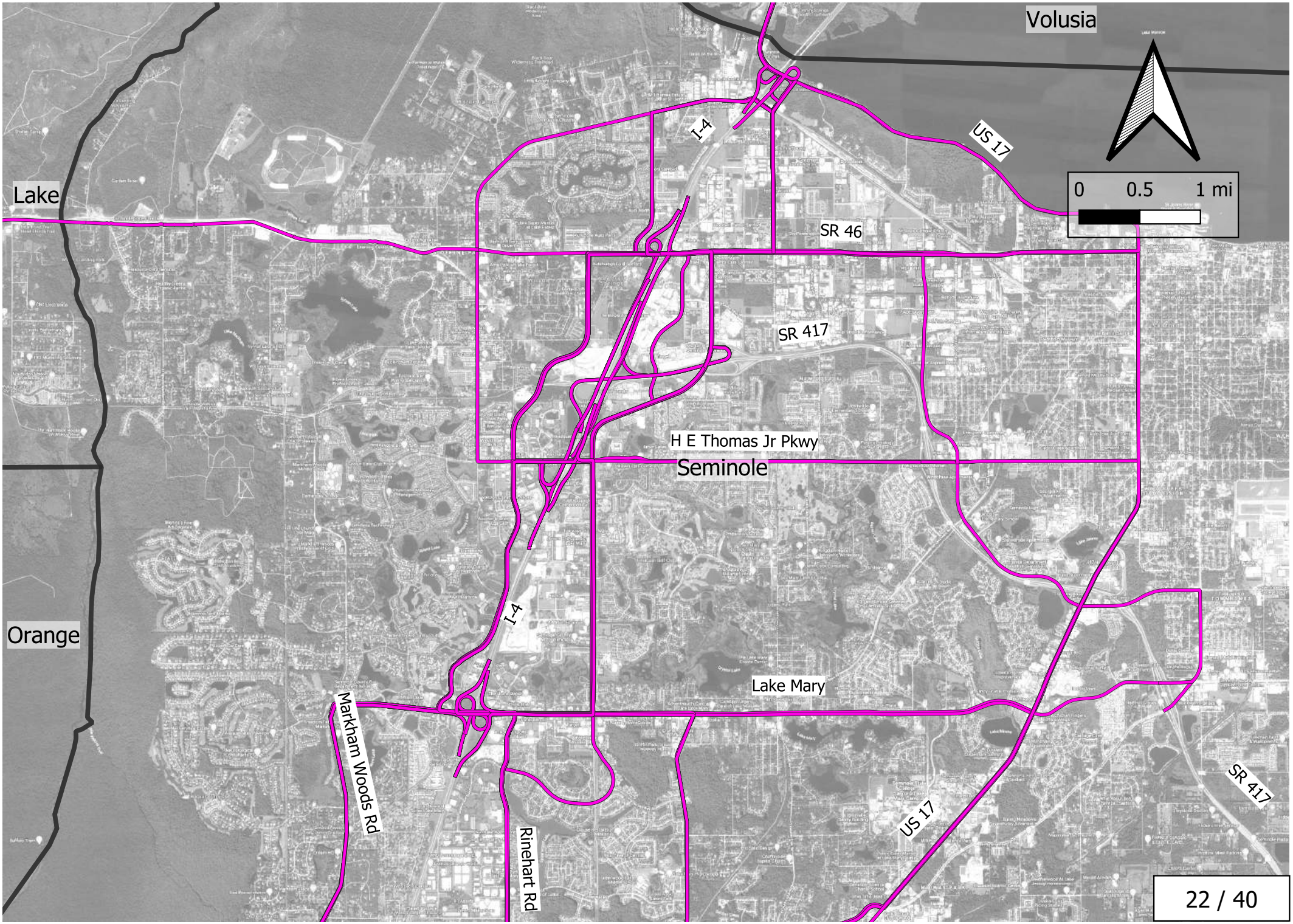
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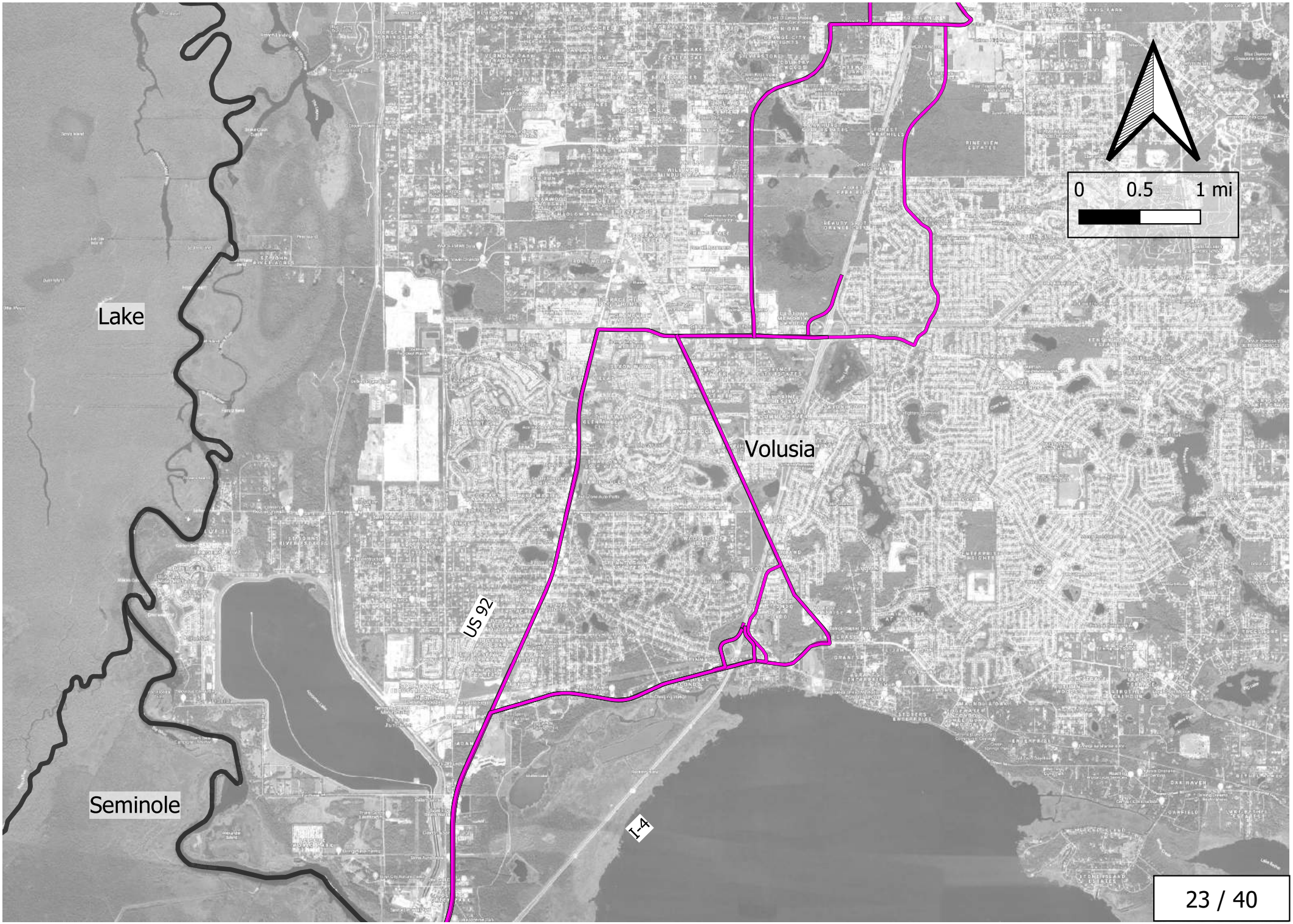
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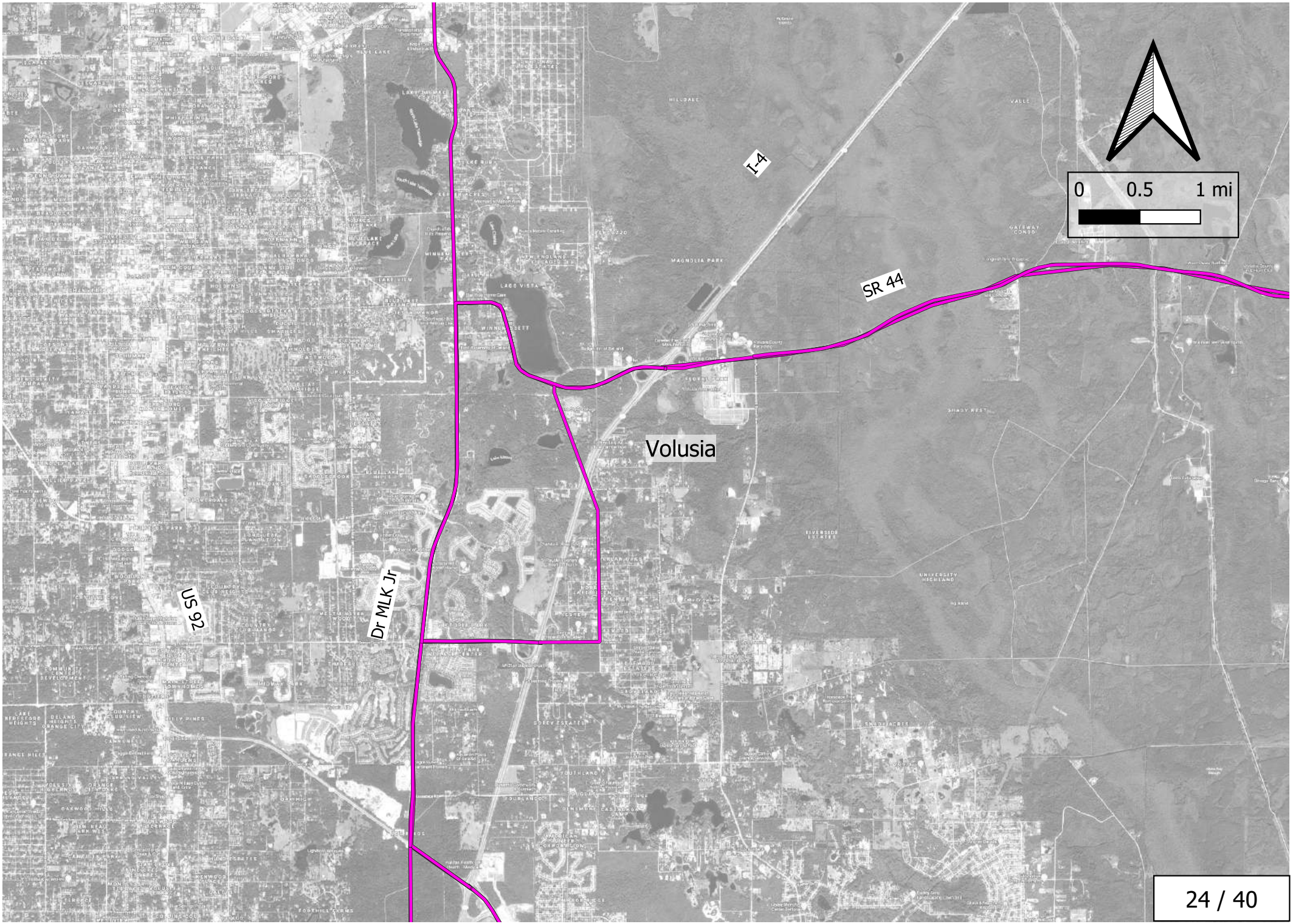
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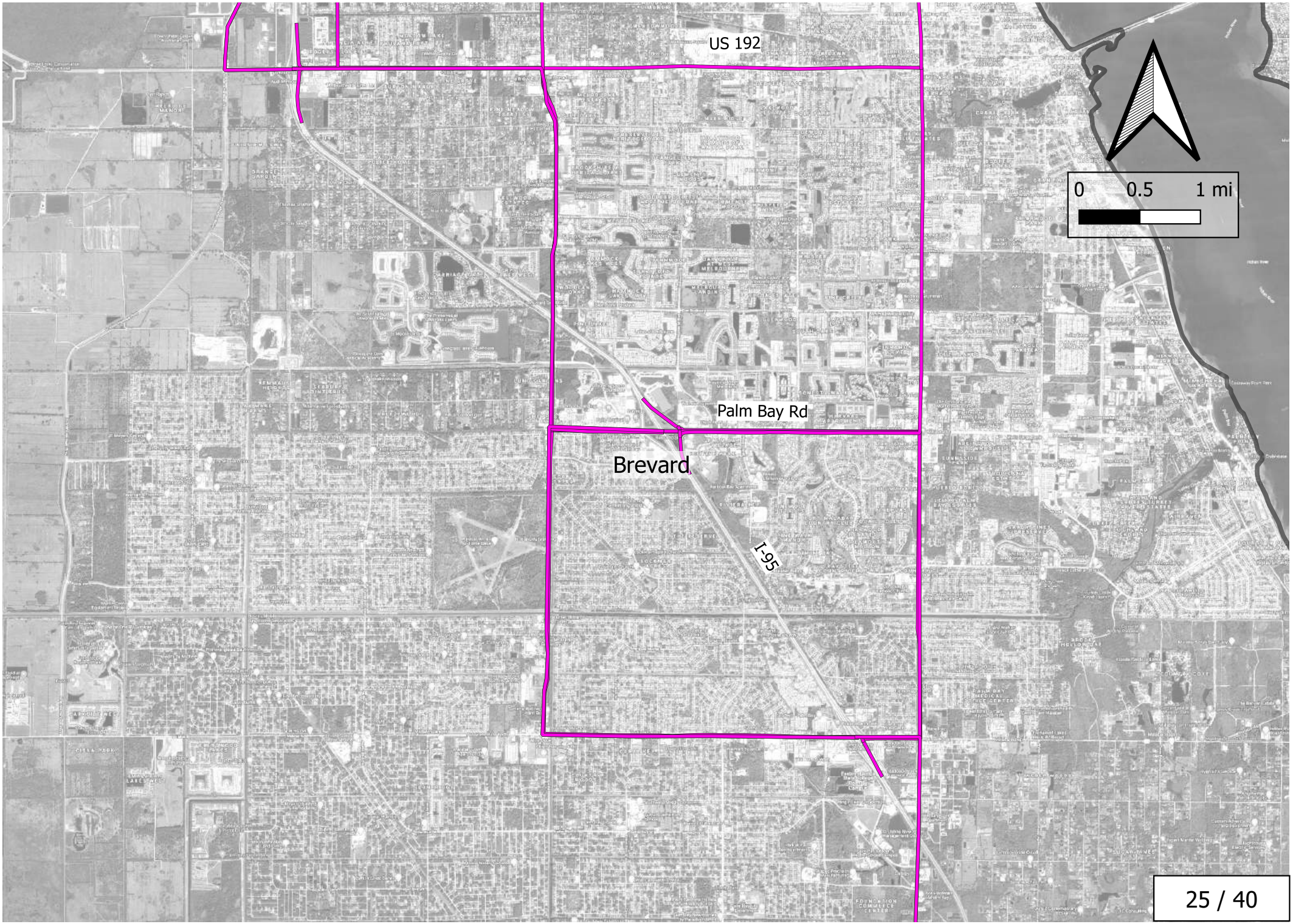
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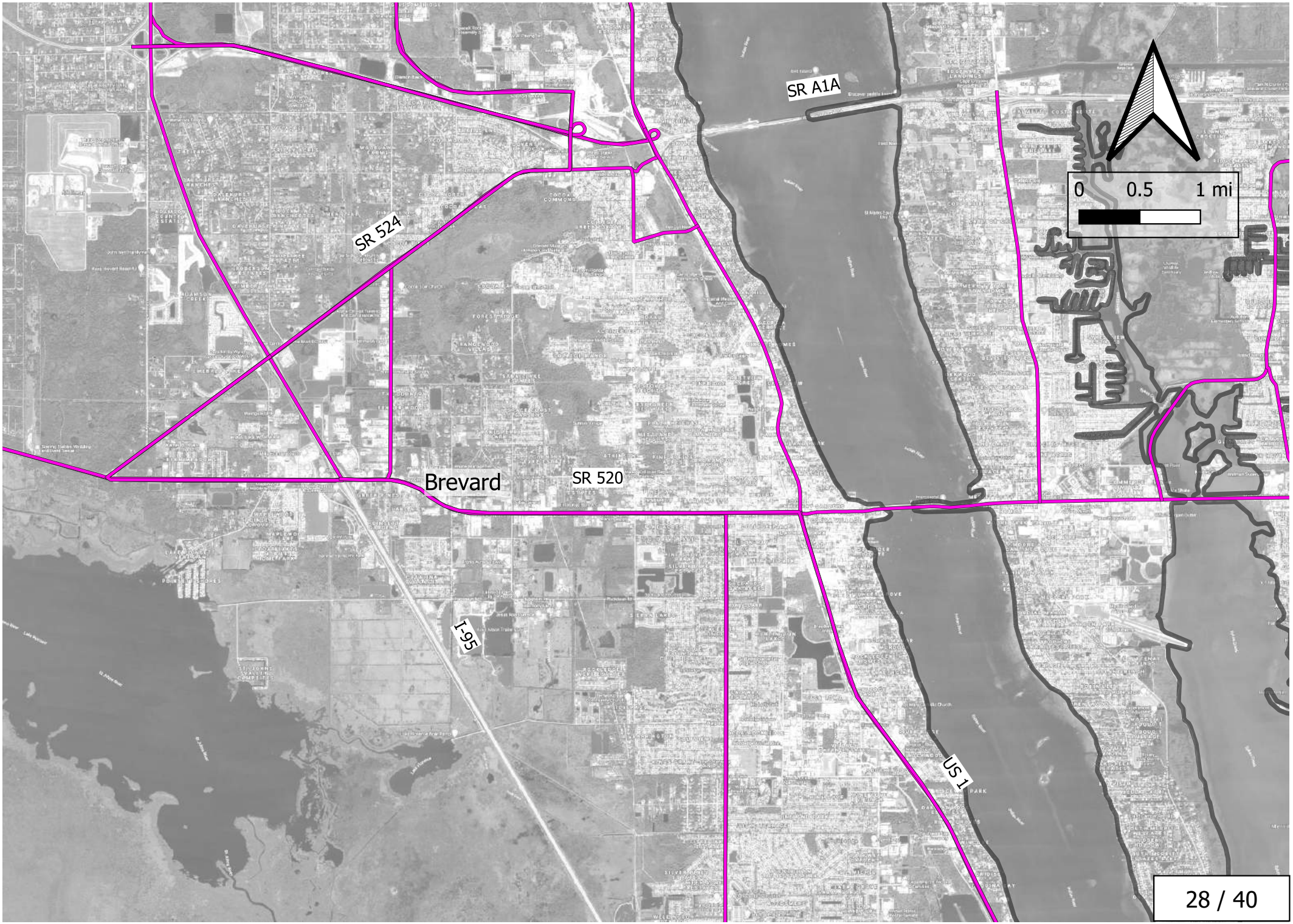
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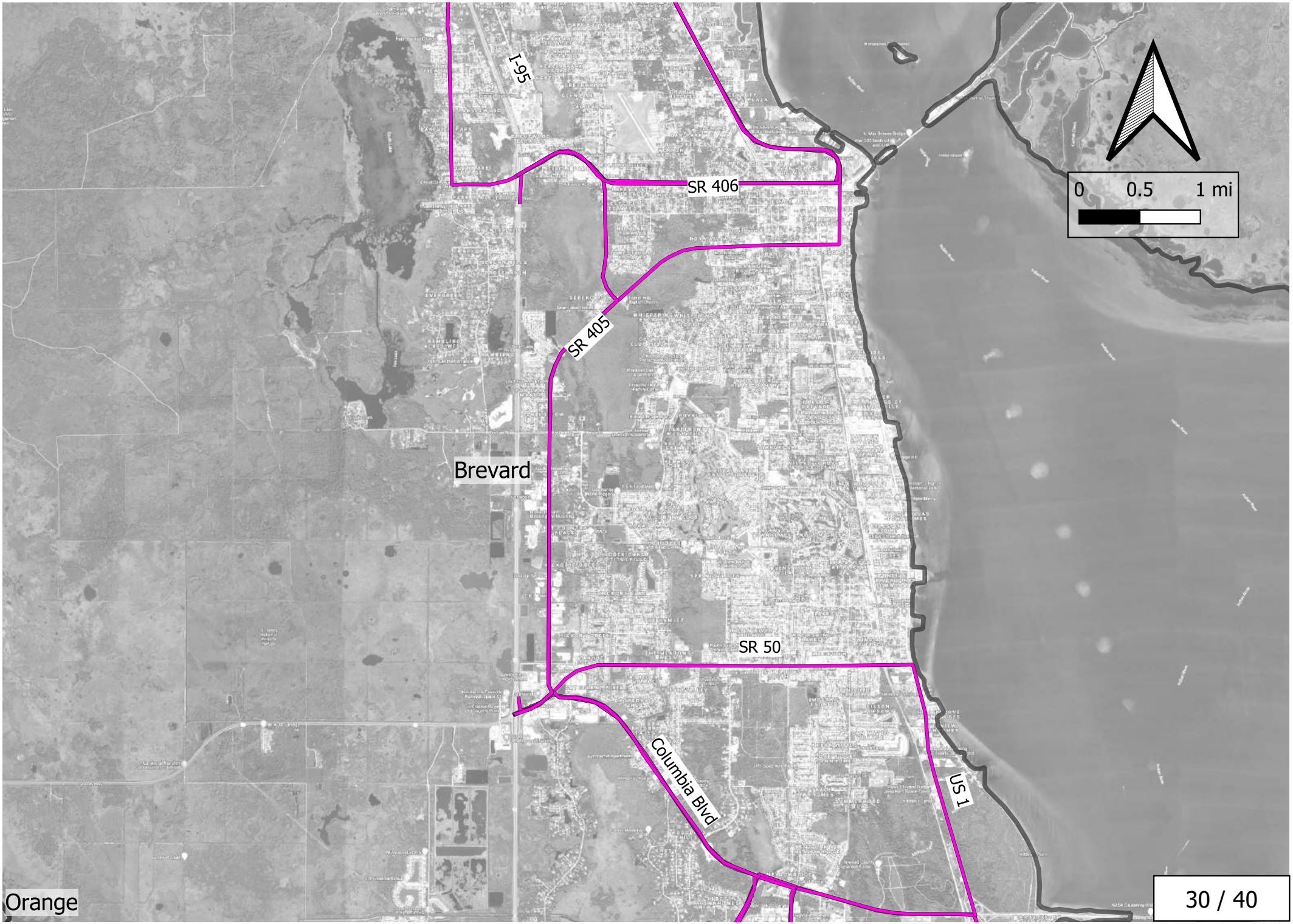
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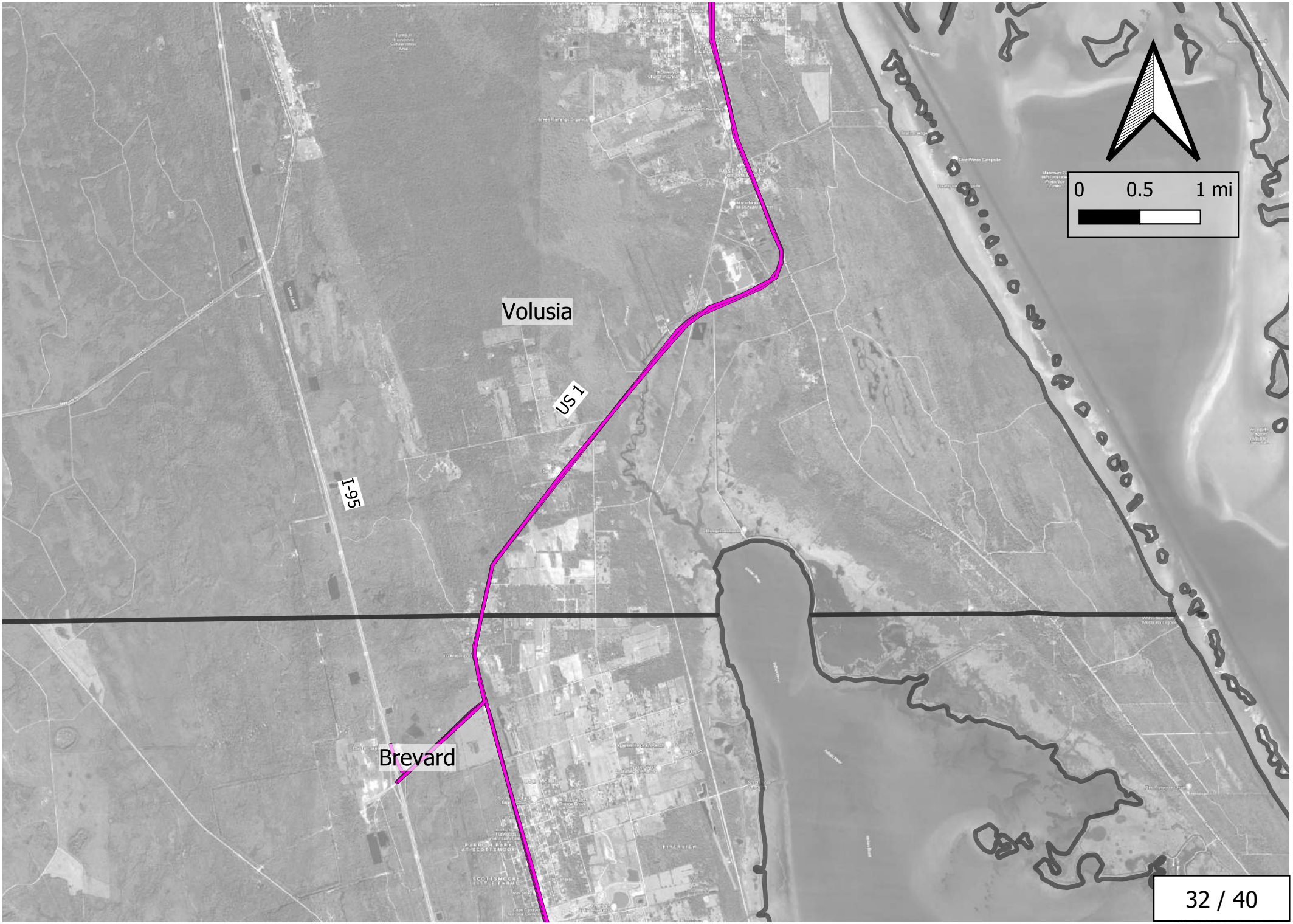
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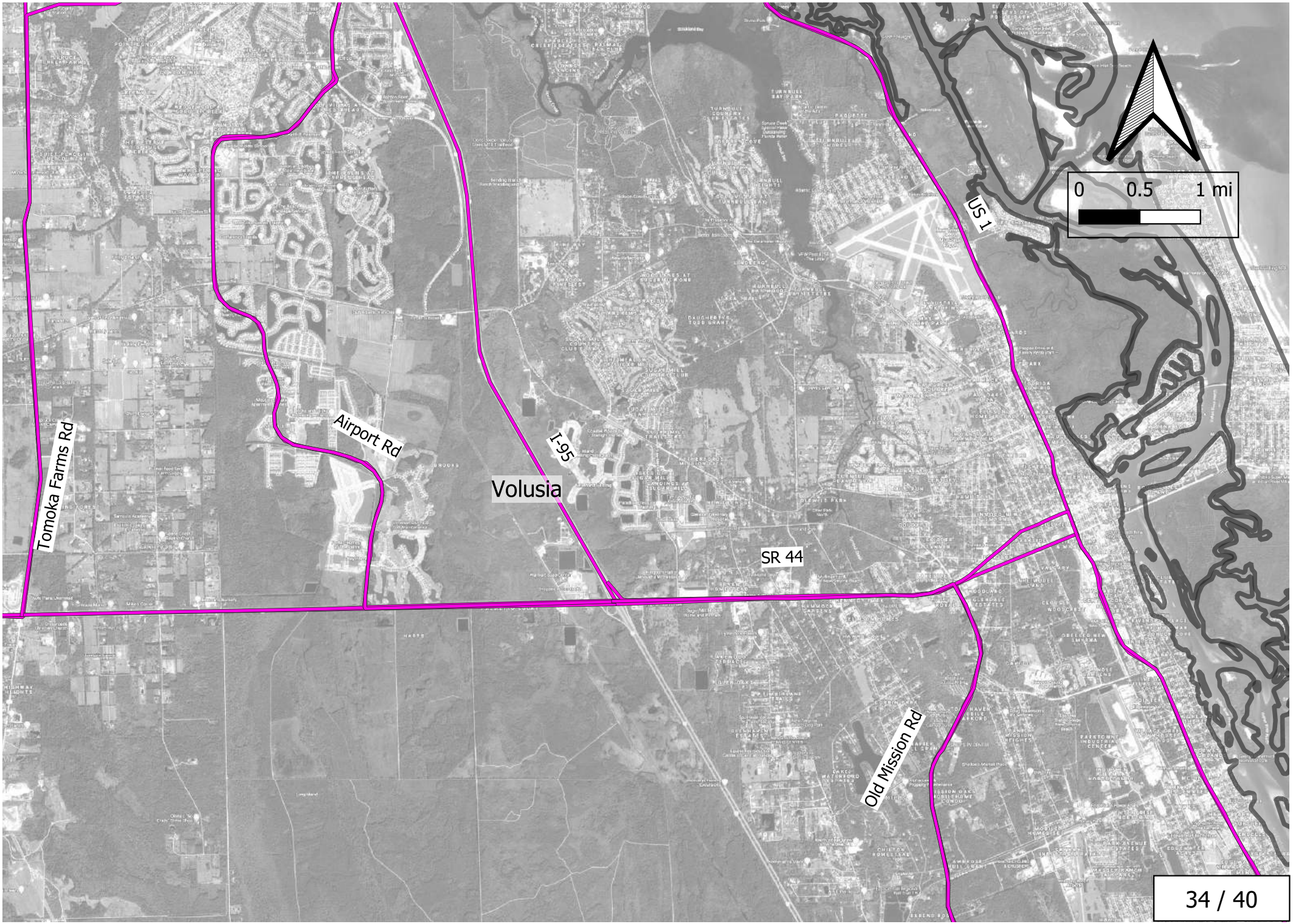
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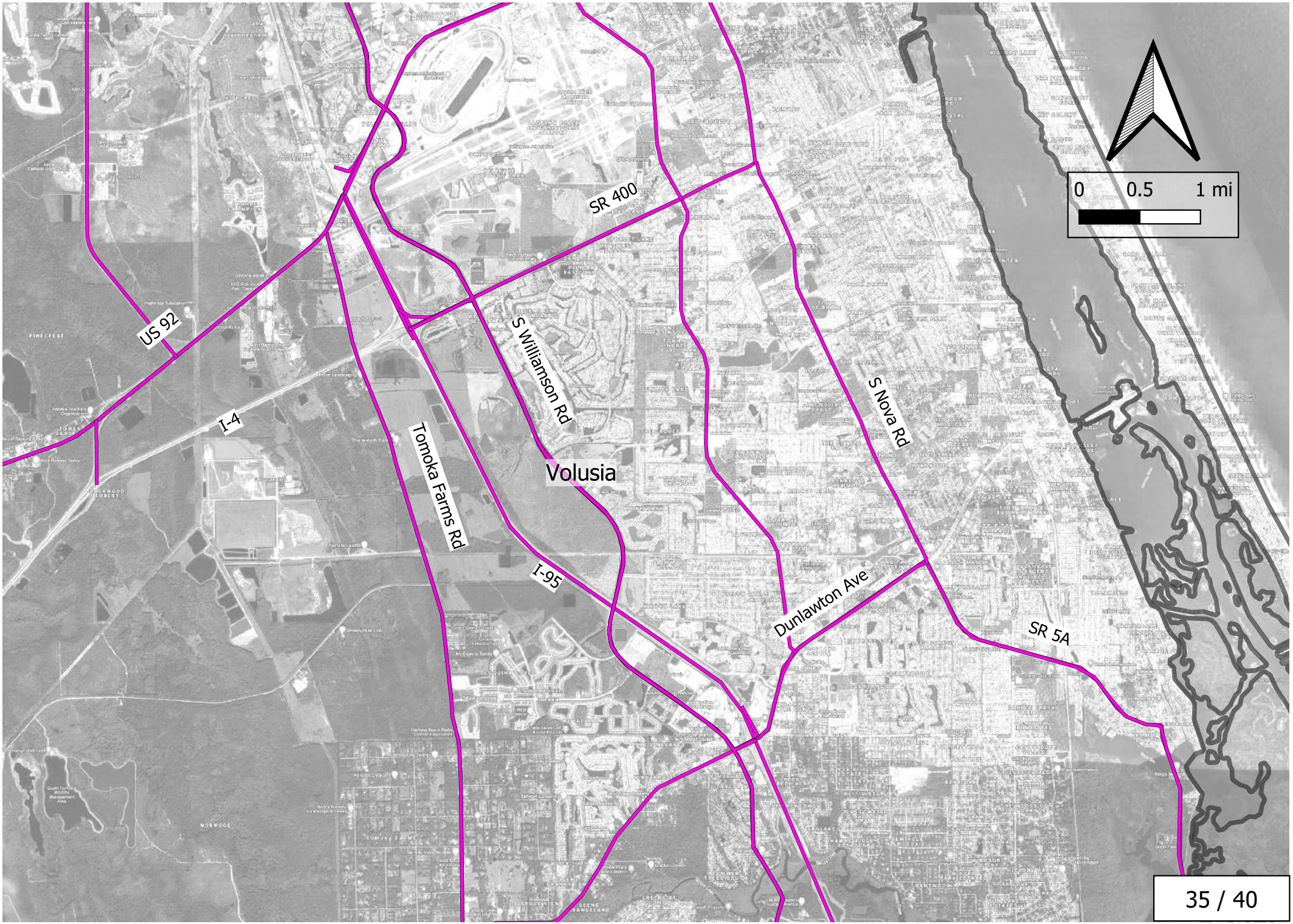
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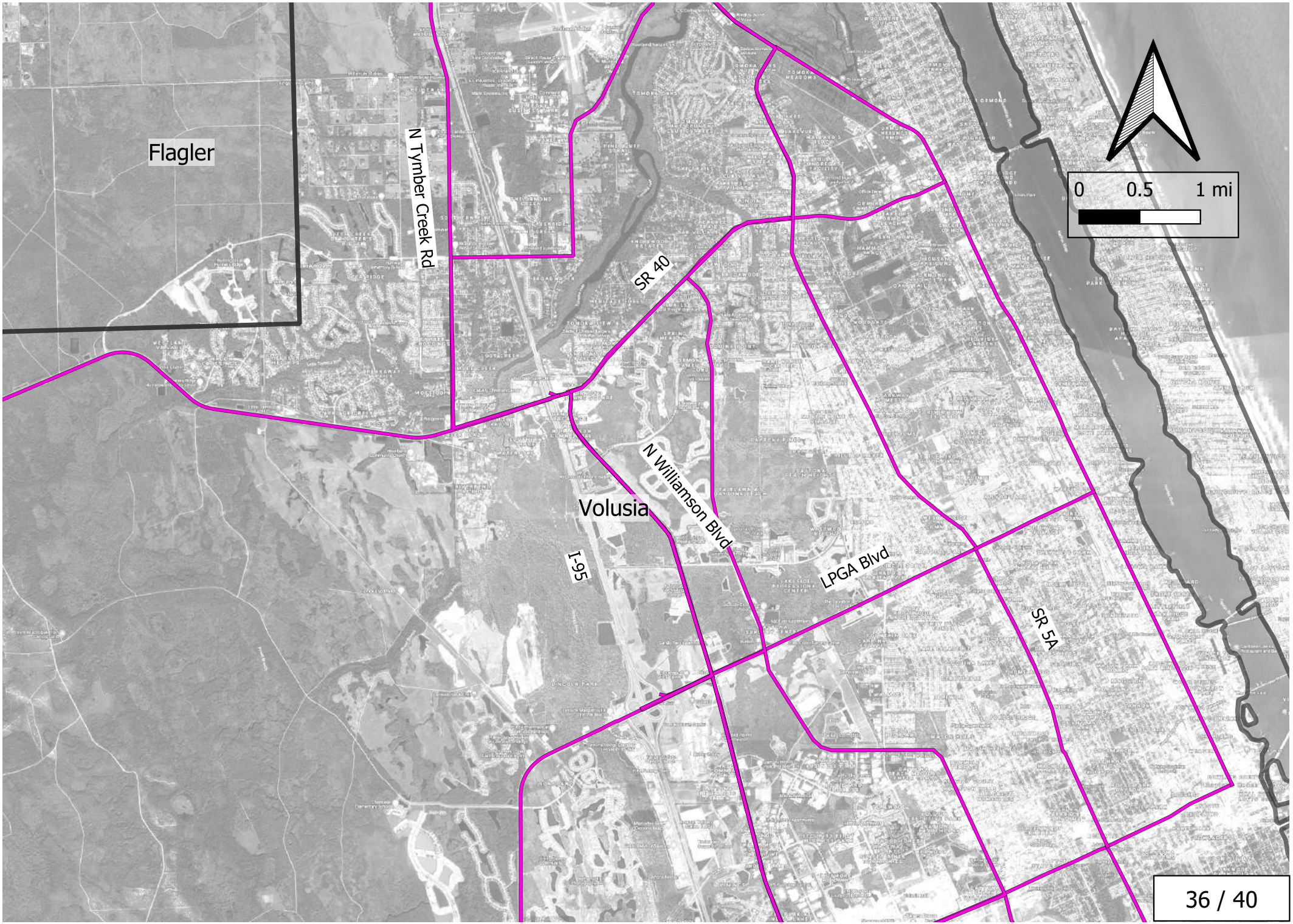
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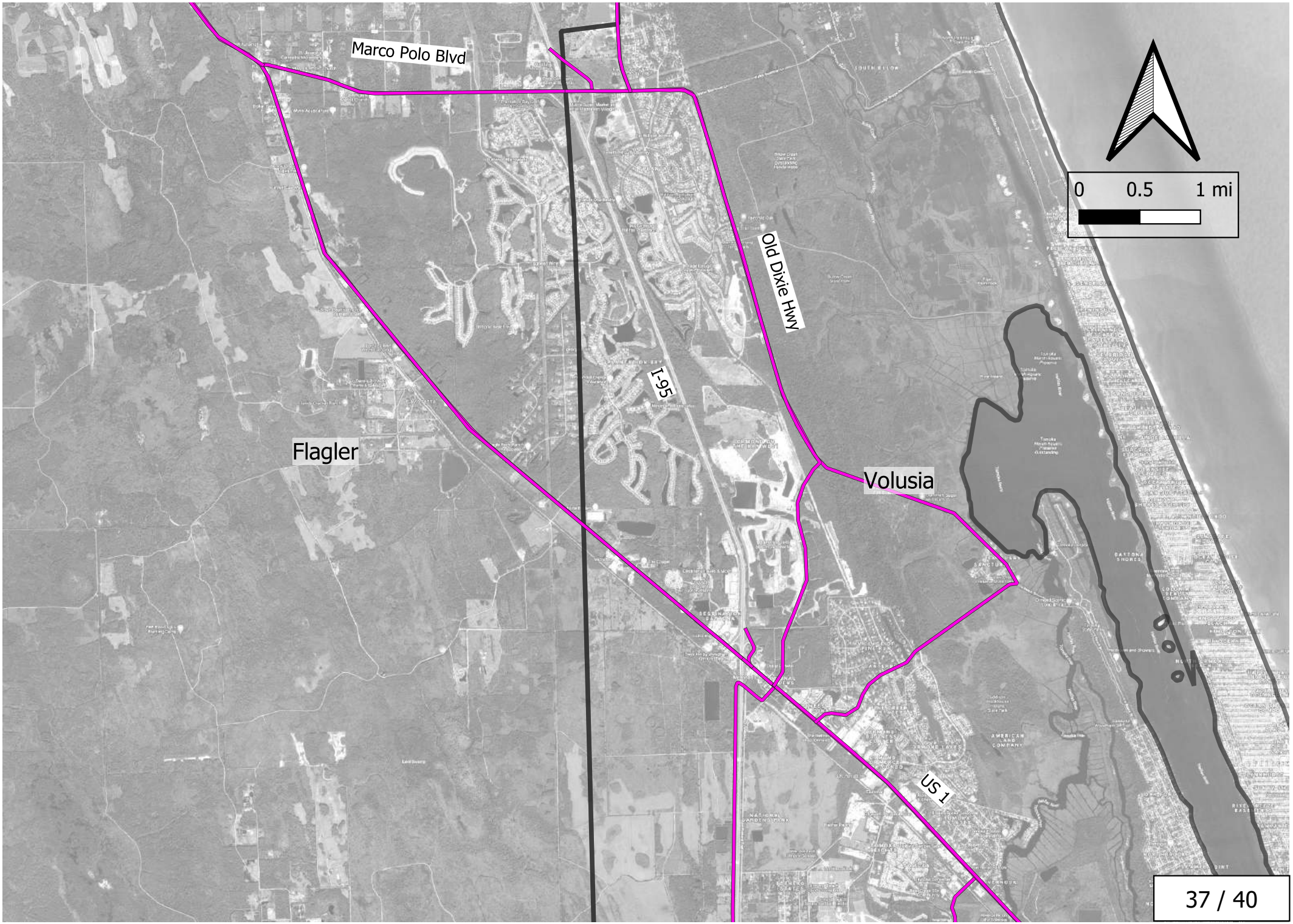
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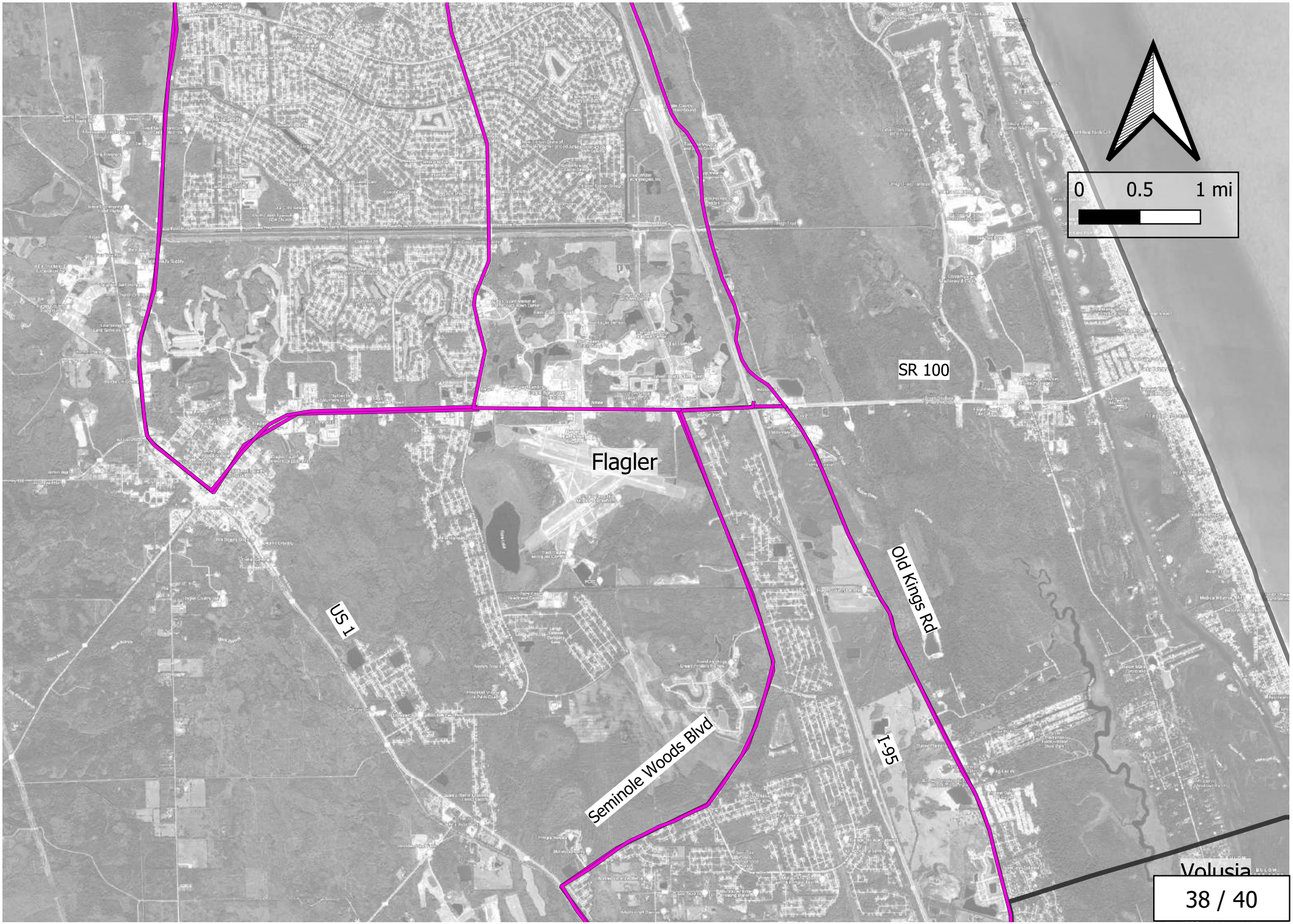
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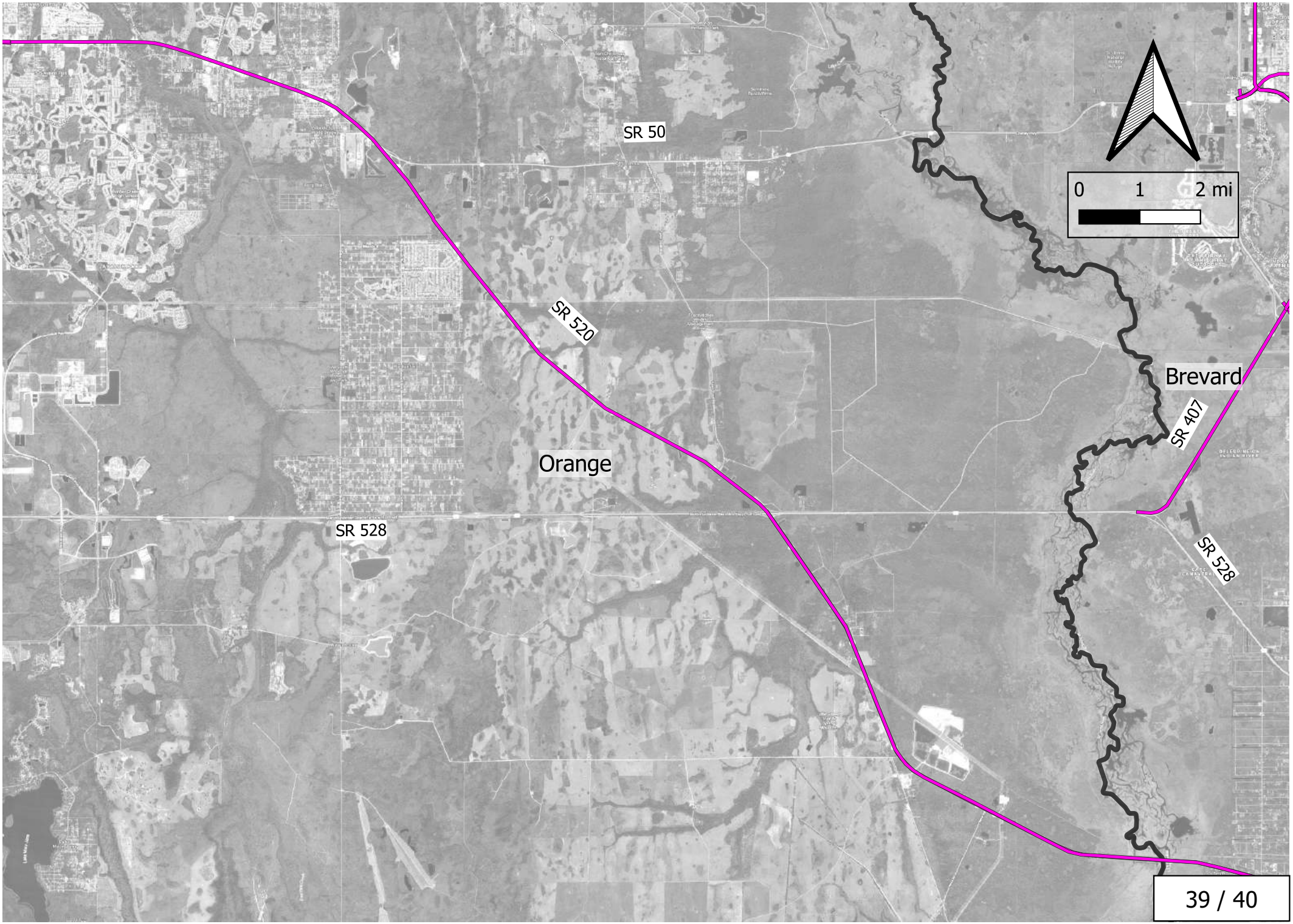
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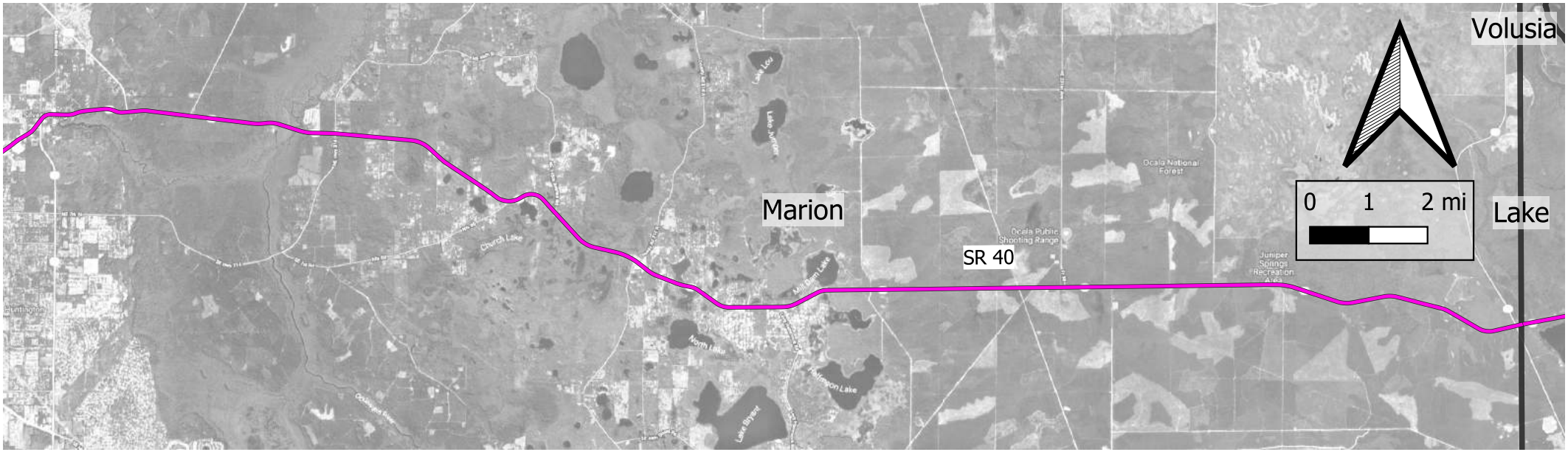
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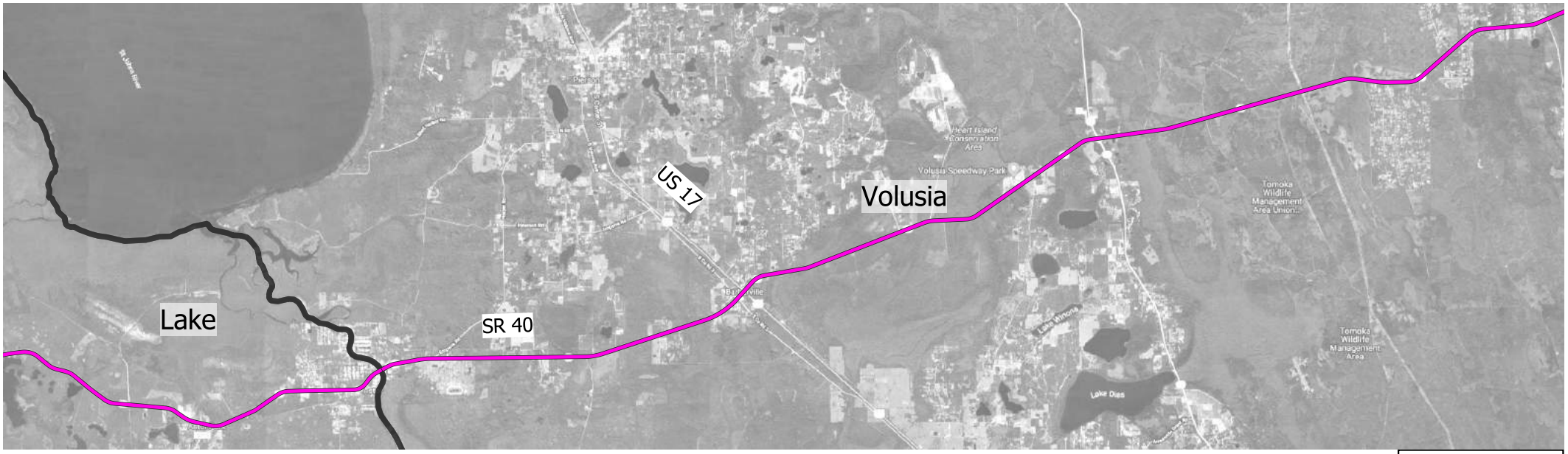
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Tomoka Wildlife Management Area Union
Tomoka Wildlife Management Area
Lake Dias
Lake Winona

Appendix C

Statewide Transportation Management Center

Standard Operating Guidelines (SOGs)

FDOT TSM&O

Transportation Systems Management & Operations

Transportation Management Center

Standard Operating Guidelines

July 2020

TMC Standard Operating Guidelines

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	David Howell	11/13/2018
	Schelley Cassidy	12/15/2018
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Appendix E Florida Missing Persons and Blue Alert Programs

Appendix F Guardrail Approach Terminal and Crash Cushion Snapshot Process

Appendix G Wrong-Way Driving Event Standard Operating Guidelines

1.1 Acronyms

AMBER	America's Missing Broadcast Emergency Response
AVL	Automatic Vehicle Locator
C2C	Center-to-Center Subsystem
CAD	Computer Aided Dispatch
CB	Citizens Band
CCTV	Closed-Circuit Television
CJIS	Criminal Justice Information Services
ConOps	Concept of Operations
CPR	Consistent, Predictable, Repeatable
DAT	Damage Assessment Teams
DEP	Department of Environmental Protection
DHSMV	Department of Highway Safety and Motor Vehicles
DTOE	District Traffic Operations Engineer
DMS	Dynamic Message Sign
EL	Express Lanes
ELM	Express Lane Marker(s)
EM	Event Management Subsystem
EMS	Emergency Medical Services
EOC	Emergency Operations Center
FAC	Florida Administrative Code
FBI	Federal Bureau of Investigation
FCC	Federal Communications Commission
FDLE	Florida Department of Law Enforcement
FDOT	Florida Department of Transportation
FFS	Florida Forest Service
FHP	Florida Highway Patrol
FHWA	Federal Highway Administration
FLATIS	Florida Advanced Traveler Information System
FTE	Florida's Turnpike Enterprise
FWC	Florida Wildlife Conservation
GTL	General Toll Lanes
GUI	Graphical-User-Interface
GUL	General Use Lanes
HAR	Highway Advisory Radios
HazMat	Hazardous Materials
IDS	Incident Detection Subsystem
IRV	Incident Response Vehicle
IT	Information Technology
ITS	Intelligent Transportation Systems
IVR	Interactive Voice Recognition
LSDMS	Lane Status Dynamic Message Sign
MAS	Message Arbitration Subsystem

MDT	Mobile Data Terminal
MOT	Maintenance of Traffic
MUTCD	Manual on Uniform Traffic Control Devices
MVDS	Microwave Vehicle Detection System
NTP	Notice to Proceed
NWS	National Weather Service
PIO	Public Information Office
PSA	Public Service Announcement
PTI	Planning Time Index
RISC	Rapid Incident Scene Clearance
RPG	Response Plan Generator
RRAVL	Road Ranger Automatic Vehicle Location Subsystem
RS	Reporting Subsystem
RTMC	Regional Transportation Management Center
SELS	Statewide Express Lanes Software
SEOC	State Emergency Operations Center
SHS	State Highway System
SIRV	Severe Incident Response Vehicle
SLERS	Statewide Law Enforcement Radio System
SOG	Standard Operating Guidelines
SOP	Standard Operating Procedures
STEOO	State Traffic Engineering and Operations Office
STIX	Southern Traffic Information eXchange
TADMS	Toll Amount Dynamic Message Sign
TAS	Toll Amount Sign
TD	Traffic Density
TEM	Traffic Engineering Manual
TIM	Traffic Incident Management
TIMP	Traffic Incident Management Program
TMC	Transportation Management Center
TOD	Time of Day
TRDMS	Toll Rate Dynamic Message Sign
TPAS	Truck Parking Availability System
TSM&O	Transportation Systems Management and Operations
TSS	Transportation Sensor Subsystem
TVT	Travel Time Subsystem
VDS	Vehicle Detection System
VOIP	Voice Over Internet Protocol
VS	Video Switching
WVC	Video Wall Control Subsystem
WWD	Wrong-Way Driving

2. Introduction

This document, presented by the Florida Department of Transportation (FDOT) Transportation Systems Management and Operations (TSM&O) office, contains the FDOT's official *Transportation Management Center (TMC) Standard Operating Guidelines (SOG).* Its objective is to help facilitate the proper operation of Florida's roadway transportation system by providing general guidance to TMC administrative and management personnel in the form of a strategic blueprint for success. This blueprint outlines recommended TMC stakeholder roles, functions, and regulations, and identifies desired results that are all based on a comprehensive study of the best nationwide and statewide practices.

In summary, this document describes "what is to be carried out and accomplished" from a top-down perspective. It is meant to serve as essential guidance to aid stakeholders and managers in the further development of individual TMC Standard Operating Procedures (SOP). It includes SOGs as they relate to TMC stakeholder responsibilities, Intelligent Transportation System (ITS) devices and tools, managing roadway events, system monitoring, and more.

This document contains standard performance measures that will be used to help the TSM&O and district offices monitor the extent to which quantifiable progress is being made against pre-determined key goals associated with efficiency and effectiveness. This document also contains guidance on how to identify gaps in meeting and conforming with this document as well as provides standards for establishing comparisons between TMCs.

Lastly, the TSM&O office intends that this becomes a living document to ensure that SOGs and performance measures remain up-to-date, accurate, and meaningful. The goal is to present opportunities for all stakeholders to provide input and feedback on this document as well as to propose new measures or revised language, as needed, to ensure that the most valuable and effective practices are in place.

Figure 1: The District Six Regional TMC (RTMC) located in Miami, Florida

TMC Standard Operating Guidelines

2.1 Operating Guidelines vs. Operating Procedures

When referring to TMC operations manuals, the terms SOG and SOP are often used loosely together or interchangeably. But there are key differences between the two that require clarification in order to effectively streamline the context of how the rest of this document is understood and rationalized into individual district TMC operations.

2.1.1 Key Differences Between Guidelines and Procedures

Guidelines are defined as the "principles intended to influence decision and actions." They are intended to set out the strategic direction of the TMC and will typically contain statements such as "TMC staff shall" and "TMC staff shall not," but will not give much direction on how this vision or strategy is executed. Procedures, on the other hand, are defined as "a particular and specific way of doing things." They articulate the exact steps required to support and carry out a TMC guideline. In other words, procedures document a course of action accomplished in a defined order, ensuring the consistent and repetitive approach to accomplish certain activities. Other key differences between guidelines and procedures include:

1. Guidelines are normally developed from a high managerial level and are meant to be universally applicable, whereas procedures are tailored for local level use.

2. Guidelines are the "rules" that govern the TMC in making decisions while procedures are the steps which direct TMC staff on how to accomplish the guidelines.

3. Guidelines focus on the what and why, whereas procedures focus on the how, when, and who.

4. Guidelines are usually expressed in broad terms (e.g., dispatch a Road Ranger if such and such happens), whereas procedures describe processes in detail (e.g., how to dispatch a Road Ranger).

5. Guidelines change infrequently as they are based on protracted study and experience as to what should and should not be done. Procedures are the opposite of that in which they will often evolve as new tactics and tools emerge, and thus require processes be redesigned to accommodate them.

2.1.2 Examples

A few examples can help illustrate the importance of clearly defining the differences between guidelines and policies.

1. **Third-Party Notification:** Depending on the type of roadway event or situation that has been detected, TMC staff will be required to alert certain third-party responders. In this regard, SOGs will define under what circumstances should a third party be contacted in each situation, and how they are to be contacted is dependent on a range of unique factors present in each district. For example, the number and type of third-party responders that spend time or are embedded in a TMC vary considerably among districts. The SOPs that are tailored for each district, in this case, provide step-by-step information as to how each agency should be contacted and the form of communication that

is used, whether it be through a telephone call, an email alert, or simply having operators turning to their side and directly informing the third-party responder in person.

2. **ITS Device Capabilities:** TMCs have an assortment of ITS devices at their disposal that are used to help monitor and manage the roadway. Policies surrounding ITS devices, such as Closed-Circuit Television (CCTV) cameras and Vehicle Detection Systems (VDS), may differ from district to district. Hence, an SOG may require that CCTV cameras are used to monitor incidents on the roadway whereas SOPs for labeling cameras may differ from one district to the next.

3. **Unique Factors or Constraints:** TMCs may each have their own individual range of factors or constraints that need to be considered when planning for or managing roadway events. For example, a local city or county may request from a district TMC that no traffic be diverted to any of their roadways, even in the case of a major lane blocking event. Whereas SOGs may prescribe what should ideally transpire in the case of a major lane blocking event, district SOPs will detail any special factors or constraints that TMC staff need to consider when performing any of their typical duties.

2.1.3 Benefits of Separating Guidelines from Procedures

Ensuring that the differences between guidelines and procedures are kept separate have several benefits, including:

1. **Reducing Maintenance Time:** Unwrapping guidelines away from procedures can allow the TSM&O office to focus more on what should be done and less on the procedural content, which usually requires significant review to accommodate all seven districts and the Florida Turnpike Enterprise (FTE). Focusing on the guidelines helps to avoid procedural nuances and leaves the finer details (e.g., procedures) to individual TMCs who are more in tune with their respective systems.

2. **Enhancing Guideline Understanding and Compliance:** When procedures are mixed in with guidelines, documents detailing the guidelines can quickly become very long and complex. Focusing on guidelines and keeping procedural details separate can help TMC staff better understand guidelines and commit them to memory.

3. **Promotes Efficiency:** Separating guidelines from procedures gives individual TMCs the opportunity to create and establish their own set of procedures that best suit the TMC, based on the makeup of their district, stakeholders, and ITS tools and devices. It also gives the TMC the opportunity to experiment with procedures and continually assess how they can be improved.

2.2 Document Organization

Chapter 3 – General TMC Standard Operating Guidelines: This chapter provides foundational TMC SOGs as they relate to day-to-day stakeholder responsibilities, ITS devices, performance measures, reporting, system upkeeping requirements, and more.

Chapter 4 – Dynamic Message Sign (DMS) Guidelines: This chapter aims to provide a uniform and consistent approach to the use of amber and full-color Dynamic Message Signs for both limited and non-

limited access roadways. It contains SOGs as it pertains to DMS messaging application, content, format, priorities, and prohibitions.

Chapter 5 – Event Management: This chapter provides SOGs that are primarily related to how roadway events are (by default) managed, in terms of how they are prepared for and officially terminated.

Chapter 6 – Roadway Event Standard Operating Guidelines: This chapter provides SOGs for specific roadway event types that TMCs are likely to encounter at some point.

Chapter 7 – Managed Lanes Operation: This chapter provides SOGs and details TMC staff operational requirements as they relate to the management of Express Lanes.

Appendix A – ITS Cybersecurity Guidelines: This appendix provides guidelines for standardizing cybersecurity efforts for the FDOT TMCs. These guidelines are intended to mitigate cybersecurity risks and give a framework for prevention, response, and recovery from an incident.

Appendix B – Truck Parking Availability System (TPAS) SOG: This appendix provides the official FDOT TMC TPAS SOG that is used to communicate the requirements for managing rest areas and weigh station smart parking systems so that each district can create its own SOP.

Appendix C – Color DMS Guidelines: This appendix contains guidelines for how color DMS can and should be used.

Appendix D – TMC Incident Executive Notification Memorandum: This appendix details when TMC staff must notify the Central Office about incidents or situations on the roadway along with the required email format.

Appendix E - Florida Missing Persons and Blue Alert Plans: This appendix provides the official guidelines and criteria for posting and managing America's Missing Broadcast Emergency Response (AMBER), Blue, and Silver Alert events.

Appendix F - Guardrail Approach Terminal and Crash Cushion Snapshot Process: This appendix provides the procedures for taking snapshots of any crashes that involve guardrail approach terminals or crash cushions as requested by the Maintenance Office. These snapshots are used to evaluate how the vehicle impacts the guardrail approach terminal or crash cushion.

Appendix G – Wrong-Way Driving Event SOG: This appendix provides the official FDOT TMC Wrong-Way Driving (WWD) event SOG. This SOG provides the framework as to how TMCs plan and manage a WWD event from the beginning to its end.

3 General TMC Standard Operating Guidelines

3.1 Network Security and Data Requirements

TMCs serve as the hub where transportation data is collected, stored, processed, and fused with other operational data to produce valuable information that is distributed to the traveling public, media, and other agencies. Consequently, because of its critical role in the successful operation of the transportation system, it is crucial that TMCs implement proper measures to secure information (data) and information technology (IT) resources to prevent misuse, abuse, and loss.

1. **ITS Cybersecurity:** To help mitigate cybersecurity risks and provide a dependable framework for prevention, response, and recovery from an incident, TMCs should implement the SOGs found in **Appendix A – Intelligent Transportation Systems Network and Cybersecurity Standards**. This document provides standards with respect to TMC Networking, System Configurations, Incident Response, Reporting, and Disaster Recovery. It also provides TMCs with resources on formulating cybersecurity strategies.

2. **Confidentiality of Information and Data:** Computer and software applications should have a multi-tier privilege-based system. The multi-tier system should identify groups based on the ability to accept or select specific actions, information to be disseminated, edit within certain parameters, or override. TMC data and IT access should be limited to individuals explicitly authorized by FDOT staff only. All data, files, and program access shall be limited to individuals with explicit authorization to view, process, or maintain such systems. This includes third-party vendors needing to access any hardware or software component in the TMC. To minimize opportunities for malicious activity, IT access restrictions are applicable but are not limited to, desktop computers, notebooks, laptops, servers, personal cell phone devices, thumb drives, or anything else that can be used to transport confidential or harmful data.

3. **Internet:** TMC staff must prohibit personal use of the internet and have access to a list of sites approved by the district or TMC IT Manager that they can view at their workstations. **Each TMC should allow only approved websites for operations staff. Software shall be installed to identify who is attempting to access unapproved websites.**

Figure 2: The District One RTMC's Server Room

3.2 TMC Operations Stakeholder Responsibilities

3.2.1 TMC Staff Responsibilities

TMC staff members are the backbone of TMC operations. As such, they are responsible for real-time utilization of various tools and devices to assess traffic conditions and roadway events, managing appropriate responses, and helping to mitigate any negative effects as much as possible.

1. **Collective TMC Staff Responsibilities:** At a minimum, all TMC staff shall:
   a) Maintain a consistent professional atmosphere.
   b) Maintain up-to-date knowledge of all networking and IT security rules and guidelines.
   c) Maintain up-to-date knowledge of all TMC SOGs and SOPs.
   d) Be fully trained in all TMC systems they are expected to operate.
   e) Maintain cross-training in the TMC to assist other TMC staff when they are overloaded.
   f) Facilitate event management, which includes, but is not limited to, detection, verification, response, notification, DMS activation, and reporting of planned and unplanned events.
   g) Provide quality assurance on the day-to-day activities in the TMC.
   h) Perform record keeping tasks, as required.
   i) Notify and coordinate, in a timely and effective manner, with other incident response and management agencies including FHP, local public safety (sheriff and police), Road Rangers, RISC contractors, and others. FHP and local public safety notification and communication must include incident detection, verification, and management information available to the TMC staff. FHP and local public safety notifications must also include secondary events and roadway conditions such as congestion, blocked lanes, and other conditions that are likely to result in a secondary crash.

2. **TMC Operator Responsibilities:** At a minimum, all TMC operators shall:
   a) Monitor and report equipment failures during their respective shifts.
   b) Log all activities into the SunGuide database and ensure the quality of information is complete, accurate, timely, and concise. SunGuide data is used for several performance measure reports and is the primary source of data for reporting on Open Roads clearance times and secondary events and crashes.
   c) Assist with the data collection for the various monthly reports, daily reports, telephone logs, operator performance reports, travel speed and travel time reports, incident reports, field equipment failures, and any other reports that are generated from the TMC.
   d) Follow all applicable local, state, and national policies, such as FHWA's Traffic Incident Management Gap Analysis Primer. The latest version of this policy can be found online at https://ops.fhwa.dot.gov/publications/fhwahop15007/index.htm

3. **TMC Shift Supervisor and Manager Responsibilities:** At a minimum, all TMC managers and shift supervisors shall:
   a) Manage TMC staff administrative and personnel issues, such as scheduling, timesheets, etc.
   b) Provide support and supervision in the TMC during shifts.

c) Have a comprehensive knowledge of all TMC staff and stakeholder responsibilities.
d) Ensure that all aids and binders are up-to-date.
e) Ensure that all communications comply with TMC policies and procedures.
f) Directly supervise all communications.
g) Perform periodic and annual updates to the TMC SOPs.
h) Identify and develop solutions to improve TMC operations efficiency.
i) Assist with generating daily, weekly, monthly, quarterly, and annual operations reports.
j) Support the training of new and existing TMC staff and keep training material up-to-date.
k) Manage the quality of TMC operations and data.

4. **TMC Staffing Requirements:** At a minimum, there must be at least one operator and shift supervisor (or position of similar or higher rank) managing the TMC control room at all times.
5. **TMC Operator Background Checks:** TMC staff use the State Law Enforcement Radio System (SLERS) to dispatch Road Rangers. This is the same radio system Florida Highway Patrol (FHP) dispatchers use to communicate with the FHP Troopers. To use the SLERS radios, all TMC personnel must submit to and pass an FBI Criminal Justice Information Services (CJIS) background check prior to employment.

3.2.2 Road Ranger Service Patrol

The Road Ranger Service Patrol program plays a major role in alleviating congestion and improving traffic flow. It is one of the most effective elements of the FDOT's Traffic Incident Management (TIM) Program. With over 100 Road Ranger vehicles in the fleet statewide, covering approximately 1,025 centerline miles of Florida highways, Road Ranger Service Patrols have expanded from helping with construction zone incident management to assisting first responders with any lane blocking incident.

1. **Road Ranger Responsibilities:** At a minimum, Road Ranger responsibilities shall include:
   a) Patrolling assigned sections of the roadway to locate motorists in need of assistance.
   b) Notifying TMC staff of any events detected while on patrol.
   c) Providing roadside assistance to disabled vehicles, such as providing enough gasoline to get them to a gas station, assisting in tire changes and minor repairs, and other needs of a minor nature.
   d) Removing minor debris from the roadway, including shoulders, whether associated with an incident, reported to the Florida Highway Patrol, or detected while on patrol.
   e) Assisting in relocating vehicles from the roadway in accordance with the Move-It Law.
   f) Assisting injured persons until more qualified help arrives.
   g) Assisting other responders as needed.
   h) Providing temporary Maintenance of Traffic (MOT) devices for traffic control around an incident zone.
   i) Verifying and notifying TMC operations of event status changes as they occur.
   j) Updating event details in SunGuide, if the Road Ranger has a Mobile Data Terminal (MDT) in their vehicle.
   k) Monitoring of the freeway to detect asset damage or suspicious activity.
   l) Serving as goodwill ambassadors to the traveling public as the FDOT's point persons in the field.

Figure 3: Road Ranger Service Patrol

2. **Road Ranger Dispatching:** Road Rangers may be self-dispatched if they encounter an incident while patrolling. Road Rangers may be dispatched by TMC staff using:
    a. The Mobile Data Terminal in the Road Ranger truck.
    b. The SLERS radio system.

    If SLERS radio communication is unavailable, TMCs can also use cell phones, Voice Over Internet Protocol (VOIP), or other communication methods to dispatch Road Rangers.

3. **Road Ranger Dispatching Limitations:** Road Rangers are not to be dispatched to any events that are violent in nature or involve suspicious activity. If a Road Ranger is threatened or uncomfortable at a stop, they shall leave immediately and notify the TMC.

4. **Road Ranger Location Monitoring:** If the TMC has access to the Road Ranger AVL system, TMC staff shall use the Automatic Vehicle Locator (AVL) website and the SunGuide map to view the location of all Road Rangers at least once every 15 minutes.

5. **Road Ranger Check-Up:** TMC staff shall manually contact each Road Ranger Service Patrol every time one full hour has passed without a service call or prior contact with the TMC. This procedure is necessary to ensure the Road Rangers are still on patrol in a safe condition; it also confirms that the Road Rangers are not sick, injured, or sleeping on patrol. The TMC shall configure the SunGuide system to alert the TMC operators when the Road Ranger has been stopped, while on patrol, for more than 15 minutes without an active event. The TMC shall configure the SunGuide system with a geo-fence to alert the TMC operators when the Road Ranger has moved outside the geo-fence.

6. **Road Ranger Safety Check:** If two attempts to contact the Road Ranger have failed, TMC staff shall immediately dispatch the nearest available Road Ranger unit to the last location given by the non-responsive Road Ranger.

7. **Road Ranger Welfare Check:** If not visible on the CCTV camera, and contact has not been made between the Road Ranger and the TMC within 15 minutes from the initial contact of reporting an assist, TMC staff shall attempt a welfare check and contact the Road Ranger originating the assist.

8. **Road Ranger Quality Control:** TMC staff shall observe and monitor the Road Rangers during the performance of their duties, including the immediate correction of any observed Road Ranger errors.

Figure 4: Road Ranger Assisting a Disabled Motorist

3.2.3 Florida Highway Patrol

The FHP is a division of the Florida Department of Highway Safety and Motor Vehicles (DHSMV) and serves as the primary law enforcement agency charged with investigating traffic crashes and violation of criminal laws on the state's highways. The FHP enforces motor vehicle and commercial vehicle laws on the state's interstate highways and on all roadways within unincorporated areas of the state. They are often found, or are co-located in, TMCs to help assist with incident management and facilitate communication between various responders.

1. **FHP Responsibilities:** At the minimum, FHP responsibilities as they relate to TMC operations include:
   a) Patrolling limited access freeways for unreported or undetected roadway events.
   b) Providing roadside assistance to any vehicles in need that are discovered during patrols.
   c) Notifying FHP dispatch of any events detected while on patrol. FHP dispatch, in turn, notifies TMC operations of events on the interstates via phone call or SunGuide FHP Computer Aided Dispatch (CAD) Alert.
   d) Verifying event status changes as they occur.
   e) Assisting in the relocation of vehicles from the roadway in accordance with the Move-It-Law.
   f) Assisting injured persons until more qualified help arrives.
   g) Assisting other responders as needed. While Road Rangers shall not be dispatched to violent or suspicious instances, FHP shall be notified and dispatched.

2. **FHP Event List:** FHP is responsible for updating its Computer Aided Dispatch system with information on any incidents that they have detected, responded to, or assisted.

3. **Emergency Dispatch:** FHP shall serve as the central dispatch for emergency services and shall be notified for all requests for emergency services such as:
   a) Emergency Medical Services (EMS).
   b) Police Activity.
   c) Fire Rescue.

Figure 5: FHP Assisting at a Scene of an Incident

3.2.4 Additional TMC Operations Stakeholders

A variety of other major stakeholders in TMC operations are crucial to maintaining a safe and efficient roadway system. Each of which have unique roles in terms of how they interact with the TMC and staff.

1. **Central (TSM&O) Office:** Central Office is responsible for the development and yearly update of this TMC SOG document and its modification as a result of the roadway system and TMC performance analysis. The Central Office is also responsible for providing additional information and guidance to the TMCs.

2. **District FDOT Staff:** District FDOT staff members are responsible for the overall organization and functionality of the TMC. In essence, FDOT staff assume the direct leadership role of the TMC and ensure that operations are conducted in accordance with this SOG document, their SOPs, and other FDOT policies.

3. **Emergency Medical Services:** EMS responds to events that have or are suspected of having injuries that require an urgent medical response, providing out-of-hospital treatment, and transport to definitive care. FHP or EMS will notify the Medical Examiner if a fatality occurs at an incident.

4. **Emergency Operations Center (EOC):** A statewide or district EOC serves as a point of contact for local, statewide, and federal Emergency Operation Centers. They coordinate and manage FDOT resources in response to major events that pose a significant threat to public safety, such as terrorism, natural disasters, etc.

5. **FDOT Maintenance:** At a minimum, each district's FDOT maintenance (or contracted Asset Management) staff is responsible for responding to:
   a) Areas where there are reports or confirmation of damage, property theft, or vandalism to State-owned infrastructure or equipment, including assets such as guardrails or barrier walls damaged in accidents.
   b) Debris on the roadway.
   c) Apparent hazardous materials (HazMat) spill.
   d) Severe incidents with long-term MOT requirements (typically estimated to have greater than one hour of lane blockage).

6. **Local Law Enforcement:** Local Law Enforcement agencies have similar responsibilities to that of the FHP. Local jurisdictions, such as those on a county (sheriffs) or city level (police), have a much smaller area of coverage. Local Law Enforcement agencies typically work closely with TMC staff on reporting and managing events only within their area of jurisdiction.

7. **Florida Fish and Wildlife Conservation Commission (FWC):** The FWC is responsible for managing and regulating Florida's fish and wildlife resources. As relating to TMC operations, they are responsible for overseeing the removal or relocation of any endangered or protected animal species that are uncharacteristically located within the roadway's right-of-way.

8. **Florida Forest Service (FFS):** The FFS is responsible for protecting and managing Florida's forest resources and provides a level of fire management that reduces threats to life and property, forests, and other related at-risk wildland resources. As relating to TMC operations, the FFS and the TMC coordinate together as it pertains to smoke or possible smoke affecting roadways.

9. **Local Animal Control:** Local Animal Control is responsible for responding to events where a live animal causes a disturbance or safety hazard on State roadways.

10. **Local Fire Rescue:** Local fire rescue is responsible for preventing the spread of fires and extinguishing fires that may be present within the roadway's right-of-way. In many counties, it is common for the Local Fire Rescue to run the EMS also.

11. **Media:** Media agencies are responsible for providing traffic information to the public. This includes radio announcements, television broadcasts, newspaper articles, etc.

12. **Public Information Office (PIO):** District PIOs manage all media and public inquiries about roadway events.

13. **Rapid Incident Scene Clearance (RISC) Contractors:** RISC is a highly innovative program that supports Florida's Open Roads Policy's goal of safely clearing major highway incidents, truck crashes, and debris in 90 minutes or less. RISC contractors are dispatched by the TMC and are responsible for responding to the incident within 60 minutes of the activation request at the behest of the FHP. Once on the

scene and provided with a Notice to Proceed (NTP) by the lead official on the scene, the vendor will have 90 minutes to clear the travel lanes for traffic.

14. **Towing and Recovery:** Towing and recovery contractors are responsible for responding to events where a vehicle is unable to leave on its own and needs to be towed away at the discretion of law enforcement or owner of the vehicle.

15. **Department of Environmental Protection (DEP):** The DEP is the State's lead agency for environmental management and stewardship – protecting Florida's air, water, and land. The DEP is responsible for determining if an incident could pose a hazard to the environment. The TMC notifies FHP dispatch if the TMC becomes aware of chemical or fuel spills.

16. **Local Signal Maintaining Agencies:** The FDOT constructs most of the signal systems on state roads, but local agencies maintain them. If an incident on the interstate can cause an unusual influx of traffic onto a state road facility, the TMC must contact the local signal maintaining agency to inform them of the incident. The local agency may be able to alter the signal timings at the interchange and adjacent signals to accommodate the increased traffic.

17. **Educational Institutions:** Transportation data can be shared with educational institutions, such as universities, to study traffic data.

3.3 Guidelines for Major TMC Tools and ITS Devices

3.3.1 SunGuide Software

SunGuide software is the common software platform for all TMC operations in the state of Florida. This modular system is comprised of several subsystems that are integrated to allow for incident management, data collection, field device control, travel time posting, and more. TMC staff shall learn and become proficient with SunGuide tools and procedures such as event logging, incident management timestamping, and associating secondary events with primary events to support performance measure reporting, outcome reporting, and validation of RISC contractor milestone accomplishment.

1. **SunGuide Operator Training:** An internal, TMC-specific training certification program shall be established, and TMC staff shall be trained and certified on the latest official version of the *SunGuide Operator Training* document that explains how to use the software prior to working in a "live" operational environment. This document is located online at http://sunguidesoftware.com/document-library/training?sid=94:Operator

2. **SunGuide Software User's Manual:** TMC staff shall be trained and certified on the latest official version of the *SunGuide Software User's Manual*, which is located online at http://sunguidesoftware.com/document-library/development?sid=569:Software-Users-Manual

3. **SunGuide Data Entry and Style Guide Training:** TMC IT staff shall be trained and certified on the latest official version of the *SunGuide Data Entry and Style Guide Training* document, which is located online at http://SunGuidesoftware.com/SunGuidesoftware/documentlibrary/ReadingRoom/Etc/Data%20&%20Style%20Guide%20Training_FINAL_2010%2010%20111.ppt.

3.3.2 CCTV Cameras and Video Walls

CCTV cameras are used for a wide variety of purposes, including the early detection of events, incident verifications, monitoring situations that need attention, and giving support to responders on scene. CCTV images are typically displayed at operator workstations or on a matrix of television monitors used as a single display that is commonly known as a "video wall." Each individual monitor can be used to display a single image or can be used to compose part of a larger image. By using a video wall, TMC staff have the flexibility of customizing the presentation of the information as conditions warrant.

1. **CCTV Camera Use**: CCTV cameras and related equipment shall be used for traffic, incident management, and information purposes only. No one, including law enforcement, shall use the system for any other purpose.

2. **Privacy for Private Property:** CCTV camera usage shall adhere to all federal and State privacy laws. For example, surveillance of private property and use of the system with the intent of invading the privacy of those individuals that could be seen through CCTV cameras is prohibited, even as a demonstration of the system's technical capabilities.

Figure 6: CCTV Camera on I-4 in Orlando

3. **Recording Video Images:** Video images are not and shall not be recorded, and no tapes or video files shall be maintained. Snapshots may be taken for incident review, training, or research. Video may be recorded only for research purposes and only if requested and approved by the District Traffic Operations Engineer (DTOE), in advance, for specific times and dates for specific cameras.

4. **Masking Camera Views**: For CCTV cameras that are next to residential locations, camera "masks" or "beards" shall be placed over the camera feeds to protect civilian privacy.

5. **Default Camera Views:** CCTV cameras shall be set to the default view of watching the traffic flow. With images being used by the public and multiple agencies, it is essential that views shall be left on the traffic flow, but license plates and individuals shall not be identifiable.

6. **CCTV Camera Image Restrictions:** When graphic personal injuries, fatalities, or hazardous materials spills are suspected in a traffic incident or crash, TMC staff may need to zoom in to collect information that is needed by the FHP, EMS, FDOT, or for other informational purposes. When this occurs, TMC staff shall restrict the CCTV camera image from any external video feeds. As soon as necessary information is collected or at the request of the FDOT or FHP dispatchers, TMC staff may zoom out the CCTV camera image so that graphic or personal images are not clearly visible on the video display wall.

7. **CCTV Camera Image Restriction Verification:** Once the CCTV camera image is restricted from public view, TMC staff shall view the CCTV camera image on the FL511.com website and all other external sources possible, to verify and document that the access has been restricted.

8. **Video Wall Display:** During non-incident times, feeds and tour of cameras shall be streaming on the video wall from multiple regions and zones. At the minimum, the video wall shall display:
   a) A selection of CCTV camera images including "video tours" (multiple cameras) and single-camera images.
   b) Any active incident cameras. These areas on the wall are allocated for the TMC staff to change camera images to show live traffic events for incident monitoring.
   c) Up to two screens displaying media that is pertinent to the function of the TMC.
   d) No duplicated images or blank cubes.

3.3.3 Vehicle Detection Systems

Vehicle Detection Systems provide TMCs with real-time information on roadway traffic such as volume, occupancy, and speed. They are an invaluable part of TMC operations as they are often one of the first sources for alerting of any congestion or roadway events, especially in rural areas.

1. **Using the SunGuide Travel Times Document:** TMC staff shall be familiarized with and adhere to the latest official version of the *Using SunGuide Travel Times* document, which is located online at http://SunGuidesoftware.com/SunGuidesoftware/documentlibrary/ReadingRoom/Etc/SunGuide-UTVT-2.0.1.pdf.

3.3.4 Florida Advanced Traffic Information System

The Florida Advanced Traffic Information System (FLATIS), or Statewide 511, is an FDOT traffic-management tool. It can be accessed via the phone or internet providing real-time traffic information on the majority of Florida's interstate highways, Florida's Turnpike, and major roadways in the state's metropolitan areas. FLATIS disseminates traffic information through the Statewide FLATIS website, the FL511 App, and by dialing 511 using the Interactive Voice Recognition (IVR) service. The website and IVR are two of the most utilized ways that traveler information is provided to the public.

1. **FLATIS Third-Party Data Feed User's Guide:** TMC staff shall be trained and certified on the latest *FLATIS Third-Party Data Feed User's Guide* document, which is located online at http://SunGuidesoftware.com/SunGuidesoftware/documentlibrary/DragAndDropFTP/100819%203rd%20Party%20Data%20Feed%20System%20-%20User%20Guide%20v1_1_Final.pdf.

2. **FLATIS Use:** FLATIS shall be used for traffic and incident management information purposes only. This includes, but is not limited to, posting of messages related to emergency road conditions, routine construction messages, hazardous weather conditions, and general traffic congestion.

3. **Statewide Floodgate and Banners Protocol:** Statewide floodgate and banner messages are a special case (they affect the entire state) and need to be coordinated with the FDOT District Two RTMC, where assistance can be obtained in publishing them.

4. **Language Requirements:** All alerts, floodgates, and banner messages shall be posted in both English and Spanish.

5. **Floodgate and Banner Message Length:** A floodgate or banner message must be brief and to the point, giving a "headline" describing the issue. As a guideline, floodgate messages shall be no longer than 30 seconds, and banner messages shall take no longer than 30 seconds to read in English or Spanish.

6. **Floodgate and Banner Message Template:** The following message template may be used for both floodgate recordings and banner messages manually entered into SunGuide:

   <Roadway/Location/Area/Entity>, there is <Event/Condition> causing <Effect>. <Recommendation (if applicable)>.

   Example: *I-95 Northbound past Exit 180 there is a crash causing the left lane to be closed. Avoid the area, use an alternate route.*

Figure 7: FL511 Spanish Logo

3.3.5 Highway Advisory Radios

Highway Advisory Radios (HAR) are systems that are used to provide motorists with pertinent and up-to-the-minute travel information through their car radios. Messages are transmitted through low-power AM roadside transmitters. Drivers approaching a HAR are advised of its existence by advance highway signs, which tell motorists where to tune their AM radio dial. These signs are equipped with beacons, which can be activated when circumstances require doing so.

1. **HAR Use:** HARs and related equipment shall be used for traffic and incident management and information purposes only. This includes, but is not limited to, posting of messages related to emergency road conditions, routine construction messages, hazardous weather conditions, general traffic congestion, and hazardous environmental conditions. No one, including FDOT staff, shall use the system for any other purpose.

2. **Default HAR Messaging:** Permanent HAR shall broadcast continuously. When there are no incidents to report, messages shall provide motorists with useful information such as upcoming construction that may affect the route or other approved messages.

3. **FCC Requirements:** Federal Communications Commission (FCC) rules require that HAR, every 30 minutes at the minimum, broadcast a short station identification message such as "You are tuned to the highway advisory radio system, broadcasting at 1660 on your AM dial, a service of the FDOT."

4. **HAR Message Length:** Since the range of a HAR system is limited, messages must convey a maximum amount of information in a minimum amount of time. Thus, all messages shall be limited to 60 seconds or less.

3.3.6 Miscellaneous

1. **Google Traffic:** Google Traffic is a feature on Google Maps that displays real-time traffic conditions information on major roads and highways. Google Traffic can be viewed at the Google Maps website, or by using the Google Maps application on a handheld device. TMC staff shall use Google Traffic to supplement existing TMC applications that provide alerts to potential traffic congestion or events. Google Traffic shall not, however, be solely relied on by TMC staff to determine actual roadway conditions in any case.

2. **Waze:** Waze provides traffic-related information to those who download their application. It uses its unique crowd-sourcing formula to collect data on what is happening on the roadway system and relies on users to update their database by flagging and recording updates on accidents, bottlenecks, severe weather, and traffic delays as they drive. TMC staff shall use this data for roadways not covered with ITS to enhance their ability to know what is happening in all corners of the transportation system. Waze shall not, however, be solely relied on by TMC staff to determine actual roadway conditions in any case. Departments shall partner with Waze to also receive Waze SunGuide alerts via the Incident Detection Subsystem.

3. **Other Crowd-Sourcing Applications:** A TMC may choose to utilize other crowd-sourcing applications besides Waze to collect data on what is happening on the roadway system. These additional applications have a myriad of audiences and purposes. Some may be geared towards emergency responders while others are designed around natural disasters. Regardless of the application's intended purpose, any information received must be verified before it can be acted upon. No crowd-sourced application shall be solely relied on to determine actual roadway conditions in any case.

4. **TPAS Guidelines for TMC SOPs:** TMC staff members are requested to adhere to the FDOT-approved TPAS guidelines that are found in Appendix B of this document.

3.4 System Monitoring and Reporting

TMC staff play a critical role in the preservation and reliability of both TMC systems and ITS field infrastructure by monitoring their statuses and assessing the accuracy of any data they produce. TMC staff try to resolve issues independently when possible, before escalating matters to the appropriate FDOT or contracted personnel responsible for the upkeep of any particular piece of equipment. They also help to track and follow up on the status of repairs to ensure TMC operations continue uninhibited as much as possible. TMCs should thus establish procedures for the proactive monitoring, troubleshooting, notification, and tracking of any issues with regard to the health of TMC systems and ITS field equipment to ensure maximum uptime.

3.4.1 System Monitoring Procedures

TMC staff shall perform several TMC systems and ITS device checks daily to ensure elevated levels of functionality and confidence in any data that is generated. TMC staff SOGs with respect to any TMC systems and ITS device checks shall include at the minimum:

1. **TMC Systems Check:** TMC systems, such as phone systems and radio systems, shall be checked at least once a day and preferably at night. Building maintenance matters shall be logged and reported to the FDOT depending on the severity of the issue.

2. **CCTV Camera Check:** Each CCTV camera shall be checked to see if it can be panned, tilted, and zoomed at least once per day. After the PTZ check, the camera is returned to the home preset.

3. **Video Wall Check:** Each CCTV camera shall be checked to see that properly streaming video is projected onto the video wall at least once per day.

4. **VDS Check**: Each VDS shall be checked to see if they are functioning and providing correct data at least once a day. Detector functionality can be checked using the SunGuide status feature. Any outages shall be reported to ITS personnel.

5. **DMS Check:** Each DMS device shall be checked at least once per day as it relates to a) operational status, b) brightness, c) control mode, d) pixels, e) lamps, f) fans, g) power, and h) temperature.

6. **DMS Message Check:** DMS messages shall be checked for accuracy, typically through CCTV cameras, at least twice per day (or more often as time allows).

7. **HAR Check**: Each HAR shall be checked to determine if they are broadcasting messages as intended. This can be done by requesting that the Road Ranger tune in to the designated HAR radio station during their shifts at least once per day. The HAR's beacons shall also be checked to see if they are actually flashing at least once per day as well.

8. **FLATIS CHECK:** The FLATIS telephone service shall be checked at least twice per day to confirm that voice recordings are working and are clear enough to understand. When posting a FLATIS floodgate message, the floodgate messages shall be verified for clarity and accuracy.

3.4.2 Critical Failures

Critical failures for TMC systems and ITS devices are defined to determine the appropriate response for repair. For example, determining a critical failure will assist the TMC and ITS Maintenance staff in determining if an "emergency call" to the ITS Maintenance Contractor or TMC IT staff is needed. TMCs shall define critical failures as:

1. Any TMC SunGuide hardware or software failures.
2. When a DMS is unable to post the desired message or when a DMS does not respond to SunGuide commands to clear a message.
3. When any CCTV camera failure creates a large coverage gap or "blind spot."
4. Any dedicated express lane DMS CCTV cameras.
5. Five or more consecutive express lane detectors, or 50% of express lane detectors are down – which-ever is less.
6. When there are any TMC building failures or maintenance concerns, such as air-conditioning or power-related issues.
7. Other issues as determined by districts.

3.4.3 Failure Verification, Troubleshooting, and Reporting

TMC staff shall have at their disposal detailed procedures for logging, reporting, and verifying any failures for both TMC systems and ITS devices. This is necessary to help resolve any failures as quickly as possible so that ITS tools and devices can continue to function. TMC staff shall have procedures for the following:

1. TMC or ITS device failure verification procedures that shall be executed first before reporting any failure(s).
2. Corrective action procedures.
3. Failure logging procedures.
4. Failure reporting procedures for non-critical failures.
5. Failure reporting procedures for critical failures.
6. Failure tracking procedures, including timelines, required vs. realized, and when to follow up or escalate unresolved failures.

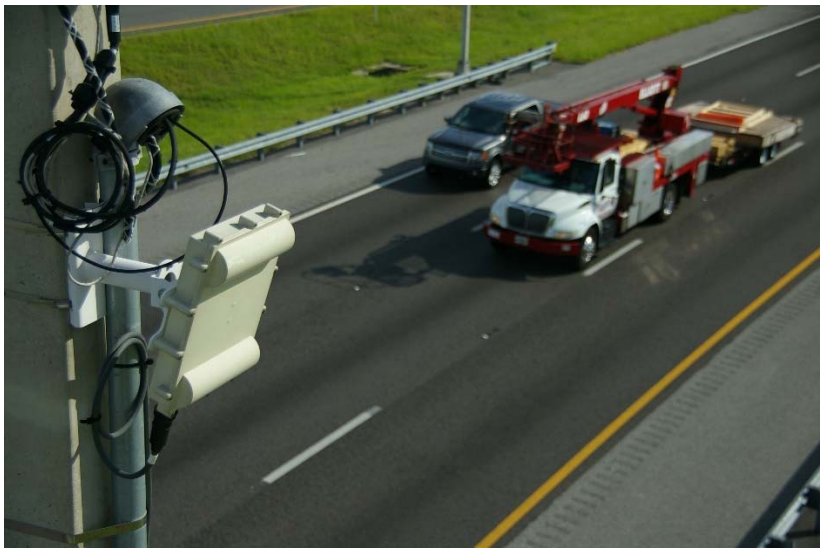

Figure 8: Microwave Vehicle Detection System

3.5 Performance Measurement and Reporting

Performance measurement and reporting helps to provide insight as to how well District TMCs are managed and can quantify their value to transportation system users. They can also be used to track the uptime of various systems and provide insight on long-term roadway trends that, in turn, can be utilized for planning purposes. TMCs should thus establish procedures for collecting, sorting, storing, analyzing, and reporting data for the performance measures found in this chapter. TMCs are encouraged to also expound on the performance measures listed below or to select additional ones as determined to be beneficial.

3.5.1 TMC Systems and ITS Device Upkeep Performance Measures

1. **ITS Field Equipment Uptime Availability:** This performance measure demonstrates field ITS devices' uptime as a percentage and is calculated by taking the total uptime (in hours) of ITS devices and dividing it by the total number of hours during the reporting period. This shall be calculated as a whole and separately for CCTV cameras, DMS, VDSs, and other devices.

2. **ITS Communication Infrastructure and Network Uptime Availability:** This performance measure demonstrates the ITS communication and networking infrastructure's uptime as a percentage and is calculated by taking the total uptime (in hours) of ITS communication and networking infrastructure and dividing it by the total number of hours during the reporting period. This shall be calculated as a whole and separately for both limited and non-limited access roadways.

3. **TMC Equipment Uptime Availability:** This performance measure demonstrates TMC's equipment hours of uptime as a percentage and is calculated by taking the total uptime (in hours) of TMC equipment and dividing it by the number of hours during the reporting period. This shall, at the very minimum, be calculated for the SunGuide software, video wall, radios, and workstations.

3.5.2 TMC Staff Performance Measures

1. **Operator Data Entry Error Rate (≤ 2 percent Target):** This performance measure demonstrates the number of SunGuide events that contained any data entry errors as a percentage and is calculated by dividing the number of events with data entry errors by the total number of events during the reporting period.

2. **Event Confirmation Time (≤ 03:00 Minutes Target):** This performance measure demonstrates the average time it takes for the TMC staff to confirm an event from the time of the initial notification of a potential event to the time it takes to respond and visually confirm the event during the reported period.

3. **Time to Post to DMS (≤ 03:00 Minutes Target):** This performance measure demonstrates the average time it takes for the TMC staff to post a DMS message upon the confirmation of the lane blocking incident.

4. **DMS Efficiency Rate (≥ 98 percent Target):** This performance measure demonstrates the number of DMS message postings executed correctly by the TMC staff as a percentage and is calculated by taking the total number of DMS messages posted correctly as per guidelines and determined by TMC management and dividing it by the total number of DMS messages posted during the reporting period.

5. **Road Ranger Dispatch Time (≤ 03:00 Minutes Target):** This performance measure demonstrates the average time it takes for the TMC staff to dispatch a Road Ranger to a potential event upon notification of an incident. Operators shall establish and log notification and dispatch times in the system.

6. **Third-Party Agency Notification (≤ 07:00 Minutes Target):** This performance measure demonstrates the average time from incident confirmation it takes for the TMC staff to notify the proper agencies about a potential event upon determining the need to do so during the reported period.

3.5.3 Roadway Trends Performance Measures

1. **Total Number of Roadway Events:** This performance measure demonstrates the number of roadway events that take place within a district during the reported period. Roadway events shall be broken out by the type and severity.

2. **Total Number of Lane Blocking Events:** This performance measure demonstrates the number of lane blocking events that take place within a district during the reported period.

3. **Secondary Crash Rate:** This performance measure demonstrates the number of secondary incidents on roadway segments managed by the TMC staff during the reported period.

4. **Peak Period 95th Percentile Planning Time Index (PTI):** This performance measure uses RTIS data to demonstrate the ratio of the 95th percent peak period travel time to the free-flow travel time for roadway segments managed by the TMC staff during the reported period.

5. **Throughput:** This performance measure demonstrates the number of vehicles present at the start, plus those attempting to enter and successfully entering a particular roadway during the analysis period. This shall be calculated for all major roadway segments within the district.

6. **Delay:** This performance measure uses RTIS data to demonstrate the travel time (for all vehicles entering and attempting to enter the system during the analysis period) minus the theoretical travel time at the free-flow speed. This difference is divided by the number of vehicle trips to obtain the mean delay per trip. This shall be calculated for all major roadway segments within the district.

3.5.4 Reporting

Districts shall create and distribute both monthly and yearly reports that highlight the stated TMC performance measures listed above and the TMC's performance related to those goals. It shall also demonstrate month-to-month and year-over-year statistics to help illustrate TMC performance and roadway trends as a function of time.

4 Dynamic Message Sign Guidelines

Dynamic Message Signs (DMSs) are one of the most important and effective means for communicating information and recommendations to motorists with regard to traffic congestion, crashes, lane closures, and more. Thus, it is necessary that DMSs provide prompt, reliable, accurate, and relevant information to be effective and provide motorists with the confidence they need to make informed decisions.

4.1 National and State Policies

The TMC DMS operations and policies shall adhere to national and State standards, including:

1. Manual on Uniform Traffic Control Devices (MUTCD).

2. Displaying Messages on Dynamic Message Sign Permanently Mounted on the State Highway System, Topic No. 000-750-015-e September 19, 2017.

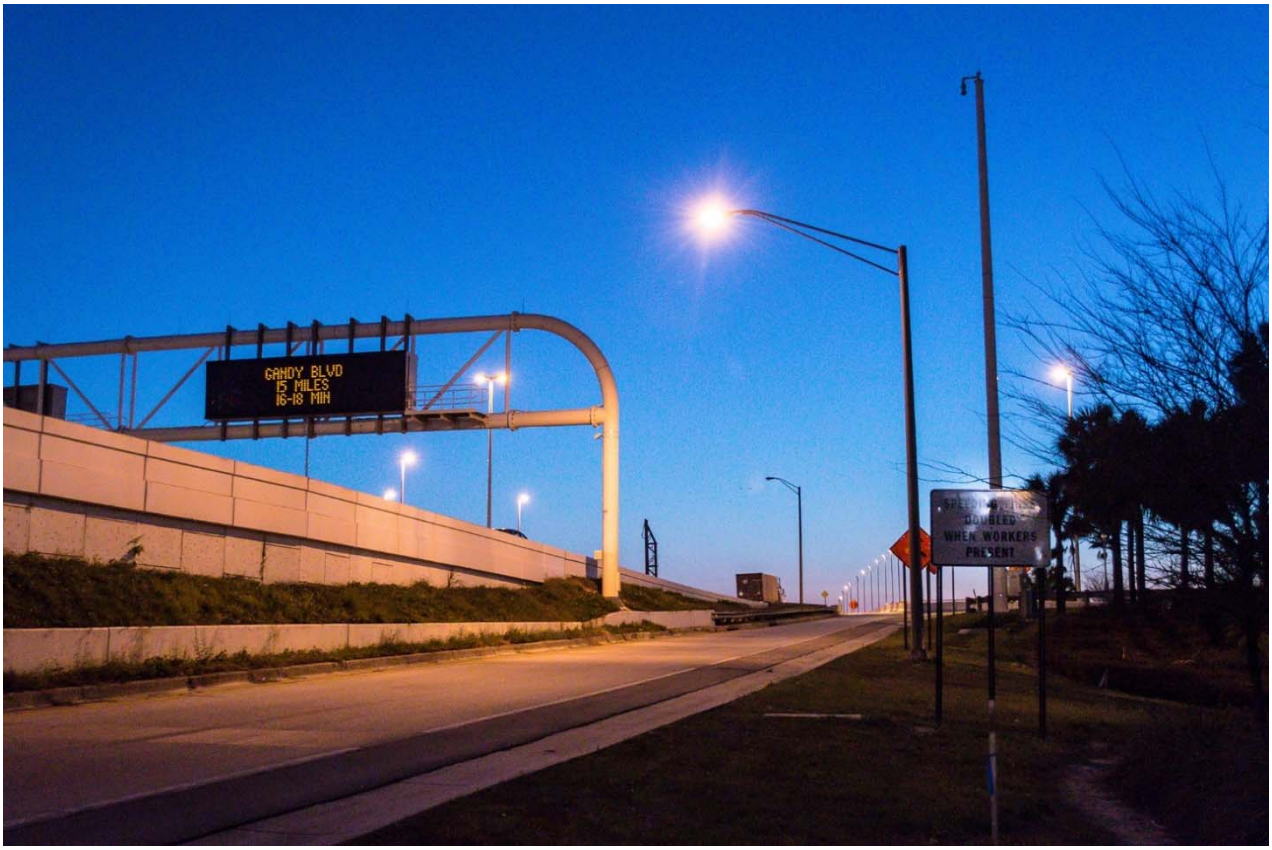

Figure 9: DMS Displaying Travel Times in Tampa, Florida

4.2 Operational Policies

4.2.1 General DMS Message Operational Guidelines

TMC staff shall adhere to the following DMS operations guidelines at all times:

1. DMS messages are displayed for all verified lane blocking incidents that occur on a roadway with a DMS upstream of the event. The messages, at a minimum, shall include the location of the event and the number of lanes closed.

2. Information concerning verified minor incidents and lane closures shall be displayed for incidents occurring up to 10 miles downstream from a DMS, if information about the location and effects to the motorist (e.g., amount of delay, number of lanes closed, etc.) can also be given.

3. Information concerning lane blocking incidents that occur on an intersecting freeway is to be displayed on DMSs that are located upstream of the interchange with the freeway, depending on the location, severity, and duration of the incident. The message shall include the location of the incident and the effects to motorists (e.g., amount of delay, number of lanes closed, etc.).

4. Messages recommending that motorists divert to specific roadways or local streets that are not within the jurisdiction of the FDOT are not advised unless severe conditions exist, and the appropriate agencies are involved. Messages supporting preplanned diversion routes are always permitted.

5. When DMS messages are used for route diversions, messages are to be displayed far enough in advance of the diversion to allow motorists sufficient opportunity to perform necessary lane changes safely, adjust speed, and exit the highway.

6. DMS messages are not to be used to divert motorists to specific alternative routes unless positive guidance is available along the alternative route.

7. During daily peak-traffic periods, messages are used to advise motorists of unusual conditions (e.g., accidents, lane blockages, etc.; see Section 4.2.2 for guidelines on displaying travel time messages).

8. DMSs located on freeways leading to other states may display messages concerning verified major incidents in the neighboring state (e.g., all lanes blocked or closed, a truck overturned, etc.).

4.2.2 Message Displays for Traffic Conditions and Travel Time

It is the policy of the FDOT that the "default display on Dynamic Message Signs shall be travel time display." The DMS provides travel time and freeway conditions to downstream on-freeway destinations at various interchanges along the freeway. Travel time in a range, as shown in the following template, is considered appropriate to avoid a loss in credibility with travelers:

Template:

Example:

4.2.3 Color DMS Usage

TMC staff shall adhere to the guidelines for color DMS usage found in the **Appendix C** document.

4.2.4 Prohibited DMS Messages

1. **Advertisements**: It is FDOT policy to prohibit the use of any type of DMS to display advertisements. This includes messages related to any commercial product or service, or promotion of a political party or candidate. This also includes messages that give the appearance of promoting a special event.

   See the following example below:

   Acceptable:

   BALLPARK
   EVENT
   PARKING

   Prohibited:

   MARLINS
   PARKING
   AHEAD

2. **Vague Messages**: DMS messages shall communicate to motorists what to expect or what actions need to be taken. For example, a DMS message that simply states "Wrong-Way Driver Detected" does not give a motorist enough information about the location of the wrong-way driver relative to their location.

3. **Routine Congestion Message**: Generic descriptors of daily or normal peak-traffic congestion shall not be used to advise motorists.

Figure 10: Color Dynamic Message Sign in Orlando, Florida

4.2.5 Key Issues

TMC staff shall determine the messaging objective and consider which DMS or DMS group is to be used to address a particular incident or location. Issues to consider include those listed below.

Number	Issue	Key Points
1	**Problem Being Addressed**	TMC staff considers not only the basic type of problem (i.e., accident, congestion, etc.) but also the following: a) Location of the problem, as in its position relative to other roadways or major interchanges. b) Duration of the problem; the extent of impacts, in terms of the number of lanes affected, traffic constraints, etc.
2	**Audience**	TMC staff considers the objective and audience of the DMS message. In some instances, the DMS message may apply to all motorists or is just intended for those traveling a considerable distance downstream.
3	**Desired Motorists Response**	Before any DMS message is posted, TMC staff first determines the desired motorist response. Encouraging specific motorist actions is an effective way of using DMSs.
4	**Location of Desired Motorists Response**	It is important to know *where* the desired motorist's response needs to take place. For example, simply cautioning motorists of abrupt stops ahead can be counterproductive if the information on how far downstream to expect abrupt stops is not provided.
5	**Degree of Desired Response**	TMC staff considers how the DMS message affects the desired motorist degree of response. For example, if a DMS message is advising motorists to use an alternative route, how much traffic shall divert before canceling this message?
6	**Proximity of DMS to Problem**	The DMS selected for a message reaches the appropriate audience for the message to be displayed. TMC staff considers the expected duration of the incident or lane closure to make sure it is longer than the travel time from the DMS to the location of the incident or lane closure.

4.2.6 Message Priorities

Foremost, DMSs shall provide motorists with real-time information relevant to their trips, whether it be related to traffic congestion, incidents, hazards, etc. In terms of secondary responsibilities, DMSs provide motorists with information relevant to future trips, such as future roadwork or a special event that is expected to cause delays. DMSs can also be used to display various safety messages or any other alerts when there are no other higher-priority road user messages to display.

Priority	Message Type	Description
Default Display	Travel Time and Travel Conditions	Traffic conditions, including travel time information, are shown on the DMS.
Priority 1	Emergencies	Information about mandatory evacuations, major security warnings, and, if specific to the area of the DMS, major National Weather Service (NWS) alerts, such as a flash flood warning, take precedence over all other incidents or events. In the case of a lane blocking incident occurring simultaneously near a specific DMS, two phases may be used for alternating Priority 1 and Priority 2 messages.
Priority 2	Lane Blocking or Hazardous Incidents	Lane-blocking traffic incidents and unexpected roadway conditions such as major crashes, closures and diversions, flooding, brush fires, etc., are always communicated to motorists, even during an emergency or evacuation.
Priority 3	Congestion within 10-Mile Radius of the DMS	This is only for non-recurring, unexpected traffic congestion and does not include typical morning rush-hour congestion.
Priority 4	AMBER, Silver, and Blue Alerts	AMBER, Silver, and Blue Alerts may also be an even higher priority depending on the seriousness of the situation.
Priority 5	Non-Lane Blocking and Non-Hazardous Incidents	This refers to incidents that are not blocking lanes and are not posing hazards to motorists, but motorists need to be aware of conditions downstream from their locations.
Priority 6	Special Event Messages	This refers to messages that direct motorists to the location of a special event venue or its parking and includes any advance notices.
Priority 7	Advance Notice of Special Events or Roadwork	Planned special events and roadwork or lane closures that are expected to have an impact on traffic shall be posted six days in advance.
Priority 8	Public Safety Messages (PSA) Messages	Approved safety messages as found on the Department's Highway Signing Program Website.

4.2.7 Before Congestion Clears

Once the event or incident has been removed from the scene, it is important to note that the TMC staff's DMS responsibilities are not finished until the congestion associated with the event is over. DMS messages shall be used to inform motorists that congestion is still present.

4.3 DMS Message Design Guidelines

If DMS messages are to be received and processed effectively by motorists, the messages must be delivered in a way that makes it easy for the drivers to read while driving; that is when there is limited exposure time available at high speed. Otherwise, if the message is confusing, ambiguous, too long to be read in time, or not displayed long enough, the operational effects of the DMS will diminish. Hence, this chapter provides guidelines for the design of DMS messages that help to enhance motorists' understanding and help present them in a consistent, standardized way throughout the State.

The design of DMS messages can be divided according to four design principles:

- Message Content
- Message Capacity and Configuration
- Message Timing and Limits
- Message Abbreviations

4.3.1 Message Content

Foremost, motorists are concerned with knowing or learning about information that will affect any of their current or future trips and what actions, if any, may need to be taken to avoid the incidents or delays. If there is an event or incident that is being communicated via a DMS, motorists' primary concern would be to know a) its exact location and b) its effects. For example, a DMS message simply stating, "CRASH 5 MILES AHEAD" gives little information about what motorists can or should expect and whether they should attempt to alter their route. Even if an estimate of the initial delay is unavailable, information on the number of lanes that are closed (or open) implies that some level of delay can be expected. These DMS messages shall also present "advice" or alternative route guidance to provide motorists with information to make informed decisions on avoiding incidents or delay.

Each DMS message must also be understandable by both locals and visitors alike. Visitors will typically have a very limited background about a city other than the interstate route numbers, let alone the distance to other routes, while most locals will recognize the names of intersections and parallel streets. For example, a DMS message simply stating, "NO REPORTED INCIDENTS TO US-1" gives little information to tourists as to how close US-1 is. Similarly, abbreviations for well-used landmarks, bridges, and recreational facilities may not be understood by visitors.

Color DMS messages policies must adhere to MUTCD and State guidelines. See Appendix C for color DMS guidelines.

4.3.2 Message Capacity and Configuration

The maximum length of a DMS message is limited by the number of MUTCD approved characters that can fit on the DMS display and the time the motorists have available to read the message. Basically, the entire message must be short enough to allow motorists to glance quickly at the sign and understand it while driving.

Occasionally, DMS messages may be too long to be displayed in just one phase and require that they are split. The MUTCD, Section 2E.21, states, "A three-line changeable message sign (DMS) shall be limited to not more than two messages." "Two messages" is meant to be understood as "two phases."

Additional principles for splitting messages include:

- Research has shown that at speeds of 55 mph or more, motorists can read an eight-word message (excluding prepositions such as “TO” and “AT”). Longer messages shall thus be avoided to prevent motorists from having to reduce their speeds to read the messages.

- No more than three units of information shall be displayed per phase; research has shown that motorists can comfortably process four to five units of information at a speed of around 35 mph. This also ensures that motorists have enough time to view and understand a message in the time it takes to approach the DMS when traveling the speed limit.

- Each phase must be understood by itself. When a DMS message is displayed over two phases, each phase must be able to stand alone. In other words, a driver seeing only one frame should understand its meaning. Each phase should also make sense regardless of which phase appears to the motorist first.

- Compatible units of information shall go together in each phase. Units of information unrelated to each other shall not be placed in the same phase.

- It is preferable to use days of the week rather than calendar dates. For example, “TUES TO FRI” is preferable over “NOV 5 – NOV 8”.

- Arterial DMSs may not be capable of displaying larger messages compared to freeway DMSs. When combining arterial DMSs and freeway DMSs with the same messages, the TMC operator must be aware of the arterial message capacity when creating messages.

- If a DMS message that needs to be communicated to motorists exceeds the maximum number of units of information that shall be displayed, the TMC staff shall reassess the message to determine what elements of it can be omitted.

4.3.3 Message Timing and Limits

Principles for freeway and arterial DMS message timing and limits include:

- **Reading Time:** Research has shown that most motorists can begin reading 18-inch characters from about 600 feet away, where reading time is approximately one word per second, excluding prepositions such as “TO” and “AT.”

- **Length of Time:** Message length of time, which is directly related to reading time, shall never be less than the time it takes for motorists to read the message and shall preferably be greater. Thus, each DMS message phase shall be displayed for at least two to four seconds.

- **Message Length:** Longer messages shall be avoided to circumvent motorists reducing their speed to read the messages. Ideally, for speeds of 55 mph, eight words shall be limited to each DMS message phase, seven words per phase at 65 mph, and six words per phase at 70 mph.

- **Font Size:** Per the MUTCD, DMS message letters shall all be capital letters whose height shall preferably be 18 inches and no smaller than 10.6 inches.

4.3.4 Message Abbreviations

It is always preferable that words be spelled out in DMS messages, whenever possible, to reduce chances for confusion from the many types of motorists who may understand abbreviations differently or with differing skill. Because DMS displays can typically handle no more than 18 characters per line and three lines total, the TMC staff may be limited in what they can display in full and may need to rely on abbreviations to convey the needed information.

It is important to consider, however, that not all motorists may understand all abbreviations in the same manner. In certain cases, abbreviations can imply multiple things and should thus be carefully selected and used across the State with consistency to reduce motorist confusion. Some abbreviations are more meaningful when accompanied by a "prompt" word. Below is a list of approved abbreviations that can be presented to motorists per Section 1A.14 of the MUTCD:

Word	Abbreviation	Prompt Required	Typical Prompt Format
Access	ACCS	Yes	ACCS (Road)
Afternoon/Evening	PM		
Ahead	AHD	Yes	(ACCIDENT) AHD
Alternate	ALT		
Avenue	AVE, AV		
Bicycle	BIKE		
Blocked	BLKD	Yes	(LANE) BLKD
Boulevard	BLVD		
Bridge	BRDG	Yes	(BRIDGE NAME) BRDG
Center	CNTR		
Chemical	CHEM	Yes	CHEM (SPILL)
Circle	CIR		
Clear	CLR		
Condition	COND	Yes	(TRAFFIC) COND
Congestion	CONG	Yes	(TRAFFIC) CONG
Construction	CONST	Yes	CONST (AHEAD)
Court	CT		
Crossing	XING		
Delay	DLY		
Downtown	DWNTN	Yes	DWNTN (TRAFFIC)
Drive	DR		
East	E or EB	Yes	E (street name)
Eastbound	EB or E-BND		
Emergency	EMERG or EMER		
Enter, Entrance	ENTR		
Exit	EXT	Yes	(NEXT) EXT
Express	EXP	Yes	EXP (LANE)
Expressway	EXPWY		

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Word	Abbreviation	Prompt Required	Typical Prompt Format
Freeway	FWY		
Friday	FRI		
Hazardous	HAZ	Yes	HAZ (DRIVING)
Hazardous Material	HAZMAT		
High Occupancy Vehicle	HOV		
Highway	HWY		
Information	INFO		
Lane	LN		
Left	LFT		
Maintenance	MAINT		
Major	MAJ	Yes	MAJ (ACCIDENT)
Mile(s)	MI	Yes	(number) MI
Miles Per Hour	MPH	Yes	(number) MPH
Minor	MNR	Yes	MNR (ACCIDENT)
Minute(s)	MIN	Yes	(number) MIN
Monday	MON		
Morning/Late Night	AM		
North	N	Yes	N (street name)
Northbound	NB, North, or N-BND		
Parking	PRKG or PKING		
Parkway	PKWY		
Pedestrian	PED		
Right	RHT		
Road	RD		
Roadwork	RDWK	Yes	RDWK (AHEAD)
Route	RTE		
Saturday	SAT		
Service	SERV		
Shoulder	SHLDR	Yes	(ON) SHOULDER
South	S	Yes	S (street name)
Southbound	SB, South, or S-BND		
Street	ST		
Sunday	SUN		
Temporary	TEMP		
Thursday	THURS		
Traffic	TRAF		
Travelers	TRAVLRS		
Tuesday	TUES		
U.S. Numbered Route	US		
Vehicle(s)	VEH	Yes	(DISABLED) VEH
Warning	WARN		
Wednesday	WED		
West	W		
Westbound	WB, WEST, or W-BND		

5 Event Management

5.1 Operational Policies

The FDOT has adopted numerous policies to help reduce events and clearance times. These policies contain guidelines for reopening roadways as soon as possible to restore a safe and orderly flow of traffic following events on Florida's roadways. These guidelines have been reviewed and endorsed by all pertinent stakeholders and shall be adhered to by TMC staff at all times.

1. **Highway Safety Smoke Management Interagency Agreement:** This policy is an agreement reached between the FFS, FDOT, and FHP. The purpose of this agreement is to facilitate proper coordination and implementation to warn the Florida public concerning roadway visibility hazards resulting from wildfires and prescribed burning.

2. **Spill Mitigation Guidelines:** This policy contains guidelines for early responders to motor vehicle crashes to reduce the confusion and subsequent delays in reopening roadways when spilled vehicle fluids are involved. These guidelines were developed by the multi-agency Florida Statewide Traffic Incident Management Program (TIMP) to clarify the goals, objectives, and processes for clearing the highway of spilled motor vehicle fluids resulting from crashes and other vehicle incidents. The guidelines were reviewed and endorsed by the FDOT, Florida Department of Environmental Protection, and FHP. The latest version of this policy can be found online at http://www.floridatim.com/documents/Training/Spill%20Mitigation%20Guidelines.pdf

3. **Open Roads Policy:** The "Open Roads Policy" is an agreement between the FHP and FDOT to expedite the removal of vehicles, cargo, and debris from the roadways on the SHS to restore a safe and orderly flow of traffic following incidents on Florida's roadways. The specific goal is to clear the travel lanes of roadways within 90 minutes of the arrival of the first responding FHP officer. The latest version of this policy can be found online at http://www.floridatim.com/documents/Training/Open%20Roads%20Policy.pdf

5.2 Proactive Detection and Monitoring

TMCs should have procedures that ensure roadway events or adverse traffic conditions are detected or anticipated as early as possible. This is because the sooner that incidents or events are detected and responded to, the less likely that secondary incidents will occur, delays can be minimized, and driver costs can be reduced. To illustrate this point, the Federal Highway Administration (FHWA) estimates that each minute of travel-lane blockage due to an incident creates on average four minutes of delay for every vehicle affected. Another study found that an estimated $2,000 is lost just in travel time for each minute of incident duration. Thus, the TMC staff should pay purposeful attention to any number of systems and applications that can help detect events as quickly as possible, as well as concentrating on areas that have historical bottlenecks, such as ramps and construction zones.

Instrument	Guidelines
Road Ranger Radios	The TMC staff shall monitor and respond to Road Ranger radio traffic promptly and evaluate the priority of the radio traffic before handling any other activity.
FHP CAD System	The TMC staff shall check the FHP CAD website for incident information at least every five minutes.
CCTV Cameras and Video Walls	The TMC staff shall at least once per hour, or more often as time permits, scan the entire roadway's right-of-way for events using CCTV cameras.
	Using CCTV cameras, the TMC staff shall look for: a) Vehicles stopped in the travel lanes due to a crash or mechanical failure. b) Slow-moving or stopped traffic. c) Objects in the roadway that may affect traffic. d) Animals on or near the roadway that may affect traffic. e) Weather conditions that may affect traffic, such as heavy fog or flooding. f) Signals stuck in flash or signs of arterial detector malfunctions. g) Anything out of the ordinary on or near the roadway.
	While performing the CCTV camera scans, the TMC staff shall also look for anything suspicious or out of the ordinary about the department's roadway and ITS equipment and infrastructure, including damage to guardrails, lighting poles, ITS poles, ITS structures, potholes, spills, or debris on the roadway, and even theft.
	The TMC staff shall preset CCTVs to view areas where traffic queues or problems typically build up, including at bottlenecks, ramps, and construction work zones and display the images on designated areas of the video wall.
	When a traffic flow abnormality or disturbance is detected, the TMC staff shall monitor that location through CCTV cameras to determine the cause(s) as well as the location downstream of the event to quickly detect any secondary incidents in the queue.
Televised Media	The TMC staff shall be able to monitor weather and news stations to detect incidents that have not previously been detected.

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Instrument	Guidelines
Roadway Detectors	The TMC staff shall configure SunGuide to produce alerts when detector data shows a 10% decrease in typical speed for a roadway section by the time of day.
	The TMC staff shall configure SunGuide to produce alerts when detector data shows a 10% increase in typical lane volume or occupancy for any roadway section by the time of day.
	The TMC staff shall always monitor the SunGuide map that displays detector data for any signs of traffic slowdowns or events.
FLATIS	The TMC staff shall check the FL511.com website every 15 minutes for incidents (in neighboring districts) and statewide floodgate and banner messages for events that may be affecting the entire State.
Secondary Websites	For any type of roadway that does not have ITS device coverage, the TMC staff shall use secondary traffic information sources such as Google Maps or Waze for congestion verification and as an incident confirmation tool.
Email	The TMC staff shall continually monitor for emails that may provide notice of events or alerts.
Telephones	The TMC staff shall monitor and promptly answer all telephone calls from FHP, Local law enforcement, other TMCs, local agencies, and motorists advising of a possible event.
NWS Alerts	The TMC staff shall configure SunGuide to receive NWS alerts for the following types of weather: a) Warnings including tornado and severe thunderstorm b) Fog c) Hurricane, Tropical Storm, and severe weather

Figure 11: TMC Operator Monitoring Live Traffic Conditions

5.3 Event Confirmation and Evaluation

TMC staff should always try to confirm and properly evaluate events to decide the most proper response. That's because incorrect or deficient event evaluations can lead to wasted efforts by the personnel dispatched improperly to the scene as well as increased event durations. More importantly, it can make the difference between life and death in more serious events or situations.

Facet	Guidelines
Event Confirmation	Once an event has been reported or confirmed, via FHP, Road Rangers, SunGuide, or other means, the TMC staff shall verify it using CCTV cameras when available.
	For all incidents, no matter how large or small, the TMC staff shall attempt confirmation using CCTV cameras, as close as possible to the location.
	Once a detector shows that there is an unusual traffic slowdown on the SunGuide map, the TMC staff shall use a CCTV camera to find the cause of the decreased speed.
	If a CCTV camera cannot see the event, the TMC staff shall dispatch a Road Ranger to the scene to confirm the event and provide details.
	If one or more indicators of a traffic event are present, but the potential incident cannot be located using a CCTV camera, the TMC staff shall more thoroughly investigate using information from the FHP, Road Rangers, approved traffic related websites, other agency cameras, and television station traffic reports.
	If a CCTV camera or Road Ranger cannot provide confirmation of the event, the TMC staff shall note the event in SunGuide and request that FHP or local law enforcement attempt to confirm the event.

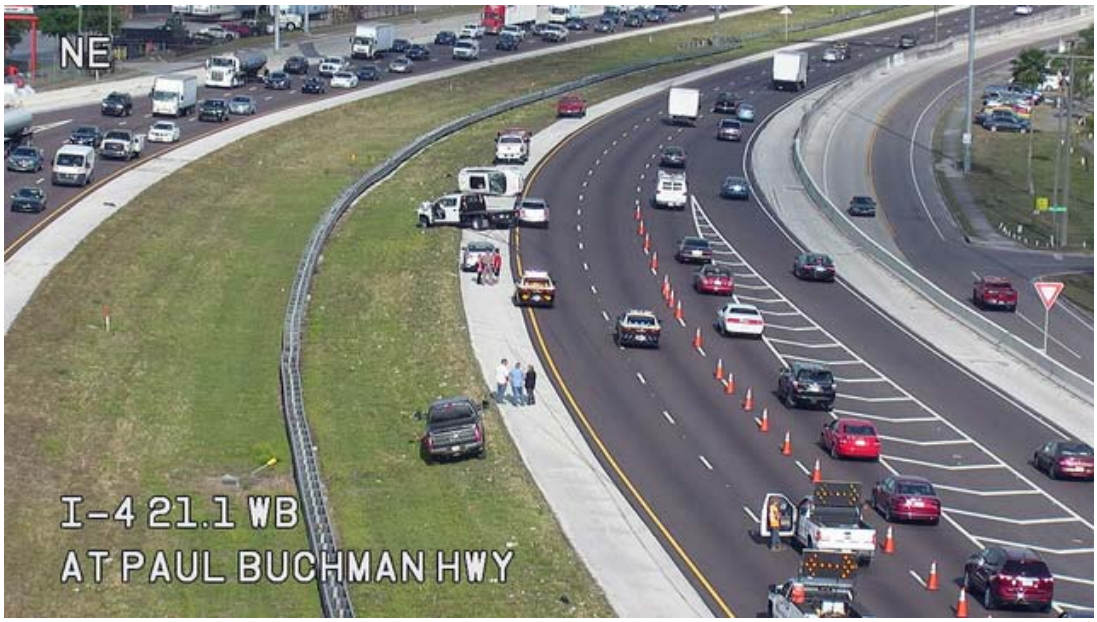

Figure 12: A Crash Closes EB I-4 Lanes on March 6, 2018 near Tampa, Florida

TMC Standard Operating Guidelines

Facet	Guidelines
Event Evaluation	When an event is detected or reported, the TMC staff shall collect the following information: a) Type, location, and direction of the incident (e.g., cross street). b) Road name. c) Proximity to exit. d) Lane closure information. e) Congestion head and tail. f) More information (injuries, HazMat, fire, vehicle description, etc.). g) FHP incident number (if available at the time).
	If injuries are associated with an event, the TMC operator can expect additional first responder resources at the incident scene as well as frequently changing lane closures as the severity of the incident increases. The TMC staff shall assume injuries have occurred at an event if: a) A vehicle has rolled over or is flipped. b) A vehicle is on fire. c) The passenger compartment is crushed or dented. d) A pedestrian or bicyclist has been hit. e) A passenger has been thrown from the vehicle. f) A passenger is bleeding. g) Any passengers have not left the vehicle or are not moving. h) The vehicle pulls over and the driver appears to be in medical distress. i) A pedestrian is on the freeway walking in a travel lane without regard for his or her safety.
	The TMC staff shall assume that there is a risk to public safety if: a) An individual is attempting to repair a vehicle in a travel lane without an emergency vehicle's warning lights on or an equivalent level of protection. b) An individual is attempting to cross a freeway. c) A bicyclist is on a freeway. d) A stopped or slow-moving vehicle is on the freeway needing other motorists to stop suddenly or swerve to avoid it. e) A stopped vehicle is in a location where it is known that there is insufficient stopping or passing-sight distance under the conditions at the time. f) A vehicle is entering the wrong direction, including excessive speed, or with frequent, non-signaled lane changes. g) A vehicle roadside fire is visible. h) Fluid is leaking from a vehicle following an accident that could be considered hazardous. i) A tanker truck is leaking its contents. j) The incident is located on a bridge, inside a construction zone, or around a horizontal or vertical curve.
	Once an event has been detected, confirmed, and the personal injuries and public risk have been assessed, the TMC staff shall classify all events into one of the following levels:

Facet	Guidelines
	a) Level 1 - Minor events where the impact to roadway travel is estimated to be less than 30 minutes with no blockage, or impact to the traveled roadway is estimated to be less than 30 minutes with minor lane blockage. b) Level 2 - Intermediate events where the impact to roadway travel is estimated to be more than 30 minutes but less than two hours, with lane blockages but not a full closure of the roadway. c) Level 3 – A major event that is estimated to affect the roadway for more than two hours, the roadway is fully closed in one direction of travel, or a wrong way driver event.

5.4 Event Notification and Response

Once an event has been confirmed and evaluated, the TMC staff must inform the proper agencies to ensure correct information is given to them so that they can dispatch suitable resources to the event. The TMC staff must also inform the public so that they too can make informed decisions on how to best respond, including the use of alternative routes to their destinations.

Instrument/ Party	Guidelines
Road Rangers	TMC staff shall notify Road Rangers of all events where there is a motorist in need of assistance, blocked lanes, need of MOT, and any other kind of traffic control activities.
	TMC staff shall dispatch a secondary Road Ranger at locations where the primary Road Ranger may be exposed to an unsafe situation or when the following criteria are met: a) In a downslope of an overpass. b) In a travel lane. c) On a dangerous curve. d) In poor sightlines. a) On a bridge or ramp.
FHP	The FHP serves as central dispatch for emergency services and shall be notified for all requests for emergency services, such as: a) EMS. b) Police Activity (crash investigation, fatalities, etc.). c) Fire Rescue. d) Hazardous Materials (HazMat).
	FHP shall be notified for all lane blockage events, crashes, and requests for tows. FHP requires the TMC staff to make a follow-up notification to FHP Dispatch for all events detected by FHP.
Central Office	TMC staff shall adhere to the guidelines found in Appendix D that dictate which events TMC staff shall notify the Central Office Executive Committee about through email.
FDOT Staff	TMC staff shall contact the District EOC for the following events: a) Incidents that are expected or estimated to have lanes blocked more than two hours. b) All lanes blocked for any amount of time, simultaneously on two separate facilities. c) If there will be an evacuation or implementation of the diversion route.

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Instrument/ Party	Guidelines
	TMC supervisory staff shall notify District FDOT staff at once upon detection or being notified of: a) Natural disasters. b) Terrorist activity. c) Suicide attempts.
FDOT Maintenance	TMC staff shall notify the FDOT Maintenance staff on any: a) Damage, property theft, or vandalism to State or local government-owned infrastructure or equipment. b) Debris on the roadway. c) Apparent hazardous materials spill. d) Severe incidents with long-term MOT requirements (typically estimated to have greater than one hour of lane blockage).
Local Law Enforcement	TMC staff shall notify local law enforcement of all events located within their jurisdiction, including unconfirmed events having an elevated level of confidence.
PIO	TMC staff shall coordinate with the District PIO with the method of notification and the threshold of when to notify the PIO of major events.
Regional RTMC	TMC staff shall coordinate with other District TMCs or Florida's Turnpike Enterprise RTMC for incidents that affect their region.
DMS	TMC staff shall use DMSs for all events with blocked travel lanes. (See Chapter 4 for details on DMS usage).
	If a WWD event is reported in an area where DMSs are present, the WWD event shall be pushed immediately to the DMS. If TMC staff cannot find the WWD after five minutes, the DMS message shall be removed until a responder can confirm the event.
	TMC staff shall determine if vehicles blocking the lanes will be removed immediately. If it is determined that the incident will take more than three minutes to clear, the TMC staff shall begin displaying messages on DMS upstream of the incident.
FLATIS	TMC staff shall publish to FLATIS all verified roadway events that are blocking lanes.
	TMC staff shall publish roadway events without lane blockage to FLATIS if: a) If it is in an area that is dark or has limited lighting. b) If weather conditions are causing drivers to slow down considerably. c) If it is located on a bridge or has limited sight distance. d) If it poses a safety risk to motorists.
	TMC staff shall post to FLATIS unconfirmed events if there is high confidence there are lanes blocked; however, the TMC staff shall remove the event from FLATIS if it is still unconfirmed after 10 minutes with no further sign of the event.
	TMC staff shall publish (or request from the District 2 RTMC) a floodgate or banner message regarding all issues affecting an area (e.g., State, region, entire roadway, etc.) such as a major weather event, major special event, major crash, bridge collapse, etc.
HAR	TMC staff shall publish to HAR all verified roadway events that are blocking lanes.

Instrument/ Party	Guidelines
	TMC staff shall publish to HAR all issues that affect an area (e.g., State, region, entire roadway, etc.) such as a major weather event, major special event, major crash, bridge collapse, etc.
E-mail	TMC staff shall create e-mail notification groups through the SunGuide software or FDOT e-mail servers that notify appropriate personnel of major incidents.
STIX	The Southern Traffic Information eXchange is a source of coordinating incidents that are in close proximity of state borders. The districts along the northern Florida border may need multi-jurisdictional incident response to handle situations efficiently and safely.
CB Radio Advisory System	The FDOT maintains a statewide system of traveler information stations, which are commonly called CB (Citizens Band) Wizard stations. These traveler information stations provide messages directing the traveling public with CB radios to Channel 19. The CB Wizard system is used in case of emergency situations, such as a hurricane, fire, contraflow, or other serious traffic conditions.

5.5 Event Monitoring and Closure

It is imperative that events are continuously checked and updated to reflect real-time conditions. When the status of an event has changed or a notifying or responding agency has informed the TMC staff of any changes, the TMC staff should at once update the information within SunGuide and update notification systems such as DMSs and the FL511 system to provide up-to-date and prompt information to motorists and other agencies.

1. **Event Notification Verification:** TMC staff shall verify all response plan items are functioning. Several methods of response plan verification include:
   a) Verifying DMS messages with a CCTV camera or asking that a Road Ranger confirm the message is working if no CCTV cameras are available.
   b) Asking that Road Rangers tune in and confirm HAR messages are audible and correct.
   c) Checking the FL511.com website for the accuracy of the event information posted.
   d) Calling 511 to verify a FLATIS message is correct.

2. **Event Notification Updates:** TMC staff shall update all public facing event (DMS, FLATIS, HAR, etc.) notifications within three minutes after confirming pertinent event changes.

3. **Event Responders Updates:** TMC staff shall update all event responders within five minutes after updated incident information becomes available.

4. **Event Monitoring:** TMC staff shall use CCTV cameras to view the incident scene and responders on the scene (if any). This helps reduce response time if the Road Ranger is in an unsafe situation and allows the TMC and FHP to decide if more help needs to be dispatched to the scene of the call.

5. **MOT Assessments:** All long-term MOT assessments shall be made within 10-30 minutes from the event verification or upon Road Ranger arrival.

6. **Road Ranger Follow Up:** TMC staff shall contact all Road Ranger Service Patrol operators at active assists every 15 minutes to ensure that the Road Rangers are safe and to receive updated incident information.

7. **FLATIS Updates:** All published floodgates and banners, except for road work and planned special events, must be republished every 30 minutes (or as event details such as congestion or lane blockage change) until the conclusion of the event.

8. **Event Documentation:** TMC staff shall record all pertinent details into SunGuide, such as responder arrival and departure times, Road Ranger dispatches, weather conditions, types of injuries, types of vehicles involved in an incident, the nearest CCTV camera, and linked events. The event documentation shall be completed to the degree in which information is available. Many of these documentations are standard when the operator completes the SunGuide event. Operators shall also manually enter comments to better document the specifics of the incident. Detailed comments with available information are especially valuable, as they may give clarification when the Central Office reviews events or at Traffic Incident Management (TIM) meetings.

9. **Event Closure:** TMC staff shall monitor the event and not deem it closed or over until:
   a) All vehicles or all those involved in the event itself have left the scene.
   b) All applicable agencies have been notified.
   c) All responders on the scene have departed.

10. **Event Closure:** TMC staff shall verify that all response plan items have been cleared including DMS messages, HAR messages, FL511 messages, warning gates, and all others.

Figure 13: Dynamic Message Sign in Pensacola, Florida

5.6 Prioritizing Multiple Events

Occasionally, a substantial number of events will take place simultaneously or the TMC staff will have to perform the same activity for two or more different events in close proximity to each other. These kinds of situations will force the TMC staff to prioritize events and operational activities to ensure the best service is provided to the public and incident responders.

1. **Injury Priority**: The FHP and other stakeholders are notified of events with the most serious injuries first.

2. **Event Severity**: The more severe the event, the higher priority (for example, Level 3 incidents shall be handled before Level 1 incidents).

3. **Surrounding Event Traffic Speed**: Events at locations with higher posted vehicle speeds take precedence over events at locations with lower posted speeds.

4. **Surrounding Event Traffic Volume**: Events at locations with higher traffic volumes take precedence over events at locations with lower traffic volumes.

5. **Road Ranger Dispatch Priority**: The TMC staff shall dispatch a Road Ranger according to the following event priority:
   a) Injury crash.
   b) Non-Injury crash blocking travel lanes.
   c) Disabled vehicle blocking travel lanes.
   d) Abandoned vehicle blocking travel lanes.
   e) Emergency traffic-control operations.
   f) Debris blocking one or more travel lanes.
   g) Non-injury crash not blocking a travel lane.
   h) Disabled vehicle not blocking a travel lane.
   i) Abandoned vehicle not blocking a travel lane but is in a questionable location.

6. **DMS Location Priority**: When two lane blocking incidents are occurring simultaneously, the TMC staff shall post messages for both incidents. Each event response plan shall display a one-phase message and the messages shall be merged together in the SunGuide software to display a two-phase message on the DMS.

5.7 Miscellaneous Event Management Issues

1. **Hurricane Preparedness:** TMCs shall each have in place a Hurricane Response Action Plan intended to establish procedural guidelines for hurricane preparations and operational activities prior to, during, and after a storm. The TMC staff will have assigned roles which will be managed by the RTMC Manager with approval of the FDOT Project Manager, who will communicate with District Headquarters, the District EOC, County EOCs, District Damage Assessment Teams (DATs), other districts, and the State EOC (SEOC) in Tallahassee.

2. **Media Questions:** All media questions shall be directed to the district PIO. TMC staff members are prohibited from communicating with the media with regards to the specifics, causes, or estimated duration of an incident and are prohibited from making statements to media outlets that will be aired on television, radio, the internet, or published in printed material such as newspapers and websites.

3. **Railroad Agency Notification:** While conducting routine CCTV camera scans, railroad agencies shall be notified at once of the following:
   a) Any event directly on the railroad tracks.
   b) Any event within the limits of the crossing gates.
   c) Malfunctions of, or damages to, at-grade crossing infrastructure (gates, lights, etc.).
   d) Suspicious activity or vandalism to tracks and other infrastructure.

4. **Transit Authority Notification:** The proper transit authority for each county shall be notified at the beginning and end of any Level 2 or Level 3 events detected along any arterial corridors.

5. **Complaints:** Complaints from the public or other agencies must be handled in a fair, consistent, and polite manner. When a complaint is received, TMC staff shall record the name, work telephone, home telephone, and details such as date, time, place, and allegations and give them to the District ITS Engineer.

6 Roadway Event Standard Operating Guidelines

This chapter provides an overview of situations or events that TMC staff members are likely to deal with regularly. The goal of this chapter is to lay out a vision of TMC staff and stakeholder responsibilities and actions regarding, but not limited to, the planning, monitoring, creating, managing, and ending of each event type. The guidelines are based on studies of both statewide and national best practices such as the open roads and quick clearance programs discussed in Chapter 5.

SOGs that are exclusive to specific roadway events are included in their own section in this chapter. For example, the actions needed on the part of TMC staff during a wildfire event would be covered in Section 6.3. The standard activities or protocols that are typically executed for nearly all event types (such as verifying a Waze alert) are not repeated and have been covered in Chapter 5 of this document.

Events covered include:

1. Abandoned Vehicle, Disabled Vehicle, and Vehicle Fires
2. AMBER, Silver, and Blue Alerts
3. Brushfire and Wildfire
4. Congestion, Crash, and Off-Ramp Backups
5. Debris
6. Emergency and Scheduled Roadwork
7. Pedestrian
8. Public Service Announcements
9. Special Events
10. Weather, Flooding, and Visibility
11. Wildlife
12. Wrong-Way Driving

6.1 Abandoned Vehicle, Disabled Vehicle, and Vehicle Fire Events

Many roadway events managed by TMC staff involve abandoned or disabled vehicles, which include both lane-blocking and non-lane-blocking vehicles. TMC staff also occasionally manage vehicle fires that emit heavy smoke that, consequently, can obscure motorists' view of the roadway.

6.1.1 Active Event Planning, Monitoring, and Detection

1. **Monitoring:** TMC staff shall look for abandoned vehicles, disabled vehicles, and vehicle fire events during their routine hourly CCTV camera views. They pay especially close attention for any that may not readily come into focus, such as those located at interchanges, ramps, beneath overpasses, etc.

2. **Evaluation:** FDOT Maintenance, FHP, local law enforcement, Road Rangers, and TMC staff shall evaluate for the following, in order, at the abandoned vehicle, disabled vehicle, or vehicle fire event:
   a) Injured, sick, or incapacitated individuals.
   b) Hazards posed to emergency services and motorists.
   c) Anything of a suspicious nature, such as a broken door or window.
   d) Smoke or fire.
   e) Strong odors indicative of toxic chemicals.
   f) Presence of dangerous or hazardous cargo.
   g) Spilled fluids or cargo.
   h) Obvious vehicle defects or issues, such as a blown tire.

Figure 14: Vehicle on Fire in Manatee County Closes an Off-Ramp

6.1.2 Event Notification and Response

1. **Road Ranger Dispatching:** TMC staff shall dispatch a Road Ranger to any abandoned vehicle, disabled vehicle, and vehicle fire, except for any that are stolen, wanted, or appear conspicuously a part of criminal activity. For vehicles implicated in criminal activity or that appear suspicious, TMC staff shall

evaluate the situation to determine if a Road Ranger may safely deploy MOT or provide support to FHP or law enforcement.

2. **Red-Tag Authorization Notice:** Once having received notice of or detecting an abandoned vehicle and determining its legal status, FHP shall notify TMC staff if the abandoned vehicle in question is stolen or wanted and if Road Rangers are authorized to "Red-Tag" the abandoned vehicle.

3. **Red-Tagging Vehicles:** FHP requires the make, model, tag, and location to "Red-Tag". Road Rangers do not "Red-Tag" an abandoned vehicle until TMC staff has confirmed that FHP has given permission to do so. Road Rangers shall also note the exact time that they did so and share this information with TMC staff who record the information.

4. **Abandoned Vehicle Relocation:** TMC staff shall request that Road Rangers promptly relocate an abandoned vehicle in the case that it poses a major safety hazard to motorists, such as those that may be located on or near the mouth of a ramp. This shall only be done at times when a tow truck or FHP will need a significant amount of time before being able to relocate the vehicle, or the event poses a serious danger to motorists. Before moving the vehicle, the TMC shall contact FHP or local law enforcement to make them aware of the abandoned vehicle. Once the vehicle is relocated the Road Ranger shall promptly notify TMC staff with the make, model, tag, and location of the relocated vehicle. TMC staff shall promptly notify FHP dispatch with the relocated vehicle information so FHP can assist the owner to find the vehicle.

5. **Motorists DMS Notification:** TMC staff shall notify motorists within five miles upstream of vehicles stopped on limited-access roadway shoulders, in areas of poor lighting or visibility, or in a dangerous location. This may be especially necessary at times in roadway sections with narrow shoulders. The following DMS message format below shall be used:

Template:

Example:

6. **FDOT Maintenance Notification:** Vehicle fires can damage the roadway infrastructure in many ways, from damaging the pavement, concrete bridge joints, and guardrail posts, to more subtle ways. TMC staff shall thus notify FDOT Maintenance of all vehicle fire events so they may assess any potential infrastructure damage.

6.1.3 Event Management Closure

1. **FDOT Maintenance Go-Ahead:** Only after FDOT Maintenance has investigated roadway infrastructure damage and deemed the roadway safe to travel, shall any blocked travel lanes or shoulders that the vehicle fire closed be reopened once it has been removed from the scene.

2. **FHP Abandoned Vehicle Removal Responsibility:** FHP is responsible for overseeing the removal of any abandoned vehicles and ensures they are removed from the roadway's right-of-way within six hours after they have been "Red-Tagged" by a Road Ranger.

3. **Abandoned Vehicle Status Check:** TMC staff shall check the status of non-hazardous abandoned vehicles every 24 hours to note if they have left the scene or if there has been any other change to its original location or state. If no visual is available, TMC staff shall request that Road Rangers provide updates on the vehicle when passing through its last-known location.

4. **FHP Reminders:** TMC staff shall inform FHP when an abandoned vehicle has not been removed from the roadway's right-of-way within a 72-hour timeframe, even if it is not posing a safety hazard as the vehicle can be distracting to motorists and be susceptible to criminal activity.

5. **Abandoned Vehicle Event Termination:** TMC staff shall first visually confirm that an abandoned vehicle is no longer on the scene before they terminate the event. In the case that no visual from a CCTV camera is available, TMC staff shall request that a Road Ranger confirm that the vehicle has left the scene whenever passing through the area during their regular patrols.

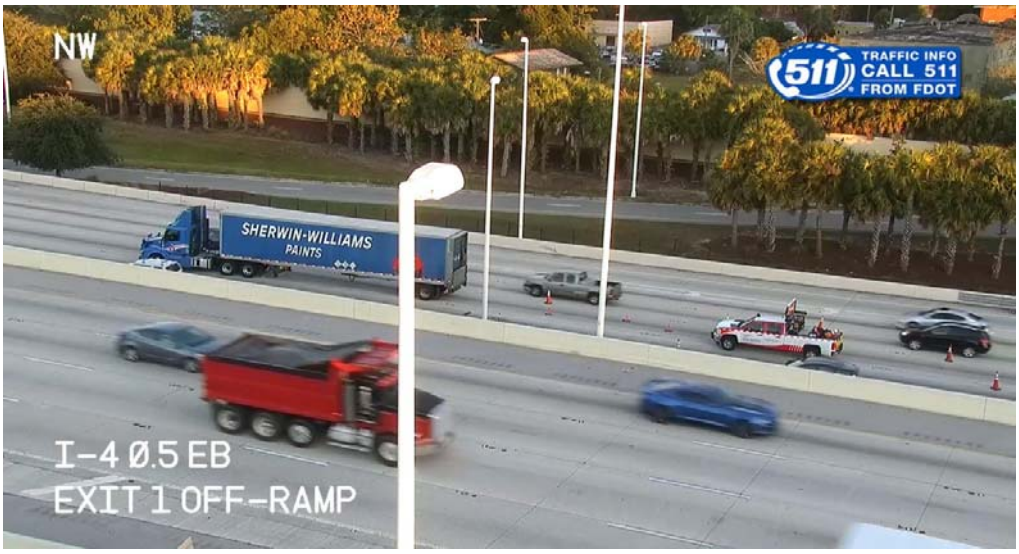

Figure 15: Disabled Truck Blocking Lanes on I-4

6.2 AMBER, Silver, and Blue Alert Events

The Florida Department of Law Enforcement (FDLE), in conjunction with the FDOT and the FHP, established the Florida Silver Alert plan and the Florida Blue Alert plan. The purpose of the Silver Alert plan is to broadcast critical information about a person who is clinically diagnosed with dementia, or any other condition that may cause the person to become confused or disoriented and is reported missing and believed to be driving a vehicle. The Blue Alert plan is used to notify the public of critical information when a Law Enforcement officer is killed, suffered serious bodily injury, or is missing while in the line of duty and the suspect, who is considered to pose an imminent threat to the public, is still at large.

The FDLE is also responsible for activating the AMBER Alert system if a child under the age of 18 is abducted and the make, model, and tag number is known about the vehicle used in the abduction.

All FDLE alert requests go through the District Five RTMC, who in turn determines which districts activate the alert and what DMS message should be posted. Once the signs are activated, motorists can be on the lookout for the vehicles. The public is instructed to report information by immediately dialing *FHP (*347) to provide the location and any other useful details if the wanted or missing vehicle is spotted.

6.2.1 Active Event Planning, Monitoring, and Detection

1. **Florida Missing Persons and Blue Alert Plans**: The FDLE, District Five RTMC, and all district TMCs shall be familiarized with the criteria and standards outlined in Appendix E for requesting, activating, and managing an AMBER, Silver, or Blue Alert. This helps to minimize errors in how alerts are requested and published and helps to deliver consistency across the entire state.

2. **Alert Activation Request**: The FDLE is the only entity that can request the District Five RTMC to publish AMBER, Silver, or Blue Alert DMS messages on limited-access roadways. No other agency or government department can directly request an AMBER, Silver, or Blue Alert message, regardless if all other criteria are met.

3. **Alert Request Verification:** District Five RTMC staff shall evaluate the validity of all FDLE alert requests and seek further clarification on any anomalies or incomplete information to help ensure that no incorrect information is posted to the FL511.com website and to DMSs.

4. **District Alert Distribution:** FDLE and District Five RTMC staff shall determine together which districts shall display the alert messages to ensure maximum effective message distribution, based on their knowledge of the missing or the wanted person and the roadway network.

5. **Individual District Alert Request:** Only the District Five RTMC can request from another district's TMCs to publish an AMBER, Silver, or Blue Alert DMS message along with the required message content. The FDLE locally situated in a district cannot make a request for the alert, even if one is in fact expected to be issued by the District Five RTMC.

6. **Alert Request Monitoring:** TMC staff shall monitor emails for District Five RTMC AMBER, Silver, or Blue Alert requests at all times, to help ensure that alert DMS messages are posted as soon as possible. Posting the alert DMS messages promptly can very well make the difference in finding the missing or wanted person.

7. **Alert Request Acknowledgement:** TMC staff shall acknowledge receipt of all District Five RTMC Alert requests as soon as they have received the email messages. In the case that no acknowledgment was received, the District Five RTMC shall contact the unresponsive TMC by telephone to inform them of the email that requests that a specific DMS alert message be posted.

6.2.2 Event Notification and Response

1. **Central Office Notification:** The District Five RTMC staff shall notify the Central Office through email of all AMBER, Silver, or Blue Alert requests. This is to ensure that the Central Office is cognizant of any alerts that may be receiving significant media attention.

2. **Alert Anomalies Authentication:** TMC staff shall always analyze the District Five RTMC AMBER, Silver, or Blue Alert email for any anomalies or missing information to ensure that it is adhering to the general alert criteria.

3. **Alert Anomaly Deference:** If an alert email contains missing or unusual information, TMC staff shall contact the District Five RTMC first to confirm that the information received is in fact correct. If the anomalies or missing information was in fact intended, TMCs shall defer judgment to the District Five RTMC and post the DMS message exactly as requested.

4. **Alert FL511 Publishing:** The District Five RTMC is solely responsible for publishing AMBER, Silver, or Blue Alerts to the FL511.com website and publishing floodgate messages. This helps to avoid having multiple TMCs post identical or duplicate information to the website.

5. **AMBER Alert DMS Message Format:** All TMCs shall only use the following AMBER Alert DMS message format below:

Phase 1:

CHILD ABDUCTION
ALERT
CALL *347

Phase 2:

RED 2002
FORD MUSTANG
FL TAG ABC 193

6. **Blue Alert DMS Message Format:** All TMCs shall only use the following Blue Alert DMS message format below:

Phase 1:

BLUE ALERT

CALL *347

Phase 2:

BLUE 2002
FORD MUSTANG
FL TAG ABC 193

7. **Silver Alert DMS Message Format:** All TMCs shall only use the following Silver Alert DMS message format below:

Phase 1:

SILVER ALERT

CALL *347

Phase 2:

BLUE 2002
FORD MUSTANG
FL TAG ABC 193

6.2.3 Event Management and Closure

1. **Alert Notice Publication Time:** All TMCs shall update the AMBER, Silver, or Blue Alert if additional vehicle information is obtained or if reissued; the messages shall be displayed for no more than six hours or until the alert is officially terminated, whichever occurs first.

2. **Alert Time Extensions:** If the FDLE requests an extension, two hours will be added to the remaining alert display time per the District Five RTMC discretion.

3. **Alert Updates:** TMC staff shall make updates as needed, such as a new color, make, or model of the vehicle, or license plate information; any DMS previously activated with the alert shall be updated with the additional information. If the update is within the first three hours, the message will continue to be activated for the original six-hour period. If the update occurs after the first three hours of the alert, the updated message will extend an additional three hours beyond the original six-hour period.

4. **AMBER, Silver, and Blue Alert Time Extensions:** A time extension beyond the six-hour rule may be granted if FDLE sends a formal request for a time extension. The District Five RTMC will then notify the appropriate districts of the time extension.

5. **Alert Closure Confirmation:** District Five RTMC staff members are solely responsible for confirming to district TMCs that an AMBER, Silver, or Blue Alert has been canceled. News reports or other sources shall not be relied on.

6.3 Brushfire and Wildfire Events

Brush fires can produce heavy smoke that can occasionally impact roadway conditions. TMC staff manage traffic during these events by using DMS messages warning motorists of fire and smoke conditions.

In Florida, the wildfire season lasts from December until June, with May being the season peak. Occasionally, wildfires are large enough to force closures of sections of the roadway. TMC staff play a vital role in disseminating information to motorists by informing motorists of the unexpected closures regionally.

6.3.1 Active Event Planning, Monitoring, and Detection

1. **Florida Forest Service Communications:** TMC staff shall communicate with the FFS to learn about local fire conditions so that they may become prepared (or be on the alert) for unplanned brush or wildfires.

2. **Planned Burn Notification:** The FFS shall notify TMC staff at least 48 hours in advance of all planned prescribed burns so that they may be on the alert, monitor wind direction, and plan traffic management and signing accordingly for the smoke that may create visibility issues on the roadway.

3. **Fire Event Monitoring:** TMC staff shall look for any signs of smoke or fire within or near the roadway's right-of-way during their routine hourly CCTV camera views, especially in more rural areas when local fire conditions are rated very high.

4. **Fire Event Evaluation:** FDOT Maintenance, FFS, FHP, law enforcement, Road Rangers, and TMC staff evaluate at a brush fire or wildfire event for the following:
   a) Distance from the roadway.
   b) Windspeed and direction.
   c) Visibility impact to drivers on the roadway.
   d) Size.
   e) Severity.

6.3.2 Event Notification and Response

1. **Fire Event Notification Requirements:** TMC staff shall notify FFS and FHP of any brush fires, wildfires, or smoke found within or near the roadway's right-of-way.

2. **Road Ranger Dispatch:** TMC staff shall dispatch Road Rangers to the brushfire or wildfire event (if safe to do so) to help set up MOT if needed, and report on ground conditions. TMC staff shall provide Road Rangers with up-to-date information on all fires, with the Road Rangers prioritizing safety first and foremost for themselves and the motorists.

3. **FDOT Maintenance Notification:** TMC staff shall notify FDOT Maintenance of any brush fire or wildfire events that are within or near the roadway's right-of-way. FDOT Maintenance needs to be made

aware of any fires that pose threats to the roadway infrastructure and thus shall plan accordingly to enforce safeguards.

6.3.3 Event Management and Closure

1. **Fire Event Monitoring:** TMC staff visually monitor the brush fire or wildfire event until it is under control or no longer expected to affect the roadway. TMC staff must consistently and continuously monitor the fire so that FDOT Maintenance, FHP, Road Rangers, and any other responders have up-to-date information on the fire.

2. **FFS Updates:** The FFS shall provide TMC staff with up-to-date information on the fire if it is expected to change or worsen so that the TMC can continually update all other third-party responders. In particular, FFS shall provide TMC staff with information on the fire's projected direction and whether it is expected to affect or impact additional roadway sections.

3. **Fire Event Termination:** TMC staff terminates the event only when Road Rangers or FHP have confirmed onsite that the brush fire or wildfire has subsided and there no longer any lingering effects to the roadway. Lingering smoke or ash may create choking hazards for motorists and thus, needs to be monitored.

Figure 16: Brushfire Closes I-95 in Brevard County in 2011

6.4 Congestion, Crash, and Off-Ramp Backup Events

Congestion and crashes can occur due to recurring traffic patterns during peak hours, incidents, inclement weather, or planned or unplanned roadwork. To reduce the occurrences of secondary incidents, motorists are notified of any congestion or crashes ahead so that they can continue cautiously as they approach the tail of the event where traffic begins to slow down or is stopped. The tail of the queue grows backwards, toward the oncoming traffic, so early warning is of significant value.

Congestion can also build up on off-ramps and back up onto the freeway travel lanes. The congestion could be from an incident on the off-ramp, an incident on the interchange cross street, congestion on the interchange cross street, or poor signal timing on the off-ramp signal. Repeating congestion points require monitoring and, when necessary and available, messaging.

6.4.1 Active Event Planning, Monitoring, and Detection

1. **Pre-Defined Response Plans for Recurring Congestion and Crashes:** TMC staff shall create generic predefined response plans for managing recurring congestion and crash zones. Response plans include:
   a) Congestion (or delay) parameters that need response plans to activate. For example, how much potential delay is the crash going to cause at this time of day (9 a.m. and 9 p.m. may have very different response plans) or what recurring roadway conditions typically precipitate serious congestion and need a warning message?
   b) Detours.
   c) Stakeholder identification and communication.
   d) Response measures such as DMS message plans, signal timing adjustments, ramp meter rates, etc.
   e) Other.

2. **Pre-Defined Response Plans for Non-Recurring Congestion and Crashes:** TMC staff shall create predefined plans for managing critical non-recurring congestion and crash zones. Plans include:
   a) Congestion parameters (i.e., how much congestion warrants notifying drivers of alternative routes?).
   b) Detours available based on each exit.
   c) Stakeholder notice and identification.
   d) Response plans.
   e) Diversion routes.
   f) Other.

3. **Pre-Defined Response Plans for Recurring Hot-Spots:** TMC staff shall create predefined plans for managing recurring and non-recurring off-ramp and merging area backup events. Plans include:
   a) Critical off-ramp backup parameters that call for a response. For example, depending on the site distance on the ramp, a hidden, minor off-ramp backup may be more dangerous than a visible

major backup. Both situations might occur at the same ramp at dissimilar stages of queue development.

b) Critical on-ramp and merge area backups.

c) Response plans that include DMS messages, signal-timing adjustments, or requests, etc. This would entail, for example, knowing when to start or request a signal-timing change or warning about the off-ramp backup.

4. **CCTV Camera Schedules:** TMC staff sets schedules of when to keep CCTV camera coverage for roadway off-ramps that have a historical tendency of spillage onto the limited access-roadway. It is important that recurring off-ramp backups are continually watched for incidents, as well as to decide when to initiate and deactivate response plans.

6.4.2 Event Notification and Response

1. **Congestion Notification Requirements:** During daily peak traffic periods, messages shall be used to tell motorists of unusual conditions (e.g., accidents, lane blockages, etc.) and shall not be used to tell motorists of the normal daily peak-period traffic-congestion conditions.

2. **Freeways as Alternate Routes:** The freeway system is the preferred alternate route, when practical. An alternate freeway route shall be suggested when incidents or congestion on the primary route cause delays lasting more than 30 minutes.

Figure 17: I-4 Congestion in Orlando, Florida

3. **Surface Street Pre-Approval:** Only pre-approved surface streets are referenced when traffic diversion or detouring is necessary.

4. **Alternative Route Condition:** a) TMC staff must have current and continuously-updated knowledge of the traffic conditions on the alternative route and b) the alternative route must result in significant savings in time for the diverted motorists.

5. **Congestion Zone DMS Notification:** TMC staff may utilize the following message format below for DMSs 10 miles upstream of the congestion zone if speeds of 45 mph or less are detected on the limited access roadway:

CONGESTION AHEAD

BEFORE EXIT 45

CLEARS PAST EXIT 52

6. **Proactive Crash DMS Notification:** TMC staff updates the DMS when traffic conditions that typically precipitate a crash or secondary crash event are detected; the following message format is used for the DMS directly upstream (but within five miles) and within the zone used:

7. **DMS Diversion Message:** TMC staff may use this DMS message when a crash has been verified, and a soft diversion may be preferable:

8. **Crash DMS Notification Message:** TMC staff may use this DMS message when a crash and lane blockage has occurred, but no alternate routes have been verified:

9. **Traffic Delay DMS Notification Message:** TMC staff may use this DMS message when a crash has been verified, and traffic delays are expected:

10. **Off-Ramp Backup Event Monitoring:** TMC staff shall continually check and manage off-ramp backup events until queues have dissipated or are no longer posing hazards to motorists.

11. **Off-Ramp Backup DMS Notification:** TMC staff uses the following message format for the DMS directly upstream (but within five miles) from the off-ramp backup event:

6.4.3 Event Management and Closure

1. **Event Monitoring:** TMC staff maintains a visual of all congestion, crash, and off-ramp backup events until the event has been terminated.

2. **Congestion Event Termination Criteria:** TMC staff terminates the congestion event once travel speeds and volumes have returned to pre-event or normal speed levels.

3. **Off-Ramp Backup Event Termination:** TMC staff terminates the off-ramp backup event once queues have cleared, vehicles are no longer spilling onto the limited-access roadway, and there are no longer any hazards to motorists.

Figure 18: Off-Ramp Backup on the Florida Turnpike

6.5 Debris Events

Debris on the shoulder and in travel lanes can pose a hazard to motorists and should be removed as soon as possible. TMC staff helps to detect the debris and coordinate its removal to ensure that roadways are safe for travel.

6.5.1 Active Event Planning, Monitoring, and Detection

1. **Debris Event Criteria:** FDOT Maintenance, FHP, local law enforcement, Road Rangers, and TMC staff shall create an event or report debris when an object is found within the roadway's right-of-way, and is distracting motorists, causing vehicles to slow down, change lanes, or swerve (even slightly) within their travel lanes.

6.5.2 Event Notification and Response

1. **Debris Removal:** If on the scene, FDOT Maintenance, FHP, local law enforcement, and Road Rangers attempt to remove the debris or temporarily set up MOT until it can be removed or relocated off the roadway.

2. **Debris Notification:** FDOT Maintenance, FHP, local law enforcement, and Road Rangers notify TMC staff of any debris within the roadway's right-of-way that needs to be removed or has been removed and if any MOT will be needed. They shall also make a note to TMC staff as to what kind of debris has been found and if any other responders will be needed to remove or clean it up.

3. **Road Ranger Dispatching:** TMC staff shall at once dispatch a Road Ranger to any location where debris has been detected on the roadway to either remove it, move it, or temporarily set up MOT, as needed. TMC staff shall, however, evaluate the debris from the CCTV camera to figure out if additional assistance will be required in removing it as soon as possible.

4. **Debris Removal Request:** If the TMC staff is notified by FHP, local law enforcement, or a Road Ranger that debris is on the scene and they are unable to remove it, the TMC staff shall contact FDOT Maintenance or maintenance contractor to respond and remove the debris.

6.5.3 Event Management and Closure

1. **Guardrail Approach Terminal and Crash Cushion Snapshot Process:** For crashes involving guardrail approach terminals or crash cushions, TMC staff members are requested to adhere to the procedures found in Appendix G as requested by the FDOT Maintenance office.

2. **FDOT Maintenance Debris Coordination:** TMC staff coordinates with the FDOT Maintenance office on the disposal of any large debris picked up by a Road Ranger or any debris that is part of the roadway infrastructure, such as a loose piece of a guardrail.

3. **Debris Removal Responsibility:** The FDOT Maintenance office oversees the removal of any debris temporarily moved within the roadway's right-of-way. Even if the debris is not directly affecting traffic, it is important that the debris does not present distraction or cause rubbernecking delays.

4. **Debris Status Checks:** TMC staff checks the status of debris that has been moved to the side of the roadway every 24 hours. If no CCTV visual is available, TMC staff requests Road Rangers give updates when passing through the last known area of the debris. It is recommended to do so to avoid having debris lingering within the roadway's right-of-way.

5. **FDOT Maintenance Reminders:** TMC staff notifies FDOT Maintenance when debris has not been removed from the roadway's right-of-way within a 72-hour timeframe, to ensure prompt removal of all debris from within the roadway's right-of-way.

6. **Debris Event Termination:** TMC staff visually confirms by CCTV that the debris is no longer present before terminating the event. If visual confirmation is not possible, TMC staff requests Road Rangers confirm that the debris has been removed when passing through the area during their regular patrols.

Figure 19: Spilled Truck Debris on I-75

6.6 Emergency and Scheduled Roadwork Events

Scheduled roadwork occurs due to roadway construction or maintenance activities and TMC staff are given prior notice of its scheduled time, date, location, and extent of activities. Emergency roadwork might be needed due to damage to the pavement or roadway infrastructure that creates unsafe travel conditions for motorists. TMCs have a critical role in managing these events to ensure motorist safety and minimize travel delays.

6.6.1 Active Event Planning, Monitoring, and Detection

1. **Advance Construction Work Notice:** The FDOT Maintenance office notifies TMC staff at least two weeks in advance of all major scheduled roadwork and gives details about any lane closures. This allows TMC staff to plan and assess the impacts of any lane closures and inform motorists in advance so that they may also plan ahead.

2. **Portable DMS Plan Review:** FDOT Maintenance submits scheduled roadwork portable DMS message plans for TMC staff's review and approval. This is so that TMC staff can ensure that the portable DMS plans complement or do not cause conflicts with the permanent DMS locations. TMC staff shall review the scheduled roadwork portable DMS message plans and give comments and suggestions within 48 hours of receiving them.

Figure 20: Road Work Ahead Sign

3. **Infrastructure Deficiency Monitoring:** TMC staff looks for any infrastructure deficiencies within the roadway's right-of-way during their routine hourly CCTV camera views. FDOT Maintenance, FHP, local law enforcement, and Road Rangers also evaluate all potential infrastructure issues met during their regular duties or patrols.

6.6.2 Event Notification and Response

1. **Roadwork DMS Message Uses:** DMS messages can be used for a wide variety of temporary work zone applications. Example situations include, but are not limited to, the following:
   a) Lane or shoulder closures.
   b) Lane width restriction.
   c) Roadway or ramp closures.
   d) Areas of significant queuing or delays.
   e) Changes in roadway alignment or surface conditions.
   f) Changes in traffic patterns.
   g) Detours and alternate routes.

2. **Alternative Route Criterion:** TMC staff is responsible for ensuring that DMS messages do not divert motorists to specific alternative routes unless helpful direction is available along the alternative route in the form of a) guide signs or trailblazers to the major destination, or b) law enforcement or traffic control personnel are positioned at critical locations along the alternative route to control and guide traffic.

3. **Advance Roadwork Notice:** Displaying an advance notice of roadwork or other potential impacts to a roadway is acceptable; however, the advance notice shall not be displayed more than six days before the roadwork or other events.

4. **Regulatory Speed Limit DMS Notification:** Regulatory Speed Limit messages may be displayed on the DMS when the new speed limit is temporarily below the normal speed limit posted for the roadway.

5. **Long-Term Construction Zone DMS Notification:** For long-term construction, permanent DMSs shall only be used for the first three days of the work period to maintain the effectiveness of the DMS. After that time, static signing or portable DMSs shall be used for the duration of the period. If necessary,

permanent DMSs can be used for temporary lane closures that may occur within a long-term construction project.

6. **Emergency Roadwork Notification:** FDOT Maintenance shall always notify TMC staff of all impending emergency roadwork and provide details on information about any lane closures.

7. **CCTV Camera Positioning:** TMC staff shall position CCTV cameras to the site of the scheduled (short-term) roadwork one hour before the projected start time and stay positioned in that manner for the duration of the job. TMC staff shall also position CCTV cameras to the site of the emergency roadwork for the duration of the job.

8. **Advance Roadwork DMS Message Notification:** TMC staff shall notify motorists within 10 miles upstream of the scheduled road or lane closures with the following DMS message:

Template:

ROADWAY TO CLOSE
DAY TO AND FROM
TIME TO AND FROM

Example:

EXIT 75 TO CLOSE
MON TO THUR
10:00 PM TO 5:00 AM

6.6.3 Event Management and Closure

1. **Long-Term Construction FLATIS Updates:** For long-term (typically continuous) scheduled roadwork, TMC staff updates the event in the FLATIS every four hours or as needed.

2. **Emergency Roadwork Updates:** FDOT Maintenance shall give one-hour updates to TMC staff on the status of any emergency roadwork that is closing lanes. TMC staff need to be aware of how long lane closures can be expected, especially if it is during or near the time for peak period traffic.

3. **Roadwork Event Termination**: TMC staff visually confirms construction workers and responders have left the scene before terminating the event. In the case of no visual, TMC staff requests FDOT Maintenance to confirm that the roadwork has been completed and all construction personnel have left the scene.

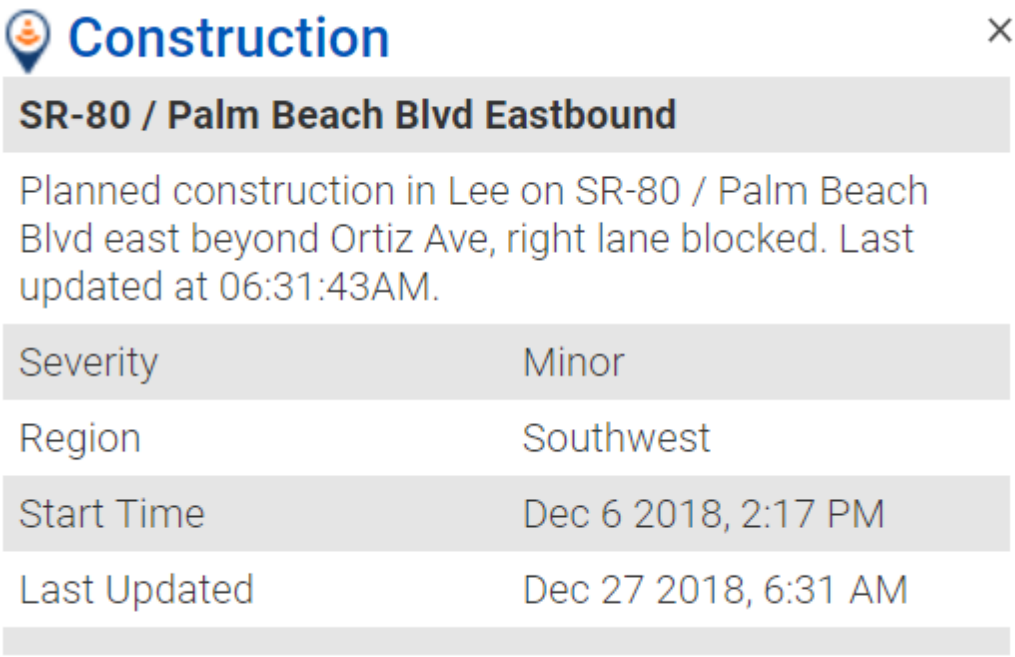

Figure 21: FLATIS Construction Update for Fort Myers, Florida

6.7 Pedestrian Events

Often, after vehicles break down, the vehicle occupants will simply walk to the next exit for a ride or to obtain help. Other pedestrians might also purposely enter the freeway right-of-way to traverse to their destination. Even if the pedestrian is not in the travel lanes, the presence of a pedestrian within the right-of-way of a limited access facility can distract motorists.

6.7.1 Active Event Planning, Monitoring, and Detection

1. **Pedestrian Monitoring:** TMC staff, while doing their routine monitoring of CCTV camera views, shall investigate for any pedestrians found within the roadway's right-of-way.

2. **Pedestrian Event Evaluation:** FDOT Maintenance, FHP, local law enforcement, Road Rangers, and TMC staff evaluates the following factors at pedestrian events:
   a) Erratic or drunken behavior.
   b) Distance to the edge of the roadway's pavement.
   c) Approximate age.
   d) Gender.
   e) Ethnicity.
   f) Attire.
   g) The direction of travel.
   h) Location in relation to the nearest exit.

6.7.2 Event Notification and Response

1. **FHP Notification:** TMC staff notifies FHP or local law enforcement of any pedestrians that are acting erratic, drunk, or appears to be under the age of 18 within the limited-access roadway right-of-way.

2. **Road Ranger Dispatch:** TMC staff dispatches a Road Ranger to the location of all pedestrian events to offer assistance.

3. **Pedestrian Event Tracking:** FDOT Maintenance, FHP, local law enforcement, Road Rangers, and TMC staff shall vigilantly track the location of all pedestrians that have been discovered and continually update all responders to the pedestrian's location and movements.

4. **Pedestrian Event DMS Message Notification:** If a pedestrian is on or near the roadway edge of the pavement, TMC staff posts the following DMS message format at once for the DMS upstream of the pedestrian in both directions and within 10 miles:

6.7.3 Event Management and Closure

1. **Pedestrian Response Notification:** The Road Ranger notifies TMC staff of the pedestrian's response for help and notes the reason he or she is located within the roadway's right-of-way.

2. **FHP Notification:** For pedestrian events not yet reported to FHP, if the pedestrian refuses help or is behaving suspiciously, TMC staff alerts the FHP.

3. **Pedestrian Event Termination**: TMC staff closes the pedestrian event once the pedestrian has been removed from the right-of-way, or there has been no sign of the pedestrian for at least 15 minutes.

Figure 22: Deadly Truck vs. Pedestrian Accident in Jacksonville, Florida

6.8 Public Service Announcement (PSA) Events

The FDOT Central Office mandates that PSA messages are to be displayed on limited-access roadway or adjacent arterial roadway DMSs throughout the state. These PSA messages are used to remind motorists of various safety issues such as seatbelt use, texting while driving, and drunk driving. The FDOT Central Office mandates the PSA messages' text, length, and time of display.

6.8.1 Active Event Planning, Monitoring, and Detection

1. **Central Office Approved Messages:** The FDOT Central Office distributes an approved list of PSAs on DMS messages for use on limited-access roadways or adjacent arterial roadways.

2. **Pedestrian Event Evaluation:** TMC staff shall request approvals from Central Office to use internally-developed PSA DMS messages prior to posting them.

3. **PSA Message Campaigns:** PSA messages shall be displayed as supplements to national or statewide traffic and driver safety campaigns on the same topic (i.e., drunk driving) and to coincide during the same time as national or statewide campaigns.

4. **PSA Message Length:** A PSA shall be limited to no more than eight words (about four to eight characters per word), excluding prepositions.

Figure 23: Drunk Driving PSA Message

5. **Air Quality PSA Messages:** Messages related to air quality or alternative transportation options may be displayed during the 24-hour period preceding an air quality alert day as decided by the FDOT or its designated representative.

6.8.2 Event Management and Closure

1. **PSA Message Timeframe:** TMC staff publishes PSA messages only between the times of 9:00 a.m. - 3:00 p.m. on weekdays and any time on weekends.

2. **PSA Message Time Length:** The total duration of any PSA message shall not exceed two hours per day at any DMS location and shall not be displayed during peak travel periods.

A complete list of approved DMS PSA messages can be found at:
https://www.fdot.gov/traffic/trafficservices/DMS.shtm

6.9 Special Events

Periodically, special events, such as concerts or sporting events, create a sudden influx of traffic and cause congestion. Without careful planning and coordination, this influx of traffic can become a cause of major delays to normal traffic patterns. Typically, TMCs are made aware of special events in advance and create a DMS plan that will notify TMC staff of the scheduled time, date, and planned DMS messages associated with the special event.

During special events, TMC staff are responsible for directing motorists to the appropriate exits to guide motorists to parking areas that have adequate capacity. TMC staff also play a critical role in managing the congestion associated with the special event.

6.9.1 Active Event Planning, Monitoring, and Detection

1. **Advance Notice:** Private entities, local government(s), and others shall notify TMC staff at least one month in advance of all major special events. It is important that this type of relationship is developed

as it gives TMC staff enough time to schedule staff, develop a response plan, and coordinate with third-party agencies with regard to any roadway closures or similar ongoing special events.

2. **Roadway Closures Verification:** TMC staff coordinates with the FDOT Maintenance office to ensure that there are no planned construction projects or roadway closures scheduled to occur on the day of the special event; or to inform them about one that may be taking place at a certain date and time.

3. **Planning:** TMC staff sets up formal processes for developing, coordinating, and confirming special event plans among all stakeholders, which includes FHP, local law enforcement, local government officials, Road Rangers, etc.

4. **Traffic Control Plans:** TMC staff shall prepare traffic control plans to provide route guidance for venue ingress and egress traffic in coordination with all stakeholders.

5. **Contingency Plans:** TMC staff prepare contingency plans for the evacuation of the special event venue. This shall be carefully planned in conjunction with stakeholders to help eliminate risks and ensure the safety and well-being of special event attendees. In the unlikely event that an evacuation of the special event is needed, chaos can ensue, grid-locking traffic in the entire area and preventing a timely evacuation.

6.9.2 Event Notification and Response

1. **DMS Usage:** DMS shall be used only for future special events that are expected to have a negative impact on traffic and that will start within six days or less. In addition, the message shall include the date and time the special event will start. The use of individual days of the week (i.e., Monday, Tuesday) is preferred over calendar dates.

2. **Park-and-Ride Lots:** Messages referencing transit or park-and-ride lots shall be used during large special events (such as a Super Bowl) to help mitigate congestion resulting from attendees.

3. **FLATIS:** TMC staff publishes the event to FLATIS to alert motorists of traffic conditions in the area likely to be affected by the special event at least three days in advance and no more than seven days in advance.

4. **Monitoring:** TMC staff watches traffic flow and amends traffic plans on-site in real time, as necessary.

Figure 24: FL511 Large Special Event Notice

6.9.3 Event Management and Closure

1. **Post Event Debriefing:** TMC staff schedules a post special event meeting to identify key successes and lessons learned.

2. **Third-Party Feedback:** TMC staff requests feedback from other agencies on how they worked together to plan for future special events.

3. **Performance Measures Review:** TMC staff reviews performance measures to:
   a) Identify locations with poor performance.
   b) Identify potential remedies.
   c) Identify specific areas that require improvements or enhancements for future special events.

6.10 Weather, Flooding, and Visibility Events

Severe weather can pose a hazard to vehicles and is often an underlying reason behind crashes or disabled vehicles. Heavy downpours due to thunderstorms can reduce visibility and cause flooding, which may stall motorists or close roadways. TMC staff manage the adverse weather events by using DMS messages to notify motorists of any locations that have reduced visibility, flooding, and congestion.

6.10.1 Active Event Planning, Monitoring, and Detection

1. **Planning:** TMC staff shall consult with the FHP to determine what wind, rain, and visibility parameters would necessitate the closure of any roadways or bridges within the district.

2. **Monitoring:** TMC staff continually monitors weather reports and forecasts at all times. TMC staff pay particularly close attention to expected rainfall totals, sustained winds, and any other storm side effect such as freezing rain or hail.

3. **Evaluation:** TMC staff monitors visibility reports each day and shall vigilantly monitor roadway locations that have a history of visibility issues at all times.

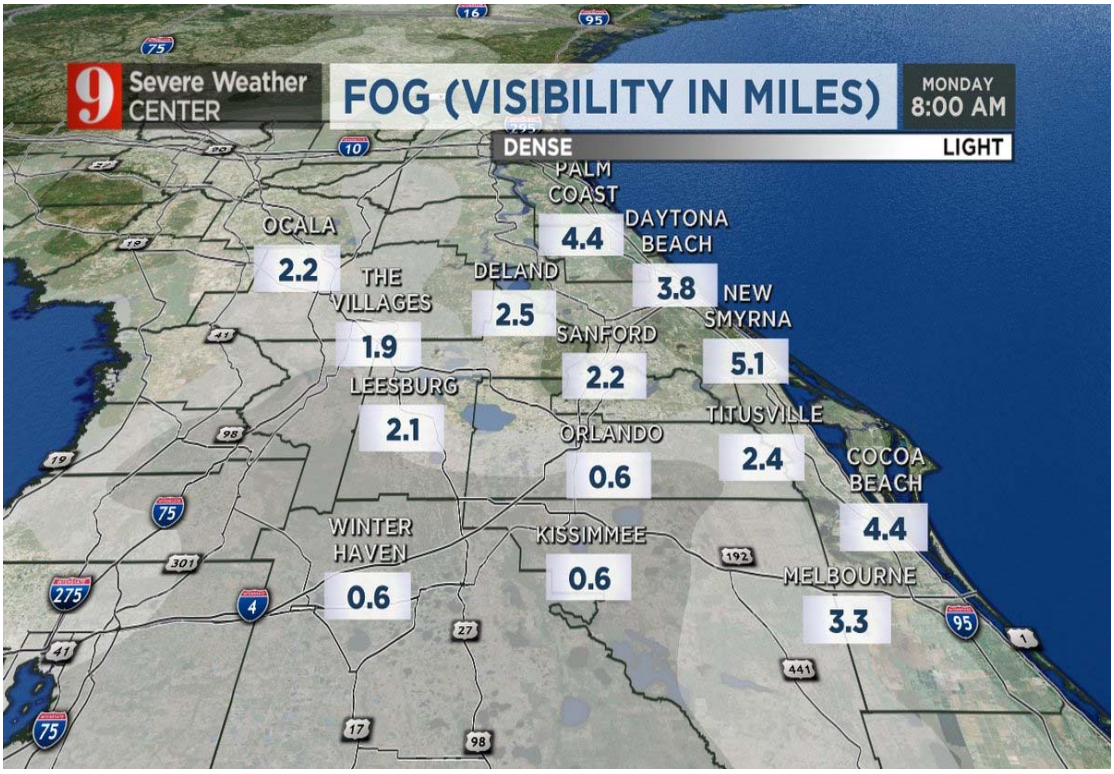

Figure 25: Central Florida Fog (Visibility) Report on November 25, 2018

6.10.2 Event Notification and Response

1. **DMS Restrictions:** DMS messages shall not project expected road conditions due to expected extreme weather more than 24 hours in advance.

2. **Reporting Restrictions:** General weather reports or forecasts shall not be displayed on the DMS or reported to the FL511.com website.

3. **Reporting Restrictions:** Adverse weather messages are typically limited to unusual conditions that would catch a motorist off-guard, such as a ramp or a bridge where icy conditions may occur. Widespread area weather messages shall be avoided to maintain the effectiveness of the messages.

4. **DMS Usage Criteria:** DMSs shall be used to broadcast flash flood warnings, tornado warnings, etc., issued by the NWS.

5. **DMS Usage Criteria:** DMS shall only be used to inform drivers of adverse weather conditions that are currently affecting travel. Reliable weather reports of imminent severe weather may be displayed, such as a flash flood warning.

6. **Advance DMS Wind Advisory Message**: TMC staff notifies motorists within 10 miles upstream of areas with sustained winds of at least 30 mph (or 20 mph on bridges) or other adverse weather effects with the following DMS format:

HIGH WIND ADVISORY
XX MILES AHEAD
USE CAUTION

7. **DMS Wind Advisory Message:** TMC staff notifies motorists within the weather-event zone with the following DMS message format:

HIGH WIND ADVISORY
NEXT XX MILES
USE CAUTION

8. **Advanced DMS Visibility Advisory Message:** If visibility on the roadway is under two miles but more than a quarter (¼) of a mile, TMC staff notifies motorists using the following DMS message format for DMSs within 10 miles upstream of the event:

REDUCED VISIBILITY
XX MILES AHEAD
USE CAUTION

9. **DMS Visibility Advisory Message:** If visibility on the roadway is under two miles but more than a quarter (¼) of a mile, TMC staff publishes the following DMS message format for DMSs within the reduced visibility zone:

REDUCED VISIBILITY
NEXT XX MILES
DRIVE SLOWLY

10. **DMS Wet Pavement Advisory Message:** For roadway sections with a discernible (but still traversable) amount of water on the roadway, TMC staff publishes the following message for DMSs within the flooding event zone:

REDUCE SPEED
ON WET PAVEMENT

Figure 26: Skyway Bridge in Tampa Closed to Traffic Due to High Wind on December 21, 2018

6.11 Wildlife Events

Periodically, wildlife or domesticated animals, will enter or be loose on the roadway's right-of-way and become a distraction, block travel lanes, or even worse, become struck by a vehicle. TMC staff play a critical role by coordinating with animal control to remove the animal as soon as possible from the right-of-way while simultaneously managing travel lanes and keeping motorists safe.

6.11.1 Active Event Planning, Monitoring, and Detection

1. **Planning:** TMC staff coordinates with FHP on procedures for the removal or disposal of live and dead animals within the roadway's right-of-way.

2. **Planning:** TMC staff coordinates with the FWC to understand which species of wildlife they shall be contacted about when they are found within or near the roadway's right-of-way.

3. **Reporting Criteria:** Animal Control, FDOT Maintenance, FHP, FWC, local law enforcement, Road Rangers, and TMC staff creates an event or report the wildlife event to TMC staff when an animal is:
   a) On the roadway or in the median.
   b) Within 50 feet from the edge of the pavement.
   c) Moving erratically within the roadway's right-of-way.
   d) An endangered or threatened species.
   e) Other.

4. **Event Evaluation:** Animal Control, FDOT Maintenance, FHP, FWC, local law enforcement, Road Rangers, and TMC staff evaluates wildlife events for the following:
   a) Animal type.
   b) Aggressiveness.
   c) Distance to the edge of the pavement.

6.11.2 Event Notification and Response

1. **Animal Control Notification:** TMC staff coordinates with FHP and FWC regarding wildlife or any animals found within the roadway's right-of-way.

2. **Dispatching and Notification:** TMC staff notifies FHP and dispatches a Road Ranger to the location where live wildlife or animals have been reported or detected on or near the roadway.

3. **FDOT Maintenance Notification:** TMC staff notifies FDOT Maintenance or the asset maintenance contractor of any animal carcasses that need to be disposed of.

4. **DMS Notification:** TMC staff posts the following message format below for DMSs in both directions within 10 miles of any wildlife that may be loose on or near the roadway and posing safety concerns:

6.11.3 Event Management and Closure

1. **FDOT Maintenance Go-Ahead:** TMC staff ensures that procedures for the disposal of dead animal carcasses are carried out.

2. **Event Termination:** TMC staff visually confirms that the wildlife, animal, or responder is no longer on the scene before terminating the event. In the case of no visual, TMC staff requests a responder on the scene to confirm that the wildlife or animal has been removed or is no longer present on the scene.

Figure 27: Florida Panther Crossing the Roadway in South Florida

6.12 Wrong-Way Driving Events

A WWD event is when a motorist enters the roadway using an exit ramp rather than an entrance ramp, turns into a wrong lane at an intersection, turns into a wrong lane using median openings, or turns around in his/her travel lane and travels in the wrong direction, against the flow of traffic. A WWD poses extreme danger to motorists. TMC staff use ITS countermeasures (if applicable) along with CCTV cameras and DMS to quickly detect, warn motorists, and manage a WWD incident. See Appendix G for additional details on WWD procedures.

6.12.1 Active Event Planning, Monitoring, and Detection

1. **Planning:** TMC staff develop predefined response plans associated with each possible WWD event location. Response plans include:
   a) Naming TMC staff and stakeholder responsibilities.
   b) Which stakeholders are notified.
   c) What other countermeasures are used.

6.12.2 Event Notification and Response

1. **Alert Verification:** TMC staff verify all WWD alerts. If it is a verified WWD event, they at once activate the associated location response plan and make the event their highest priority.

2. **Alert Precaution:** If TMC staff is unable to verify the validity of the WWD alert, they take precautionary measures and proceed as though it has happened.

3. **DMS Notification:** TMC staff publishes the following message format for the limited-access roadway DMS at once upstream and within 10 miles of the WWD event:

WRONG WAY
DRIVER REPORTED
USE EXTREME CAUTION

6.12.3 Event Management and Closure

1. **Event Tracking:** TMC staff use CCTV cameras to either continually track the WWD or look for any sign of one if it is unconfirmed.
2. **Event Termination:** TMC staff terminates the WWD event if it has been confirmed that the driver turned around, stopped, crashed, or there has not been any sign of one for at least 10 minutes.

7 Managed Lanes Operations

7.1 Overview

Managed lanes are a Transportation System Management and Operations (TSM&O) solution for highway facilities or lanes where operational strategies are proactively implemented and managed in response to changing traffic conditions. The three primary management strategies used are vehicle eligibility, separation and access control, and tolling. Managed lanes can be implemented using any combination of these strategies to fit the needs of a facility. Managed lanes that include tolling for immediate or future use are called "express lanes."

1. **Vehicle Eligibility:** Registered buses and two-axle vehicles equipped with an active SunPass or other interoperable transponder are permitted to use the express lanes. Trucks with three or more axles and passenger vehicles pulling trailers or boats are prohibited.
2. **Separation and Access Control:** Express lanes access is permitted only at the designated ingress (egress) points. Express lanes may be separated from the general use lanes (GUL) or general toll lanes (GTL) with a barrier wall, buffer with express lane markers (ELMs), elevated (grade-separated), wide buffer, or pavement markings.
3. **Tolling:** Tolling uses a toll amount to maintain a performance threshold and promote free-flow travel. Per Florida Administrative Code (FAC) 14-100.003, free-flow conditions are established when vehicles can safely operate at speeds of 45 miles per hour (mph) or higher in the express lanes. No cash or TOLL-BY-PLATE payment is accepted in the express lanes.

   Three types of tolling are approved for use on Florida's express lanes.
   1. **Static:** A fixed toll amount is applied.
   2. **Time-of-Day:** A variable or fixed toll amount is applied during a certain time of day, typically during the morning and afternoon peak periods.
   3. **Dynamic:** Toll amounts are updated by Statewide Express Lanes Software (SELS) at a set interval to support free-flow conditions in the express lanes.

   There are two types of express lanes tolling environments.
   1. Express Lanes adjacent to GULs:
      a) The GULs are not tolled.
      b) The express lanes are tolled.
   2. Express Lanes adjacent to GTLs:
      a) The GTLs are tolled in accordance with a static toll.
      b) The express lanes have an additional toll.

   Vehicle Exemptions: Registered van pools, public transit buses, school buses, and over-the-road buses do not pay the toll. Registration and renewal for each vehicle are required annually.

7.2 Express Lanes Staff Responsibilities

Express lanes (EL) operators require additional training and responsibility above the TMC Operator responsibilities. The hiring of new EL operators is timed to have them trained and ready for express lanes opening to traffic.

Express Lanes Operations Schedule: Express lanes may operate 24 hours per day, during certain times of the day, and under seasonal hours depending on the traffic characteristics specific to the express lanes' facility. A minimum of one EL operator per express lane facility is required to cover the times

when tolling is in effect. A minimum of one EL Supervisor or Manager is staffed during weekdays, with sufficient coverage from at least one hour prior to the express lanes' stated a.m. peak period (i.e., time used for EL reports) until one hour beyond its stated p.m. peak period.

7.2.1 EL Operations Staff Responsibilities

EL Operator Responsibilities:

a) Operate the Statewide Express Lanes Software and SunGuide for the express lanes' facility.
b) Monitor the express lanes' facility.
c) Verify toll amounts are displayed correctly on the Toll Amount Dynamic Message Sign (TADMS) after every toll amount update.
d) Verify appropriate messaging on Lane Status Dynamic Message Sign (LSDMS).
e) Provide notification and verification of incidents.
f) TMC point of contact for incidents and events are posted in the express lanes' facility.
g) Dispatch Road Ranger Service Patrol and/or FHP for express lanes events.
h) Document and report on express lanes field device failures. Notification includes:
    i. EL Supervisor/Manager
    ii. TMC/ITS Maintenance
    iii. FDOT TMC/TMS&O Staff
i) Document and report on express lanes software failures. Notification includes:
    i. EL Supervisor/Manager
    ii. TMC IT Staff
    iii. FDOT TMC/TMS&O Staff
    iv. FTE
    v. FDOT Central Office TSM&O
j) Notify EL supervisors/managers and FDOT TMS&O Staff when an express lanes segment is operating below 45 mph, and when the facility is subsequently operating at free-flow conditions.
k) Serve as the primary point of contact for support for other district TMCs during events in the express lanes' facility.
l) Ensure shift change report for express lanes operations is complete and accurate for each shift worked.
m) Prepare or assist with the preparation of express lanes reports.
n) Coordinate express lanes and/or facility closure activities for maintenance and repair of ITS equipment, express lane marker repair/replacement, and/or property damage repair.

EL Operator Skill Set: The EL operator requires a skill set of understanding basic traffic flow theory and the relationship of the traffic conditions to the SELS tolling algorithm. The EL operator must also understand the impact that incidents and field equipment malfunctions have on the operations of the express lanes' facility.

EL Supervisor or Manager Responsibilities:

a) Oversee EL operations.
b) Evaluate and analyze performance metrics.
c) Conduct or oversee operational analyses.
d) Review and update SELS operational parameters (see Section 7.3.3 Operational Modes).
e) Conduct EL operations training.
f) Generate reports.
g) Assist with device troubleshooting and maintenance coordination.

h) Serve as a liaison between other district TMCs and/or other partnering agencies.

EL Supervisor or Manager Skill Set: The EL supervisor or manager requires a skill set for overseeing all EL operations, including advanced traffic flow theory and advanced knowledge of the SELS tolling algorithm. He/she must also possess proficient knowledge of EL operations guidelines and procedures.

7.3 Statewide Express Lanes (SELS) Software

SELS is the Department's tolling software on the State's express lane facilities. SELS is the operational interface used by the EL operators. SELS also posts toll amounts to the TADMSs in the field and transmits toll amounts to Florida's Turnpike Enterprise (FTE) Toll Amount Interface. Depending upon the tolling mode, SELS will calculate a toll amount, which the EL operator may be required to acknowledge in SELS and verify via CCTV camera images at the TMC. Refer to the *FDOT Traffic Engineering Manual (TEM) 2.42* for more information on signing for express lanes, including requirements for the static portion of the Toll Amount Sign (TAS) as well as the TADMS and LSDMS.

7.3.1 Lane Identification

A standard labeling structure and consistent naming convention for the express lanes' configuration in SELS is developed and documented to provide the EL Operator a point of reference when describing the location of ELs, GULs, or GTLs on one or more facilities.

7.3.2 Trip Tolls

Express lanes in Florida utilize trip tolling. Trip tolling promotes longer trips by enabling customers to lock in a toll amount for the entire trip upon entry into the facility. Trips are constructed by combining two or more subsequent downstream segment tolls. The sum of these segment tolls creates a trip toll. Trip tolls cannot be manually created in SELS. They are dependent on segment tolls.

7.3.3 Operational Modes

SELS has five modes of operation, two adjustment functionalities, and a start-up sequence available. EL operators are required to monitor SELS and manage the express lanes' facility in the appropriate mode.

Modes of Operation

1. **Dynamic:** This mode is the default operational mode for all dynamically tolled express lanes facilities. This mode is used until a situation arises that warrants a change in mode (e.g., express lanes closure). SELS calculates a toll amount based on current traffic conditions and can be configured for automatic approval.
2. **Time-of-Day (TOD):** This operational mode is used when the EL facility is open and dynamic mode is unavailable (e.g., when many detectors have failed, toll amounts are not calculated correctly) and traffic warrants use of the toll stored in the TOD table. The TOD mode requires EL operator interaction when switching from another operating mode to TOD mode. While in this mode, toll amounts are updated automatically based on the operating tolls stored in the SELS TOD table. There is a schedule in SELS that allows it to associate a different TOD table with each day of the week, and a different TOD table may be associated with all holidays. This mode can be configured to utilize automatic approval.
    i. TMC Staff analyzes, updates, and uploads TOD tables at a minimum of once per year. The analysis is typically based on the previous six months of posted toll

amounts and may need to be adjusted if there are atypical conditions such as seasonal variations.

3. **Manual:** This operational mode is typically an override mode that requires EL operator interaction. Manual mode allows the EL operator to set toll amounts manually by selecting from a predefined set of toll amounts. Toll amounts remain the same until the EL operator chooses a new toll or changes the operational mode.

   Manual mode is used only when:
   - Automated toll calculation does not produce an appropriate toll, and
   - There is no reliable traffic data and the TOD toll amount is not reflective of the day and time.

4. **Closed:** This operational mode is an override mode that requires EL operator interaction. The closed mode is used when the express lanes' facility is closed; resulting in no toll amount (or zero additional toll when adjacent to GTL) being charged to the customer and the message "**CLOSED**" posted to all TADMSs associated with the closure. The EL operator changes the operational mode to Closed and adjusts the effective time of the toll amount to a configurable time (typically 10 minutes) before the EL operator confirmed the incident. This time is relative to either:
   i. The time at which the dialog was opened by the operator if no event is associated before submitting the request, or
   ii. The starting time of the associated event.

   The operator may choose to set a different time if appropriate.[1] See Section 7.4.3 for additional express lanes closure guidelines.

5. **Zero Toll**: This operational mode is an override mode that requires EL operator interaction. Zero Toll mode is only applied during emergency evacuations when the express lanes' facility is open, but a $0.00 toll is being applied, and "**0.00**" is posted to all TADMSs associated with the evacuation route. Zero Toll mode must be associated with an event in SunGuide. Zero Toll mode sets SELS with a configurable effective time (typically 10 minutes) before the event reported time. This time is relative to either:
   i. The time at which the operator opened the dialog if no event is associated before submitting the request, or
   ii. The starting time of the associated event.

   The operator may choose to set a different time if appropriate. If no event is available at the time of override, the EL operator selects a dummy event and provides a justification in the comment field.

   Zero Toll mode is applied only:
   i. During evacuations, when the Governor of Florida has suspended tolls and/or under the direction of the FDOT or FHP.
   ii. When the EL operator is notified by the TSM&O Program Engineer, TSM&O Engineer- Freeways, and/or the Emergency Operations Center (EOC) to implement Zero Toll mode.

[1] An enhancement to be released in December 2019 will further adjust effective times of segments with no egress when the next downstream segment is closed. The adjustment will be relative to the downstream segment's closure time.

Zero Toll Mode is **NOT** applied:

i. During the non-tolled portions of the day on an express lanes facility that is implementing the use of "time-of-day tolling," meaning the tolls are only collected during the facility's peak period and all other times there is no toll.
ii. When traffic is being directed from the GULs or GTLs to the ELs by an on-scene law enforcement officer as a diversion around a crash or other incident.
iii. To encourage the use of the ELs.

Toll Adjustments: Toll adjustments require EL operator interaction. Two forms of toll adjustment are available: (1) on-going or (2) finite. This allows the EL operator to go back in time (up to two hours) and change the toll amount charged to the customer. This amount is constrained to be less than the toll amount that was posted on the TADMSs.

1. An on-going adjustment continuously replaces the posted toll amount with a lower toll amount while the adjustment continues.
2. A finite adjustment is for a specific interval based on a defined beginning and ending time set by the EL operator.

Under **Florida Statutes 338.166**, a customer shall be charged the minimum toll (i.e., retroactive minimum speed toll adjustment) when the average speed along a segment is less than 40 mph. SELS is currently configured to automate this specific toll adjustment, and no additional EL operator interaction is required.

Sign failures require a finite toll adjustment.

a) A TADMS is stuck displaying a toll that is lower than the desired toll, and it is the last TADMS on this approach. The segment or trip toll is adjusted to the lower toll stuck on the sign.
b) A TADMS is blank and is the only sign on an approach. Adjust the segment toll to the minimum toll.
c) All TADMSs at an approach are blank. Adjust the segment toll to the minimum toll.
d) The last TADMS on an approach is not displaying the toll properly and may be misinterpreted. Adjust the segment toll to the minimum toll.

A finite toll adjustment is effective prior to the time at which the problem requiring the toll adjustment is discovered. The default time proposed by SELS is used, unless it is suspected that the sign was incorrect at an earlier time. The SELS default value is the configured offset (usually 10 minutes) before the time at which the operator opened the dialog to request the adjustment. The operator may change the offset value before submitting the toll adjustment request.

No toll adjustments are necessary when:

a) A TADMS is stuck displaying a toll that is higher than the desired toll.
b) A TADMS is stuck displaying a toll that is lower than the desired toll, but a downstream sign on this same approach is displaying the correct toll.

c) A TADMS is blank, and another sign on this approach (whether upstream or downstream) is working properly.
d) A TADMS is not displaying the toll properly, and a downstream sign on this approach is properly displaying the correct toll.

Startup: When starting SELS, or when publishing a corridor, the TMC staff initializes the SELS software. This process allows the EL operator to start SELS in the correct mode, ensure the correct toll amount is being posted and charged and permits the EL operator to set interim toll amounts for the period when SELS was not running.

7.3.4 Detector Data Verification and Inclusion and Exclusion in the Calculation of the Toll Amount

Data is used to calculate the toll amount in SELS is periodically checked by TMC staff for accuracy. TMC staff compares volume data collected from field devices (i.e., traffic detectors) on any given express lanes segment to the volume data collected at the toll gantry for that segment. The FTE provides the volume data at the toll gantry, which serves as the baseline data. A percent error differential threshold (e.g., ±5.0%) is established and any detector within the segment that exceeds the established error differential threshold is "toggled off" within SELS (i.e., excluded) from use in calculating the toll amount. The device is subsequently reported to maintenance for recalibration. The device is "toggled on" once it meets (i.e., falls within) the established percent error.

7.3.5 Transit Time Configuration

The SELS toll amount algorithm updates at a configurable minimum frequency per SELS instance (once every 15, 10, or five minutes). Toll amounts are posted to the TADMS immediately. They are effective immediately if the new toll amount is equal to or less than the current effective toll amount. A new toll amount that is higher than a configurable transit time will delay the current effective toll. Transit times are configurable within SELS and must be calculated and configured for each segment.

Logic for Transit Time: The logic behind the use of transit time is based on the customer paying only the toll amount they see on the TADMS, or less. For any express lanes segment, the customer's transponder is "read" only at the toll gantry, not at their ingress location. To assure all customers entering an express lanes segment are charged what they saw on the TADMS, or less, the free-flow travel duration from the farthest location must be used.

Determination of Transit Time: Determine the free-flow travel duration between the closest TADMS of the farthest segment ingress (controlling ingress) to the toll gantry for that segment. Multiply the sum of the free-flow travel durations by three (3). The speed on the ingress ramp is not always the same as the segment speed on the freeway so the transit time must be the sum of travel durations instead of using the distance sum and free-flow speeds to calculate the transit time.

7.3.6 Express Lanes Reporting

Each district provides express lanes performance measure (PM) outputs to the Central Office TSM&O office or its designee (e.g., FTE). Specific express lanes PMs have been identified, and the district uses SELS reporting features to provide the required data. The PM outputs are provided monthly and annually for each operating express lane facility within the district.

7.4 Event Management

The purpose of this section is to supplement DMS guidelines and event management described previously in this document. The EL operator is responsible for managing events in the express lanes' facility. This requires coordination with other TMC operations staff that operate SELS and SunGuide software and the dispatching of emergency resources (e.g., FHP and Road Rangers).

7.4.1 Traffic and Roadway Monitoring

The EL operator monitors traffic conditions using CCTV cameras. The EL operator also monitors traffic conditions using SELS in accordance with Section 7.3. SELS interfaces with SunGuide to obtain speed and volume data from the express lanes' detectors.

Traffic Conditions: The EL operator monitors the express lanes for significant differences in traffic conditions from one detector station to the next as these may indicate a disruption of flow. Conditions to monitor between detector stations include:

a) A greater than 20% decrease in volume.
b) A greater than 30% decrease in speed.
c) A greater than 20% increase in occupancy.

If the differences above are observed, the EL operator identifies if an event is involved and evaluates if action is necessary.

Express Lanes DMS: The EL operator monitors all DMSs associated with the express lanes to ensure the toll amounts are being updated and all DMS are displaying the correct message. At a minimum:

a) Once every 15 minutes during off-peak hours of operation the EL operator verifies the TADMS and LSDMS.
b) After each toll amount update during peak hours of operation, the EL operator verifies the TADMS and LSDMS.

SELS automatically presents images of TADMS and LSDMS to the EL operator for his/her review after each toll update. Each TADMS and LSDMS can be configured to require verification after each update or to have verification be optional. The percentage of signs that do not require verification on every update can be configured, and SELS will select that percentage of optional signs and include in each verification cycle. At a minimum, the last TADMS and LSDMS on any approach require verification on every toll amount update interval. A record of verified signs is maintained for Customer Service toll inquiries.

Ingress and Egress: The EL operator monitors traffic at express lanes ingress and egress locations to identify and verify delays due to merging traffic. If delays are observed, the EL operator posts "CONGESTED" on the LSDMS.

7.4.2 Event Monitoring

Express lanes events are continuously monitored through CCTV cameras and via communication with Road Ranger Service Patrol, incident response, or the roadway maintenance contractor. Updated information is disseminated to local law enforcement agencies, FHP, and other agencies (e.g., FLATIS). All telephone communications are logged. CCTV cameras verify event messaging throughout the event duration.

7.4.3 Event Confirmation

CCTV cameras confirm events in the express lanes. If CCTV cameras are not available, the on-scene Road Ranger Service Patrol or Law Enforcement Officer must verify the event.

7.4.4 Event Duration Evaluation and Express Lanes Closure Implementation

Events in the express lanes are evaluated by the EL operator to estimate the duration of an event and determine if there is a need to initiate a closure of the facility. The event is continuously monitored during the event duration to implement an alternate type of facility closure if necessary.

Closure Definitions:

a) Soft Closure is defined as utilizing appropriate DMS to post standard closed messages and dispatching road ranger service patrol to the scene.
b) Hard Closure is defined as a physical blockage of the express lanes entrance utilizing Road Ranger Service Patrol, incident management, FHP, roadway maintenance, a gate, or a combination thereof.

When to Implement a Closure: The following express lanes closure options are implemented based on the criteria listed.

a) Normal Tolling Activities (i.e., no closure):
   - Events less than 30 minutes; and,
   - Event location has two or more express lanes with at least one travel lane accessible to vehicles; and,
   - Event does not involve a crash, police activity, emergency vehicles, emergency roadwork, reduced visibility, or flooding.
b) Soft Closure:
   - Events anticipated to be less than 30 minutes; and,
   - Event location consists of only one express lane; or
   - Event involves a crash, police activity, emergency vehicles, emergency roadwork, reduced visibility, or flooding.
c) Hard Closure:
   - Event anticipated being greater than 30 minutes but less than 60 minutes.
d) Hard Closure with Roadway Maintenance:
   - Event lasting longer than 60 minutes.
   - Roadway maintenance shall be notified to take over the responsibility of physically closing the express lanes; relieving the Road Rangers and/or incident responders from those duties.

Traffic Diversion into or out of the Express Lanes Facility: Only upon FHP request and FDOT approval will traffic be diverted into or out of the express lanes. The EL operator implements a hard closure and coordinates with the Road Ranger Service Patrol or roadway maintenance for the channeling of traffic.

Express Lanes Closure Initiation: At a minimum, the EL operator completes the following for any type of express lanes facility closure:

a) Implement Closed mode in SELS. SELS posts the default standard messages to the LSDMS and TADMS.
b) Manually post standard messages to all associated DMSs at the GUL or GTL stating the express lanes are closed.

7.4.5 Dissemination of Information

The SunGuide software response plan generator does not control the TADMS and LSDMS. SELS automatically posts messages to the TADMS and LSDMS related to the SELS tolling mode. Messages can be changed manually by posting a message through SunGuide or SELS. When manually posting a message, the EL operator only posts messages from the express lanes sub-library. Any full-matrix DMS (i.e., three-line GUL/GTL, arterial, or express lanes DMS) is operated through the SunGuide response plan generator. Once an event is identified within the express lanes' facility, the EL operator posts the messages as described below.

7.4.6 Standard Messaging Express Lanes Sub-Library

The following standard messaging options are available through the SunGuide express lanes sub-library for full-matrix DMS.

Single Segment: Standard messaging for all full-matrix DMS associated with express lane ingress(es) includes the following when a closure is required:

	Message #1	Message #2	Message #3
LINE 1	EXPRESS LANE(S)	EXPRESS LANE(S)	EXPRESS LANE(S)
LINE 2	CLOSED AT	CLOSED BEFORE	CLOSED BEYOND
LINE 3	<INTERCHANGE> [varies]	<INTERCHANGE> [varies]	<INTERCHANGE> [varies]

	Message #1	Message #2	Message #3
LINE 1	EXPRESS LANE(S)	EXPRESS LANE(S)	
LINE 2	CLOSED	CLOSED	
LINE 3	KEEP RIGHT	KEEP RIGHT (phase 1) DO NOT ENTER (phase 2)	

Multiple Segments: Standard messaging for full-matrix DMS that are associated with express lane ingresses (or prior to egresses within the express lanes) and when an incident occurs in a downstream segment includes the following when a closure is required:

	Message #1	Message #2	Message #3
LINE 1	EXPRESS LANE(S)	EXPRESS LANE(S)	EXPRESS LANE(S)
LINE 2	CLOSED FROM	CLOSED FROM (LOCATION)	TRAFFIC MUST
LINE 3	<LOCATION>TO <LOCATION>	TO <LOCATION>	EXIT TO <LOCATION>

Express-to-Express Direct Connect Ramps: Standard messaging for full-matrix DMS that are associated with express lane facility direct connect ramps are included the following when a closure is required:

	Message #1	Message #2	Message #3
LINE 1	EXPRESS RAMP TO	EXPRESS RAMP TO	
LINE 2	<LOCATION>	<LOCATION> CLOSED	
LINE 3	CLOSED	KEEP RIGHT (phase 1) DO NOT ENTER (phase 2)	

Lane Status Dynamic Message Signs (LSDMS): LSDMSs are used to notify the user when an express lane facility is closed as well as other warnings that may be relevant prior to entering the express lane or prior to accessing a direct connect ramp. There also may be situations when the LSDMS is used to notify the user that the express lanes are open.

Event management messages for the LSDMS include the following:

a) EXPRESS LN CLOSED
b) EXPRESS LNS CLOSED
c) EXPRESS LANES CLOSED
d) TOLLS ENFORCED
e) CONGESTED
f) EXPRESS LN OPEN
g) EXPRESS LNS OPEN
h) EXPRESS LANES OPEN

Toll Amount Dynamic Message Signs (TADMS): TADMSs are the block insert style DMS that shows the toll amount the customer pays to reach the destination listed on the static portion of the TAS. The TADMS may be used to notify the user if the express lanes are open without tolling or closed.
The TADMS status messages include the following:

a) CLOSED
b) OPEN

7.4.7 Congestion Management

Express lanes are monitored using EL speed graphs within SELS to identify congestion. Congestion in the express lanes is verified by CCTV cameras or a Road Ranger Service Patrol. Congestion in the express lanes is documented and managed as a congestion event in SunGuide and SELS. The threshold to create a congestion event is based on a calculated traffic density (TD) determined by the District Traffic Operations Engineer. SELS automatically requests the congestion message once TD is 32 or greater.

LSDMS Messaging: Standard messaging for congestion is utilized. LSDMS shows “CONGESTED” during a congestion-related event. Once congestion has reduced (i.e., TD lower than the threshold), all LSDMS show “TOLLS ENFORCED.”

7.4.8 Special-Event Traffic

Excess traffic congestion in the express lanes may occur due to special-event traffic. This congestion is not a common occurrence and may be attributed to police motorcades or escorts or special events within the region. Procedures are developed to manage special event traffic. The ITS Operations Manager or higher may be authorized to coordinate and implement a special event in the express lanes.

7.5 Traffic Incident Management (TIM)

The purpose of this section is to describe the supplemental road ranger service patrol and incident response coordination guidelines set forth in a previous chapter. The TMC Operating Guidelines for TIM in the express lanes are influenced by separation type (e.g., buffer separation) and the TIM instituted by each TMC.

7.5.1 TIM Programs

Districts create incident management plans during the planning process for express lanes, typically upon completion of the facility's Concept of Operations (ConOps). Districts identify TIM programs early in this process for budgeting and resource allocation. TMC staff may require additional training dependent on the TIM program deployed. Districts choose a combination of programs to ensure safe and rapid clearance of express lanes facilities.

Current TIM programs include:

Road Ranger Service Patrol: Additional Road Ranger Service Patrol is programmed as dedicated resources for each express lanes' facility. At a minimum, a Road Ranger Service Patrol provides a "first on scene" emergency resource to assist TMC staff in assessing the event and coordination with emergency responders.

FHP: Dedicated FHP is programmed for each express lanes' facility. A contract between the district and FHP is established with the local FHP Troop to provide additional dedicated FHP officers to patrol the express lanes. FHP also provides enforcement within the facility (e.g., speeding, crossing over Express Lane Markers, and vehicle occupancy).

Incident Response Vehicle (IRV): Also known as the Severe Incident Response Vehicle (SIRV) program, this is a TIM program implemented by a district to provide specially trained staff in specially equipped vehicles who act on the district's behalf as an incident command at the scene. IRV personnel have police, firefighter, or EMS backgrounds and experience, and possess the training and skills above that of a Road Ranger Service Patrol. Training includes:

a) Incident command.
b) Advanced management of traffic.
c) Incident clearance.
d) Severe incident documentation.
e) Emergency vehicle operation.
f) First responder functions and responsibilities.
g) Spill mitigation.
h) State Law Enforcement Radio System radio communication.

7.5.2 Incident Clearance

TMC staff coordinates with the Road Ranger Service Patrol, FHP, and incident response personnel to provide quick clearance of express lanes facilities. As part of each facility's incident management plan, the district identifies safe and secure locations to relocate disabled vehicles from express lanes, GULs/GTLs, and shoulders. Examples include:

a) Accident investigation sites.
b) GUL/GTL off-ramp shoulders.
c) Park-and-Ride lots.

7.5.3 TIM Vehicle Staging Areas

As part of each facility's incident management plan, the district identifies safe and secure locations to stage dedicated express lane TIM vehicles. These locations are upstream of an ingress location with proper distance to safely merge from the staging area to the express lanes' facility. Shoulders within the express lanes may also be used provided they are standard width and do not create sight distance issues for motorists (i.e., along horizontal or vertical curves).

7.5.4 TIM Team

Each TMC participates in meetings with FHP, road ranger service patrol, local emergency responders, and other agencies and stakeholders involved with the operations and maintenance of the express lanes. Meetings include discussion of the following:

a) Incident clearance procedures.
b) Team building.
c) Post-event assessment.
d) Lessons learned.

TMC Standard Operating Guidelines

ITS Cybersecurity Guidelines

Appendix A

Technical Memorandum

Intelligent Transportation Systems

Network and Cybersecurity Standards

Version 1.0

May 8, 2019

Prepared for:

Florida Department of Transportation
TSM&O Program

605 Suwannee Street, M.S. 90

Tallahassee, Florida 32399-0450

(850) 410-5600

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APPENDIX A 10

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Figure 1 – Core, Distribution, Access Topology Diagram 2

List of Acronyms and Abbreviations

DR.....Disaster Recovery

F.A.C ..... Florida Administrative Code

FDOT .....Florida Department of Transportation

HTTPS ..... Hypertext Transfer Protocol Secure

IEEE ..... Institute of Electrical and Electronics Engineers

IP .....Internet Protocol

ISIS.....Intermediate System to Intermediate System

ITS .....Intelligent Transportation Systems

NEC.....National Electrical Code

NMS .....Network Management Systems

OIT .....Office of Information Technology

OOB .....Out-of-Band

QoS.....Quality of Service

RSTP .....Rapid Spanning Tree Protocol

RTMC..... Regional Transportation Management Center

SCP ..... Secure Copy Protocol

SFTP..... Secure File Transfer Protocol

SNMP ..... Simple Network Management Protocol

SSH .....Secure Shell

TMC.....Transportation Management Center

TSM&O..... Transportation Systems Management and Operations

UPS.....Uninterruptible Power Supply

VPN .....Virtual Private Network

1 Background

All Florida Department of Transportation (FDOT) districts are responsible for intelligent transportation systems (ITS) networking and cybersecurity practices inside their region. Although all districts have been implementing and maintaining similar, well-built network infrastructures, there are no standards to provide guidance for the network infrastructures across the state. This has resulted in dissimilar networking systems, procedures, protocols, and cybersecurity conventions among the districts.

2 Purpose

The purpose of this document is to provide standardized ITS networking and cybersecurity guidance for the FDOT districts. The following guidance is intended to facilitate high network availability, minimize troubleshooting efforts, safeguard peering network compatibility, mitigate cybersecurity risks, and ensure successful data continuity in the event of disasters. In addition, these guidelines will establish a unified networking and cybersecurity foundation across all FDOT ITS networks.

3 Definitions

Critical Systems –

- SunGuide® servers or clusters
- Core, distribution, and access network equipment functioning at Layers 2 and 3 (routers, switches, and firewalls) of the Open Systems Interconnection model
- Wide-area fiber-optic transmission systems
- Aggregated storage systems and controller equipment
- Network management systems (NMS)
- Systems participating in the notification of transportation incidents to FDOT management

Hypervisor – A hypervisor (or virtual machine monitor) is computer software, firmware, or hardware that creates and runs virtual machines. The computer on which a hypervisor runs one or more virtual machines is called a host machine, and each virtual machine is called a guest machine.

Virtualized Systems or Virtual Machines – These are servers running application software and/or databases housed on a hypervisor capable hardware platform. The hardware architecture is robustly outfitted with processors, storage, and random-access memory to allow multiple software-based emulated server instances to be run on a single hardware platform.

4 Networking and Hardware

4.1 Networking

All networks shall utilize a “Core-Distribution-Access” network model. Note that the core and distribution layer can be collapsed into one, known as a “collapsed-core.”

4.1.1 Core

The core should be highly available and redundant to provide sub-second failover. The core aggregates traffic from the distribution layer devices and should avoid using central processing unit-intensive rules such as packet inspection or quality of service (QoS).

4.1.2 Distribution

The distribution layer is the aggregation point for all access-layer switches and defines a summarization edge for network protocols (Intermediate System to Intermediate System [ISIS], Spanning Tree, and Rapid Spanning Tree, at Layer-2; and Border Gateway Protocol and Open Shortest Path First at Layer-3). Some distribution points may also perform access functions and provide similar services offered at the edge, such as identity control and access management, port security, and firewalling or access control lists.

4.1.3 Access

The access layer is at the end-node or edge of the network. End devices, such as cameras, vehicle detection devices, and other ITS and traffic control devices, shall connect directly to access switches.

QoS marking, port security, and network identity services are performed at this layer.

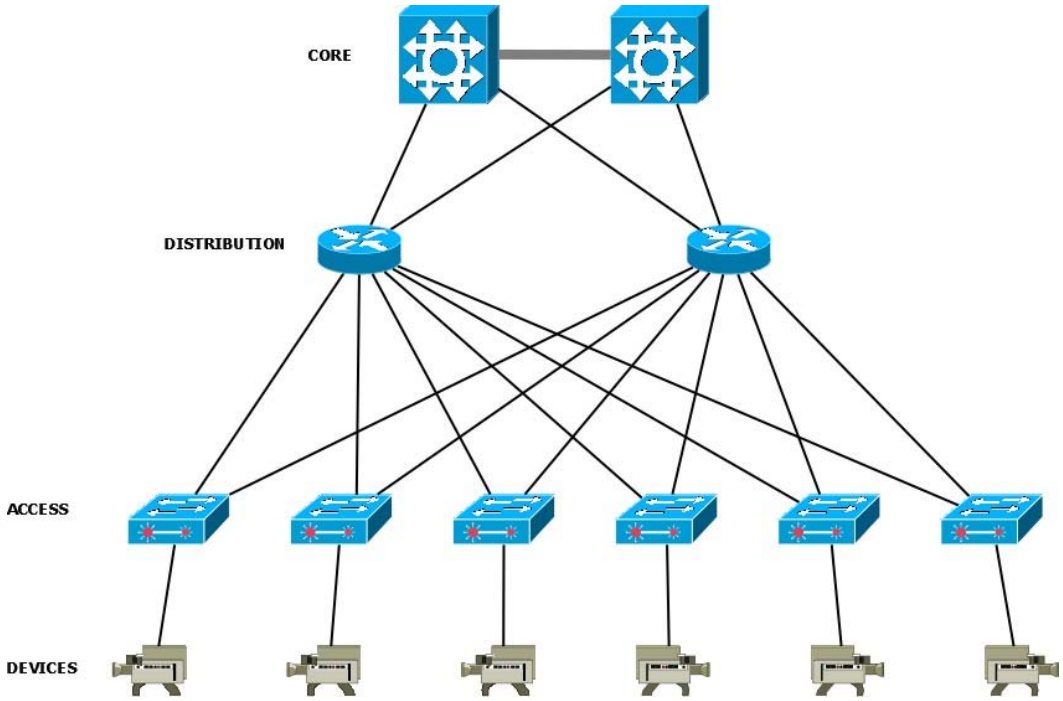

Figure 1 – Core, Distribution, and Access Topology Diagram

4.2 Redundancy

4.2.1 All networks shall be configured to have at least two redundant core switches.

4.2.2 All critical network equipment shall have redundant power supplies plugged into separate power circuits.

4.2.3 All instances of the Layer-2 Spanning Tree Protocol shall have a primary and backup root bridge manually configured (instead of allowing the network to hold automatic elections). The "core" switches at the regional transportation management center (RTMC) are typically configured as the primary and backup root bridges.

4.2.4 Where possible and applicable, network devices shall have a redundant supervisor or management cards.

4.2.5 Firewalls at the RTMC should have redundancy using a clustered or high-availability configuration.

4.2.6 At RTMCs and transportation management centers (TMCs), separate fiber backhauls should enter the building at different sides for redundancy.

4.2.7 All RTMC servers shall have at least two network interface ports to provide redundancy.

4.2.8 Where possible, network topologies should have at least one redundant/failover path.

4.3 Multicast

4.3.1 Multicast shall be configured for Protocol Independent Multicast-Sparse Mode operation.

4.3.2 All Layer-2 switches shall support Internet Group Management Protocol version 2.

4.3.3 All Layer-3 devices shall be able to implement Multicast Source Discovery Protocol.

4.3.4 All Internet Protocol (IP) cameras shall be able to provide a minimum of two multicast streams: a high-bandwidth and a low-bandwidth stream. Cameras shall be tested in a lab environment such as the Traffic Engineering Research Laboratory and be on the FDOT Approved Products List before being deployed in the field. Multicast streaming software such as Video LAN Player should be used to test these capabilities.

4.3.5 Where possible, IP cameras shall be configured to use the H.264 encoding format.

4.4 Layer-2 Considerations

4.4.1 Where possible, large broadcast domains (Layer-2 Virtual Local Area Networks or IP subnets) shall be segmented with Layer-3 devices.

4.4.2 All Layer-2 switches shall comply with the Rapid Spanning Tree Protocol (RSTP) standard (Institute of Electrical and Electronics Engineers [IEEE] 802.1w), and RSTP should be enabled when available. Proprietary enhancements to RSTP should also be considered for implementation (such as RUGGEDCOM's eRSTP).

4.4.3 Within the RTMCs, consider migration from a spanning tree-based Layer-2 network to one based on the link state routing of Layer-2 frames (Transparent Interconnection of Lots of Links, ISIS, or Shortest Path Bridging). There are also proprietary versions of these technologies such as Cisco's FabricPath, Juniper's Virtual Chassis and Virtual Chassis Fabric, Extreme Network's Fabric Connect, and Brocade's Virtual Cluster Switching.

4.5 Firmware

4.5.1 Network equipment shall be checked for updated firmware annually (see numbered paragraph 5.1.3).

4.6 Network Management, Monitoring, and Notification

4.6.1 NMS software shall be used for proactive monitoring, polling, and alarm notifications of overall network health. The NMS shall support the latest generally available versions of Secure Shell (SSH), Simple Network Management Protocol (SNMP) v2, and SNMP v3. The NMS shall be able to receive SNMP traps, send SNMP queries, monitor devices, and generate notifications for alarms.

4.6.2 Where available, SNMP shall be used on all network devices to send traps to the NMS for proactive environmental and hardware monitoring.

4.6.3 Where possible, and at critical field sites, out-of-band (OOB) access and remote power management should be employed. OOB access should be a digital subscriber line, broadband, or Long-Term Evolution. OOB access shall be routed through a firewall at the field site.

4.6.4 Each district shall have within the core infrastructure, a Syslog server capable of capturing event logs from equipment supporting the Syslog feature. Syslog data shall be included in a backup/disaster recovery plan, and Syslog data shall be retained for a minimum of 30 days.

4.7 Equipment Maintenance

4.7.1 Network equipment hardware (switches, firewalls, load-balancers, etc.) should be replaced every seven years to prevent “end-of-life” or “end-of-support” hardware replacement issues, or “out-of- sight, out-of-mind” neglect. Please reference the ITS Equipment Replacement worksheet in Appendix A.

4.7.2 Network routing (Layer-3) equipment shall be replaced every ten years.

4.8 Miscellaneous

4.8.1 IP Addressing: IP address blocks for the districts’ ITS networks shall be coordinated with and assigned from the Central Office. Districts shall use IP address space allocated by the Central Office to assign for use within their territory for their own use, and the partners within their territory. Should a district run low on assignable address space for network devices within the district or for partners they support, the district shall request additional address space from the Central Office.

4.8.1.1 Shared device control and access: Districts which share device control and access across territorial boundaries shall coordinate device IP address assignments among themselves and assign device addresses to equipment which best fit the operational needs of the Districts involved.

4.8.2 Where possible, servers should be migrated from physical machines to virtual machines. Virtual machines can be re-deployed quickly on new hardware in the event of a failure.

4.8.3 Remote power management devices shall have a built-in firewall, secure shell (SSH), and Hypertext Transfer Protocol Secure (HTTPS) capabilities.

4.8.3 Where possible, network backbones shall begin migrating towards 10Gb/s speeds.

4.9 Disaster Recovery

4.9.1 Critical systems (including virtualized systems) and files shall be backed up and random single-file restore-tested daily, to include at a minimum:

4.9.1.1 Weekly full backups.

4.9.1.2 Each district shall determine retention of all backups to meet its requirements.

4.9.2 Annual restoration tests of virtual machines.

4.9.3 RTMCs shall have a physically separate disaster recovery (DR) site capable of full systems failover within four (4) hours. All systems and networking equipment at the DR site shall be powered on and kept up to date with configuration changes, firmware, etc. The DR site shall be at least a category three hurricane-rated building.

4.9.4 When possible, DR failover should be practiced at least annually and should include a laminated, hard copy DR Procedure manual for each staff person involved. Procedure manuals shall be reviewed during the annual test and updated as required. A hard copy of procedure manuals shall be stored off-site as a backup copy.

4.9.5 Cloud-based storage for primary backups is not recommended, and FDOT resources should be used to house backup data.

4.10 Failover Testing

4.10.1 Critical systems and core networks should be tested for failover annually. A postmortem analysis of annual failover tests shall be provided to the FDOT District Traffic Operations Engineer. Post- mortem analyses shall include a “lessons learned” section to formulate improvements to failover processes.

4.11 Facility Power

4.11.1 RTMC/TMC electrical power shall be provided via a three-phase service from the local utility servicing the facility.

4.11.2 At the RTMC, electrical power must have a “circuit A” and “circuit B” routed to separate power distribution panels.

4.12 Emergency Power

4.12.1 At the RTMC, all power systems must be routed through a sufficiently sized uninterruptible power supply (UPS) battery plant to provide uninterrupted power to critical systems during utility power failures and emergency power generator start-up.

4.12.2 All UPS equipment shall have sufficient working batteries, which shall be replaced if faulty or at the end of life.

4.12.3 All building or shelter grade UPS or battery plant systems shall be on a maintenance plan.

4.12.4 The RTMC/TMC shall have a generator backup sufficiently sized to run critical services for a minimum of seven days without commercial power.

4.12.5 RTMC/TMC generators shall be exercised weekly.

4.12.6 Where possible, roadside generators that supply backup power to critical hub sites and/or ITS infrastructure on a major freeway or arterial corridor shall be deployed to maintain power for these systems during prolonged power outages.

4.12.7 Roadside generators shall be exercised monthly (at a minimum).

4.12.8 A maintenance plan shall cover all generators.

4.13 Grounding and Surge Protection

4.13.1 All field sites shall have proper grounding according to the current National Electrical Code (NEC) specifications.

4.13.2 All RTMC/TMCs shall have proper grounding (grounding arrays are preferable) according to current NEC specifications.

4.13.3 For Power-over-Ethernet powered field devices that are exposed to the elements, grounding shall be maintained near the device and within the cabinet.

4.13.4 All field network equipment shall use surge protection devices for all non-fiber optic network cables.

4.13.5 All field network equipment shall have power routed through a UPS on-site.

4.14 Support and Maintenance

4.14.1 All critical equipment and systems shall have an active support and maintenance contract. The contract shall cover technical support, software updates, and hardware replacement, where applicable. Where possible, a support and maintenance contract shall include on-site, phone, and email support. Hardware replacement options shall be within 10 to 30 business days, or better (such as advanced replacement).

4.14.2 If a support and maintenance contract is written with a third party (value-added reseller or maintenance contractor) and not the equipment manufacturer, the third-party maintenance contractor should stock spare equipment equivalent to 10% of the deployed product(s).

5 Cybersecurity

5.1 Networking

5.1.1 All Layer-2 and Layer-3 equipment shall have the default administrator account and password changed upon installation. Use of default credentials in the production network environment is prohibited.

5.1.2 Each administrative user will have their own administration account to provide elevated privileges for operations, administration, management, and provisioning (OAMP).

5.1.3 Administration accounts shall employ strong password standards and preferably rely on RADIUS, TACACS+, or similar technology for authentication and authorization. The strong password standard shall align with the current FDOT Office of Information Technology's (OIT) password standard.

A. Must be a minimum of eight characters in length
B. Must be different than the last 24 passwords used
C. Must contain at least one character from three of the following four categories:
   i. Uppercase English characters (A-Z)
   ii. Lowercase English characters (a-z)
   iii. Numbers (0-9)
   iv. Non-alphanumeric special characters of: ~ ! @ # $ % ^ & * _ - + = ` | \ ( ) { } [ ] : ; " ' < > , . ? /

D. Must ***not*** contain the User Account (User ID) or parts of the user's full name (first and last name) that exceed two consecutive characters
   i. Must be changed every 65 days

5.1.4 All networking equipment shall be kept updated with the latest generally available firmware release that has been tested to not affect production systems adversely.

5.1.5 Where possible, access to network equipment shall use encrypted communications, such as:

A. SSH (in lieu of Telnet)
B. HTTPS (in lieu of HTTP)
C. Secure Copy Protocol (SCP) or Secure File Transfer Protocol (SFTP) (in lieu of File Transfer Protocol or Trivial File Transfer Protocol)

5.1.6 All unused network interfaces on Layer-2 and Layer-3 equipment shall be disabled, except for designated "technician access" ports.

5.1.7 Pursuant to section 74.2 Florida Administrative Code (F.A.C.), any interface used for interconnection of discrete networks (e.g., ITS infrastructure to the Internet, media outlets, other municipal ITS partners) shall be secured with a firewall or unified threat management system that includes a firewall.

5.1.8 Pursuant to section 74.2 F.A.C, the implementation of intrusion prevention techniques or hardware shall be implemented for any interface connected to the Internet. Web filtering and anomalous activity notification and reporting shall also be implemented. Institute port-based network access control (IEEE 802.1x), MAC address or IP-MAC filtering, and security on Layer-2 equipment to prevent attachment of unauthorized devices on the local area network.

5.1.10 Documentation of outside fiber-optic cable plants and network addressing information are considered sensitive, confidential information. Documentation containing this type of information shall be created,

modified, and stored only on FDOT-owned computers and servers. This confidential information can only be shared with non-FDOT staff (contractors and consultants) on a need-to-know basis. Non-FDOT employees with a legitimate need-to-know basis must be employed by an FDOT contractor or consultant holding an active contract with the Department at the time the information is disclosed. Sharing electronic copies of the data shall occur via the FDOT File Transfer Appliance, and not be transmitted via electronic mail.

5.1.10.1 Any shared copy of this type of information with a non-FDOT employee must be returned to the Department deleted or destroyed following its intended use. In the case of updating existing documentation, the modified copy shall be returned to FDOT-owned storage medium, and the contractor's copy shall be deleted or destroyed.

5.1.11 All archived network equipment configuration files shall be stored securely.

5.1.11.1 Configuration files shall be retrieved via encrypted communications (SSH, SCP, or SFTP) and stored as an encrypted file in a restricted-access folder on an out-of-band network management server requiring least-privilege based access control.

5.2 Virtual Private Networking

5.2.1 Audit logging of devices and users connecting to the ITS network via virtual private network (VPN) access.

5.2.2 Employ per user- or user group-based access policies for VPN access to only the systems/devices required.

5.2.3 Consider using host checking technologies in the VPN appliance (if supported by the hardware/software) to verify that systems used to connect via VPN are up to date with patches and anti-malware definitions.

5.2.4 Require strong password standards for all VPN user accounts. The strong password standards shall align with the current FDOT OIT password standard.

5.3 System Configurations

5.3.1 Exercise due diligence to ensure business continuity. Patches, bug fixes, security updates, and similar software enhancements shall be tested and vetted in a virtual environment or testbed platform to ensure that production systems will not be adversely affected.

5.3.2 Run the current revision of installed operating systems, including all released security patches, on all production computer systems. Operating systems shall be kept current, either automatically, or via centralized management that applies updates after testing to ensure the production environment is not adversely impacted.

5.3.3 Run a current anti-malware protection software product on all production computer systems. Anti-malware products shall be kept current automatically, or via centralized management that applies updates after they are manually vetted for the environment.

5.3.4 Employ the principle of least privilege on file-storage systems to ensure users are unable to access sensitive data outside of their responsibilities.

5.3.5 Employ user groups and group policy objects on active directory-based systems to ensure the principle of least-privilege access rights.

5.3.6 Require strong password standards for all user accounts. The strong password standard shall align with the current FDOT OIT password standard.

5.4 Incident Response and Reporting

5.4.1 All potential or confirmed breaches or security incidents shall be immediately brought to the attention of the RTMC's Operations Manager, the ITS Network Manager, the State Transportation Systems Management and Operations (TSM&O) Program Engineer, and the Information Security Management Office. In the event an RTMC Operations Manager and ITS Network Manager are consultants, an FDOT Manager must also be notified.

5.4.2 Promptly notify key personnel when a cybersecurity-related service outage affects the RTMC's ability to monitor the transportation infrastructure. Notification (email or phone call) of such scenarios shall include, at a minimum, the following personnel: RTMC Operations Manager, ITS Network Manager (if an FDOT employee), District Traffic Operations Engineer, State TSM&O Program Engineer, District Public Information Officer, District Director of Operations, and the District Secretary.

5.5 Physical Security

5.5.1 All ITS equipment shall be installed within a secured area.

5.5.2 All above-ground power and communications cables shall be protected in conduit according to FDOT specifications.

5.5.3 All Layer-2 and Layer-3 equipment shall be installed in a secured, restricted access area, accessible only by authorized personnel where access is automatically logged. Where possible, the use of proximity cards and/or cyber keys is encouraged. Physical access control systems can generate logs (e.g., a door intrusion alarm on a roadside cabinet), and by the equipment itself by logging site access via sign-on information.

5.5.4 Consider using IP cameras with alarm capabilities to monitor access within critical field sites.

Fiscal Year 2017/2018 - 2026/2027 End of Life Cycle ITS Replacement Cost Estimate

	Category	Pay Item Number	Description	Fiscal Year 2017/2018			Fiscal Year 2018/2019			Fiscal Year 2019/2020			Fiscal Year 2020/2021			Fiscal Year 2021/2022			Fiscal Year 2022/2023			Fiscal Year 2023/2024			Fiscal Year 2024/2025			Fiscal Year 2025/2026			Fiscal Year 2026/2027			Life Cycle (years)
				Price	# of Dev.	Total	Price	# of Dev.	Total	Price	# of Dev.	Total	Price	# of Dev.	Total	Price	# of Dev.	Total	Price	# of Dev.	Total	Price	# of Dev.	Total	Price	# of Dev.	Total	Price	# of Dev.	Total	Price	# of Dev.	Total	
Emergency Generators	Freeway	639-4	EMERGENCY GENERATOR - PORTABLE 6 KW, INCLUDING MAINTENA	$6,000			$6,162			$6,336			$6,498			$6,660			$6,840			$7,032			$7,236			$7,452			$7,686			18
		639-5-1	EMERGENCY GENERATOR - PERMANENT UP TO 25 KW, INCLUDING ALL NECESSARY COMPONENTS	$20,000			$20,540			$21,120			$21,660			$22,200			$22,800			$23,440			$24,120			$24,840			$25,620			18
		639-5-2	EMERGENCY GENERATOR - PERMANENT 25 - 50 KW, INCLUDING ALL NECESSARY COMPONENTS	$35,000			$35,945			$36,960			$37,905			$38,850			$39,900			$41,020			$42,210			$43,470			$44,835			18
		639-5-	EMERGENCY GENERATOR - PERMANENT 50 - 100 KW, INCLUDING ALL NECESSARY COMPONENTS	$80,000			$82,160			$84,480			$86,640			$88,800			$91,200			$93,760			$96,480			$99,360			######			18
	Arterial	639-4	EMERGENCY GENERATOR - PORTABLE 6 KW, INCLUDING MAINTENA	$6,000			$6,162			$6,336			$6,498			$6,660			$6,840			$7,032			$7,236			$7,452			$7,686			18
		639-5-1	EMERGENCY GENERATOR - PERMANENT UP TO 25 KW, INCLUDING ALL NECESSARY COMPONENTS	$20,000			$20,540			$21,120			$21,660			$22,200			$22,800			$23,440			$24,120			$24,840			$25,620			18
		639-5-2	EMERGENCY GENERATOR - PERMANENT 25 - 50 KW, INCLUDING ALL NECESSARY COMPONENTS	$35,000			$35,945			$36,960			$37,905			$38,850			$39,900			$41,020			$42,210			$43,470			$44,835			18
		639-5-	EMERGENCY GENERATOR - PERMANENT 50 - 100 KW, INCLUDING ALL NECESSARY COMPONENTS	$80,000			$82,160			$84,480			$86,640			$88,800			$91,200			$93,760			$96,480			$99,360			######			18
	Express	639-4	EMERGENCY GENERATOR - PORTABLE 6 KW, INCLUDING MAINTENA	$6,000			$6,162			$6,336			$6,498			$6,660			$6,840			$7,032			$7,236			$7,452			$7,686			18
		639-5-1	EMERGENCY GENERATOR - PERMANENT UP TO 25 KW, INCLUDING ALL NECESSARY COMPONENTS	$20,000			$20,540			$21,120			$21,660			$22,200			$22,800			$23,440			$24,120			$24,840			$25,620			18
		639-5-2	EMERGENCY GENERATOR - PERMANENT 25 - 50 KW, INCLUDING ALL NECESSARY COMPONENTS	$35,000			$35,945			$36,960			$37,905			$38,850			$39,900			$41,020			$42,210			$43,470			$44,835			18
		639-5-	EMERGENCY GENERATOR - PERMANENT 50 - 100 KW, INCLUDING ALL NECESSARY COMPONENTS	$80,000			$82,160			$84,480			$86,640			$88,800			$91,200			$93,760			$96,480			$99,360			######			18
Vehicle Detection System	Freeway	660-3	VEHICLE DETECTION SYSTEM - MICROWAVE, INCLUDING SENSOR, CABINET EQUIPMENT	$5,000			$5,135			$5,280			$5,415			$5,550			$5,700			$5,860			$6,030			$6,210			$6,405			18
		660-4	VEHICLE DETECTION SYSTEM - VIDEO DETECTOR, INCLUDING CAMERA, CABINET EQUIPMENT, SINGLE CAMERA	$3,800			$3,903			$4,013			$4,115			$4,218			$4,332			$4,454			$4,583			$4,720			$4,868			18
		660-5	WIRELESS MAGNETOMETER SENSOR/POD,	$900			$924			$950			$975			$999			$1,026			$1,055			$1,085			$1,118			$1,153			18
		660-5	WIRELESS MAGNETOMETER RADIO, CABINET EQUIPMENT	$2,920			$2,999			$3,084			$3,162			$3,241			$3,329			$3,422			$3,522			$3,627			$3,741			18
		660-6	VEHICLE DETECTION SYSTEM- AVI, BLUETOOTH, INCLUDES CABINET EQUIPMENT	$4,070			$4,180			$4,298			$4,408			$4,518			$4,640			$4,770			$4,908			$5,055			$5,214			7
	Arterial	660-3	VEHICLE DETECTION SYSTEM - MICROWAVE, INCLUDING SENSOR, CABINET EQUIPMENT	$5,000			$5,135			$5,280			$5,415			$5,550			$5,700			$5,860			$6,030			$6,210			$6,405			18
		660-4	VEHICLE DETECTION SYSTEM - VIDEO DETECTOR, INCLUDING CAMERA, CABINET EQUIPMENT, SINGLE CAMERA	$3,800			$3,903			$4,013			$4,115			$4,218			$4,332			$4,454			$4,583			$4,720			$4,868			18
		660-5	WIRELESS MAGNETOMETER SENSOR/POD,	$900			$924			$950			$975			$999			$1,026			$1,055			$1,085			$1,118			$1,153			18
		660-5	WIRELESS MAGNETOMETER RADIO, CABINET EQUIPMENT	$2,920			$2,999			$3,084			$3,162			$3,241			$3,329			$3,422			$3,522			$3,627			$3,741			18
		660-6	VEHICLE DETECTION SYSTEM- AVI, BLUETOOTH, INCLUDES CABINET EQUIPMENT	$4,070			$4,180			$4,298			$4,408			$4,518			$4,640			$4,770			$4,908			$5,055			$5,214			7
	Express	660-3	VEHICLE DETECTION SYSTEM - MICROWAVE, INCLUDING SENSOR, CABINET EQUIPMENT	$5,000			$5,135			$5,280			$5,415			$5,550			$5,700			$5,860			$6,030			$6,210			$6,405			18
		660-4	VEHICLE DETECTION SYSTEM - VIDEO DETECTOR, INCLUDING CAMERA, CABINET EQUIPMENT, SINGLE CAMERA	$3,800			$3,903			$4,013			$4,115			$4,218			$4,332			$4,454			$4,583			$4,720			$4,868			18
		660-5	WIRELESS MAGNETOMETER SENSOR/POD,	$900			$924			$950			$975			$999			$1,026			$1,055			$1,085			$1,118			$1,153			18
		660-5	WIRELESS MAGNETOMETER RADIO, CABINET EQUIPMENT	$2,920			$2,999			$3,084			$3,162			$3,241			$3,329			$3,422			$3,522			$3,627			$3,741			18
		660-6	VEHICLE DETECTION SYSTEM- AVI, BLUETOOTH, INCLUDES CABINET EQUIPMENT	$4,070			$4,180			$4,298			$4,408			$4,518			$4,640			$4,770			$4,908			$5,055			$5,214			7
Video Equipment/ Network Devices	Freeway		CCTV CAMERA LOWERING DEVICE	$6,242			$6,411			$6,592			$6,760			$6,929			$7,116			$7,316			$7,528			$7,753			$7,996			20
		682-1	CCTV CAMERA, IP, HIGH DEFINITION, INCLUDES CABINET EQUIPMENT	$4,910			$5,043			$5,185			$5,318			$5,450			$5,597			$5,755			$5,921			$6,098			$6,290			18
		682-1	CCTV CAMERA, IP, THERMAL HYBRID, INCLUDES CABINET EQUIPMENT	$22,185			$22,784			$23,427			$24,026			$24,625			$25,291			$26,001			$26,755			$27,554			$28,419			18
		684-7	LAYER 3 SWITCH "EDGE"	$2,994			$3,075			$3,162			$3,243			$3,323			$3,413			$3,509			$3,611			$3,719			$3,835			18
		684-1	MANAGED FIELD ETHERNET SWITCH - LAYER 2	$1,593			$1,636			$1,682			$1,725			$1,768			$1,816			$1,867			$1,921			$1,979			$2,041			7
		684-2	DEVICE SERVER, 4-8 PORT MODEL	$591			$607			$624			$640			$656			$674			$692			$713			$734			$757			7
		684-5	MEDIA CONVERTER	$550			$565			$581			$596			$611			$627			$645			$663			$683			$705			7
		684-6	WIRELESS COMMUNICATION DEVICE, LICENSED WIRELESS POINT-TO-POINT SYSTEM	$3,700			$3,800			$3,907			$4,007			$4,107			$4,218			$4,336			$4,462			$4,595			$4,740			5
	Arterial		CCTV CAMERA LOWERING DEVICE	$6,242			$6,411			$6,592			$6,760			$6,929			$7,116			$7,316			$7,528			$7,753			$7,996			20
		682-1	CCTV CAMERA, IP, HIGH DEFINITION, INCLUDES CABINET EQUIPMENT	$4,910			$5,043			$5,185			$5,318			$5,450			$5,597			$5,755			$5,921			$6,098			$6,290			18
		682-1	CCTV CAMERA, IP, THERMAL HYBRID, INCLUDES CABINET EQUIPMENT	$22,185			$22,784			$23,427			$24,026			$24,625			$25,291			$26,001			$26,755			$27,554			$28,419			18
		684-7	LAYER 3 SWITCH "EDGE"	$2,994			$3,075			$3,162			$3,243			$3,323			$3,413			$3,509			$3,611			$3,719			$3,835			18
		684-1	MANAGED FIELD ETHERNET SWITCH - LAYER 2	$1,593			$1,636			$1,682			$1,725			$1,768			$1,816			$1,867			$1,921			$1,979			$2,041			7
		684-2	DEVICE SERVER, 4-8 PORT MODEL	$591			$607			$624			$640			$656			$674			$692			$713			$734			$757			7
		684-5	MEDIA CONVERTER	$550			$565			$581			$596			$611			$627			$645			$663			$683			$705			7
		684-6	WIRELESS COMMUNICATION DEVICE, LICENSED WIRELESS POINT-TO-POINT SYSTEM	$3,700			$3,800			$3,907			$4,007			$4,107			$4,218			$4,336			$4,462			$4,595			$4,740			5
	Express		CCTV CAMERA LOWERING DEVICE	$6,242			$6,411			$6,592			$6,760			$6,929			$7,116			$7,316			$7,528			$7,753			$7,996			20
		682-1	CCTV CAMERA, IP, HIGH DEFINITION, INCLUDES CABINET EQUIPMENT	$4,910			$5,043			$5,185			$5,318			$5,450			$5,597			$5,755			$5,921			$6,098			$6,290			18
		682-1	CCTV CAMERA, IP, THERMAL HYBRID, INCLUDES CABINET EQUIPMENT	$22,185			$22,784			$23,427			$24,026			$24,625			$25,291			$26,001			$26,755			$27,554			$28,419			18
		684-7	LAYER 3 SWITCH "EDGE"	$2,994			$3,075			$3,162			$3,243			$3,323			$3,413			$3,509			$3,611			$3,719			$3,835			18
		684-1	MANAGED FIELD ETHERNET SWITCH - LAYER 2	$1,593			$1,636			$1,682			$1,725			$1,768			$1,816			$1,867			$1,921			$1,979			$2,041			7
		684-2	DEVICE SERVER, 4-8 PORT MODEL	$591			$607			$624			$640			$656			$674			$692			$713			$734			$757			7
		684-5	MEDIA CONVERTER	$550			$565			$581			$596			$611			$627			$645			$663			$683			$705			7
		684-6	WIRELESS COMMUNICATION DEVICE, LICENSED WIRELESS POINT-TO-POINT SYSTEM	$3,700			$3,800			$3,907			$4,007			$4,107			$4,218			$4,336			$4,462			$4,595			$4,740			5

DMS	Freeway	700-8	FRONT-ACCESS DMS, FULL-COLOR, 51-100 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	$73,377			$75,358			$77,486			$79,467			$81,448			$83,650			$85,998			$88,493			$91,134			$93,996				ea
		700-8	FRONT-ACCESS DMS, FULL-COLOR, 101-200 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	######			######			######			######			$111,390			######			$117,611			######			######			######				ea
		700-9	WALK-IN DMS, FULL- COLOR, 201-300 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	######			######			######			######			######			$117,981			######			$124,811			######			######				ea
		700-7	EMBEDDED DMS, FULL COLOR, 12-20 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	$31,493			$32,343			$33,257			$34,107			$34,957			$35,902			$36,910			$37,981			$39,114			$40,343				ea
	Arterial	700-8	FRONT-ACCESS DMS, FULL-COLOR, 51-100 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	$73,377			$75,358			$77,486			$79,467			$81,448			$83,650			$85,998			$88,493			$91,134			$93,996				ea
		700-8	FRONT-ACCESS DMS, FULL COLOR, 101-200 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	######			######			######			######			$111,390			######			$117,611			######			######			######				ea
		700-9	WALK-IN DMS, FULL- COLOR, 201-300 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	######			######			######			######			######			$117,981			######			$124,811			######			######				ea
		700-7	EMBEDDED DMS, FULL COLOR, 12-20 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	$31,493			$32,343			$33,257			$34,107			$34,957			$35,902			$36,910			$37,981			$39,114			$40,343				ea
	Express	700-8	FRONT-ACCESS DMS, FULL-COLOR, 51-100 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	$73,377			$75,358			$77,486			$79,467			$81,448			$83,650			$85,998			$88,493			$91,134			$93,996				ea
		700-8	FRONT-ACCESS DMS, FULL COLOR, 101-200 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	######			######			######			######			$111,390			######			$117,611			######			######			######				ea
		700-9	WALK-IN DMS, FULL- COLOR, 201-300 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	######			######			######			######			######			$117,981			######			$124,811			######			######				ea
		700-7	EMBEDDED DMS, FULL COLOR, 12-20 FT2, INCLUDES GROUND MOUNT CONTROL EQUIPMENT CABINET	$31,493			$32,343			$33,257			$34,107			$34,957			$35,902			$36,910			$37,981			$39,114			$40,343				ea
Cabinets	Freeway	676-2	ITS CABINET 334	$4,085			$4,195			$4,314			$4,424			$4,534			$4,657			$4,788			$4,927			$5,074			$5,233				ea
		676-2	ITS CABINET 336S	$2,914			$2,993			$3,077			$3,156			$3,235			$3,322			$3,415			$3,514			$3,619			$3,733				ea
	Arterial	676-2	ITS CABINET 334	$4,085			$4,195			$4,314			$4,424			$4,534			$4,657			$4,788			$4,927			$5,074			$5,233				ea
		676-2	ITS CABINET 336S	$2,914			$2,993			$3,077			$3,156			$3,235			$3,322			$3,415			$3,514			$3,619			$3,733				ea
	Express	676-2	ITS CABINET 334	$4,085			$4,195			$4,314			$4,424			$4,534			$4,657			$4,788			$4,927			$5,074			$5,233				ea
		676-2	ITS CABINET 336S	$2,914			$2,993			$3,077			$3,156			$3,235			$3,322			$3,415			$3,514			$3,619			$3,733				ea
Ramp Meter	Freeeway		RAMP METER (SIGNAL, CONTROLLER, LOOP DETECTORS, DETECTOR CARDS), ONE LANE	$18,624			$19,127			$19,667			$20,170			$20,673			$21,231			$21,827			$22,461			$23,131			$23,857				ea
	Express		RAMP METER (SIGNAL, CONTROLLER, LOOP DETECTORS, DETECTOR CARDS), ONE LANE	$18,624			$19,127			$19,667			$20,170			$20,673			$21,231			$21,827			$22,461			$23,131			$23,857				ea
UPS	Freeway	685-1	UPS, INCLUDING BATTERIES, NETWORK ADAPTER, BATTERY CABLE KIT, AUTOMATIC TRANSFER SWITCH, GENERATOR RECEPTACLE	$4,020			$4,129			$4,245			$4,354			$4,462			$4,583			$4,711			$4,848			$4,993			$5,150				ea
		685-1	UPS, INCLUDING BATTERIES, NETWORK ADAPTER, BATTERY CABLE KIT, AUTOMATIC TRANSFER SWITCH, GENERATOR RECEPTACLE	$7,118			$7,310			$7,517			$7,709			$7,901			$8,115			$8,342			$8,584			$8,841			$9,118				ea
		685-1	UPS, INCLUDING BATTERIES, NETWORK ADAPTER, BATTERY CABLE KIT, AUTOMATIC TRANSFER SWITCH, GENERATOR RECEPTACLE	$8,081			$8,299			$8,534			$8,752			$8,970			$9,212			$9,471			$9,746			$10,037			$10,352				ea
	Arterial	685-1	UPS, INCLUDING BATTERIES, NETWORK ADAPTER, BATTERY CABLE KIT, AUTOMATIC TRANSFER SWITCH, GENERATOR RECEPTACLE	$4,020			$4,129			$4,245			$4,354			$4,462			$4,583			$4,711			$4,848			$4,993			$5,150				ea
		685-1	UPS, INCLUDING BATTERIES, NETWORK ADAPTER, BATTERY CABLE KIT, AUTOMATIC TRANSFER SWITCH, GENERATOR RECEPTACLE	$7,118			$7,310			$7,517			$7,709			$7,901			$8,115			$8,342			$8,584			$8,841			$9,118				ea
		685-1	UPS, INCLUDING BATTERIES, NETWORK ADAPTER, BATTERY CABLE KIT, AUTOMATIC TRANSFER SWITCH, GENERATOR RECEPTACLE	$8,081			$8,299			$8,534			$8,752			$8,970			$9,212			$9,471			$9,746			$10,037			$10,352				ea
	Express	685-1	UPS, INCLUDING BATTERIES, NETWORK ADAPTER, BATTERY CABLE KIT, AUTOMATIC TRANSFER SWITCH, GENERATOR RECEPTACLE	$4,020			$4,129			$4,245			$4,354			$4,462			$4,583			$4,711			$4,848			$4,993			$5,150				ea
		685-1	UPS, INCLUDING BATTERIES, NETWORK ADAPTER, BATTERY CABLE KIT, AUTOMATIC TRANSFER SWITCH, GENERATOR RECEPTACLE	$7,118			$7,310			$7,517			$7,709			$7,901			$8,115			$8,342			$8,584			$8,841							
		685-1	UPS, INCLUDING BATTERIES, NETWORK ADAPTER, BATTERY CABLE KIT, AUTOMATIC TRANSFER SWITCH, GENERATOR RECEPTACLE	$8,081			$8,299			$8,534			$8,752			$8,970			$9,212			$9,471			$9,746			$10,037			$10,352				ea

RTMC/Misc Equipment	Freeway	682-2	RTMC FLAT PANEL HD TV (70" + DIAGONAL)	$9,000	$9,243	$9,504	$9,747	$9,990	$10,260	$10,548	$10,854	$11,178	$11,529	[illegible]
		682-2	VIDEO DISPLAY EQUIPMENT VIDEO DISPLAY CONTROL SYSTEM	$51,000	$52,377	$53,856	$55,233	$56,610	$58,140	$59,772	$61,506	$63,342	$65,331	[illegible]
			LAYER 3 SWITCH "AGGREGATION"	$25,739	$26,434	$27,180	$27,875	$28,570	$29,342	$30,166	$31,041	$31,968	$32,972	[illegible]
			LAYER 3 SWITCH "CORE"	######	######	######	######	######	######	######	######	######	######	[illegible]
			STORAGE AREA NETWORK FOR RTMC OPERATIONS, ONE TIME COST, RELATED EQUIPMENT INCLUDING BUT NOT LIMITED TO: Data Storage Hard Drives Fiber Channels (SFPs) for Data Storage Capabilities Data Storage Warehouse Enclosure Hardware Support	$30,960	$31,796	$32,694	$33,530	$34,366	$35,294	$36,285	$37,338	$38,452	$39,660	[illegible]
	Arterial		RTMC WORKSTATION	$4,000	$4,108	$4,224	$4,332	$4,440	$4,560	$4,688	$4,824	$4,968	$5,124	[illegible]
		677-1	EQUIPMENT SHELTER, UP TO 120 SF, BUIILDING ONLY	$45,000	$46,215	$47,520	$48,735	$49,950	$51,300	$52,740	$54,270	$55,890	$57,645	[illegible]
			RTMC SERVER RELATED EQUIPMENT, ONE TIME COST, INCLUDING BUT NOT LIMITED TO: High Performance Server SAS Hard Drives Server Memory Kits and Hard Drive Warranty Server/Data Center Virtualization Platform Virtualization Platform 1 year support	$10,987	$11,284	$11,602	$11,899	$12,196	$12,525	$12,877	$13,250	$13,646	$14,074	[illegible]
		682-2	RTMC FLAT PANEL HD TV (70" + DIAGONAL)	$9,000	$9,243	$9,504	$9,747	$9,990	$10,260	$10,548	$10,854	$11,178	$11,529	[illegible]
		682-2	VIDEO DISPLAY EQUIPMENT VIDEO DISPLAY CONTROL SYSTEM	$51,000	$52,377	$53,856	$55,233	$56,610	$58,140	$59,772	$61,506	$63,342	$65,331	[illegible]
			LAYER 3 SWITCH "AGGREGATION"	$25,739	$26,434	$27,180	$27,875	$28,570	$29,342	$30,166	$31,041	$31,968	$32,972	[illegible]
			LAYER 3 SWITCH "CORE"	######	######	######	######	######	######	######	######	######	######	[illegible]
			STORAGE AREA NETWORK FOR RTMC OPERATIONS, ONE TIME COST, RELATED EQUIPMENT INCLUDING BUT NOT LIMITED TO: Data Storage Hard Drives (QTY 24) Fiber Channels (SFPs) for Data Storage Capabilities (Qty 4) Data Storage Warehouse Enclosure (Qty 1) Hardware Support	$30,960	$31,796	$32,694	$33,530	$34,366	$35,294	$36,285	$37,338	$38,452	$39,660	[illegible]
	Express		RTMC WORKSTATION	$4,000	$4,108	$4,224	$4,332	$4,440	$4,560	$4,688	$4,824	$4,968	$5,124	[illegible]
		677-1	EQUIPMENT SHELTER, UP TO 120 SF, BUIILDING ONLY	$45,000	$46,215	$47,520	$48,735	$49,950	$51,300	$52,740	$54,270	$55,890	$57,645	[illegible]
			STORAGE AREA NETWORK FOR RTMC OPERATIONS, ONE TIME COST, RELATED EQUIPMENT INCLUDING BUT NOT LIMITED TO: Data Storage Hard Drives (QTY 24) Fiber Channels (SFPs) for Data Storage Capabilities (Qty 4) Data Storage Warehouse Enclosure (Qty 1) Hardware Support	$10,987	$11,284	$11,602	$11,899	$12,196	$12,525	$12,877	$13,250	$13,646	$14,074	[illegible]
		682-2	RTMC FLAT PANEL HD TV (70" + DIAGONAL)	$9,000	$9,243	$9,504	$9,747	$9,990	$10,260	$10,548	$10,854	$11,178	$11,529	[illegible]
		682-2	VIDEO DISPLAY EQUIPMENT VIDEO DISPLAY CONTROL SYSTEM	$51,000	$52,377	$53,856	$55,233	$56,610	$58,140	$59,772	$61,506	$63,342	$65,331	[illegible]
			LAYER 3 SWITCH "AGGREGATION"	$25,739	$26,434	$27,180	$27,875	$28,570	$29,342	$30,166	$31,041	$31,968	$32,972	[illegible]
			LAYER 3 SWITCH "CORE"	######	######	######	######	######	######	######	######	######	######	[illegible]
			STORAGE AREA NETWORK FOR RTMC OPERATIONS, ONE TIME COST, RELATED EQUIPMENT INCLUDING BUT NOT LIMITED TO: Data Storage Hard Drives (QTY 24) Fiber Channels (SFPs) for Data Storage Capabilities (Qty 4) Data Storage Warehouse Enclosure (Qty 1) Hardware Support	$30,960	$31,796	$32,694	$33,530	$34,366	$35,294	$36,285	$37,338	$38,452	$39,660	[illegible]
	Freeway Fiscal Year Sub Total ($)													
	Arterial Fiscal Year Sub Total ($)													
	Express Lanes Fiscal Year Sub Total ($)													
	Total Fiscal Year Grand Total ($)													

Truck Parking Availability System Standard Operating Guidelines

Appendix B

Truck Parking Availability System (TPAS) Guidelines for RTMC Standard Operating Guidelines (SOG)

Definitions

Guidance: Include applicable definitions of the TPAS in the SOP.

Sample Definition 1: Truck Parking Availability System (TPAS) provides safe truck parking information to commercial vehicle operators. Truck parking on Florida's Interstate roadways can overflow onto rest area ramps, freeway ramps and shoulders, and adjacent roads. This overflow creates safety concerns for other motorists and for the commercial vehicle operators along the corridor. Expansion of the rest areas to accommodate the need for more truck parking is costly. The FDOT has undertaken a project to provide for more efficient use of existing spaces along the corridor through notification of parking available to the trucking community.

Sample Definition 2: Dynamic Truck Parking Signs (DTPS). The truck parking availability information is shown on DTPS. DTPS are static signs with three brick embedded dynamic message signs (DMS) to display the number of available truck parking spaces. The information is also disseminated over the FL511.com webpage, and through third-party data feeds.

Sample Definition 3: TPAS Sensors. The TPAS includes sensors to monitor truck parking availability at public welcome centers, rest areas, and weigh stations. TPAS sensors are of two types: vehicle presence detection sensors for individual parking spaces at the welcome centers and rest areas, and vehicle detection sensors deployed on the entrance and exit of the weigh station parking locations.

Sample Definition 4: SunGuide® Truck Parking Subsystem (TPS) is the name of the TPAS module within the SunGuide software. SunGuide TPS automatically generates parking availability messages on the DTPS and FL511 from parking sensors.

Introduction

Guidance: Explain the purpose of this SOP.

Sample Introduction: This SOP describes the operator's roles and responsibilities for monitoring truck parking availability and ensuring accuracy of TPAS information provided via DTPS and FL511.

The following is a (SAMPLE) list of TPAS locations to monitor:

- I-4 Westbound (WB) Rest Area at Mile Marker 46
- I-4 Eastbound (EB) Rest Area at Mile Marker 46
- I-4 WB Weigh Station at Mile Marker 12
- I-4 EB Weigh Station at Mile Marker 12

SunGuide TPS Operator Interface

Guidance: Provide an overview of the TPAS components of the SunGuide software and how the RTMC operator will interact with the SunGuide TPS.

Sample SunGuide Software for TPAS Overview:

The SunGuide TPS module provides situational information to the RTMC operator for each TPAS deployment within their jurisdiction. The icon used in the SunGuide map is shown below:

Figure 28: SunGuide Map Icon

To view the status of the TPAS site, hover the mouse pointer over the TPS icon to reveal a brief table of truck parking availability information. Below is a screenshot of a SunGuide software TPAS Site Status display.

Figure 29: SunGuide Software TPAS Site Status

Click the icon to open a detailed status of the facility and associated devices and cameras. Below is a figure of the SunGuide software detailed Truck Parking Facility Status.

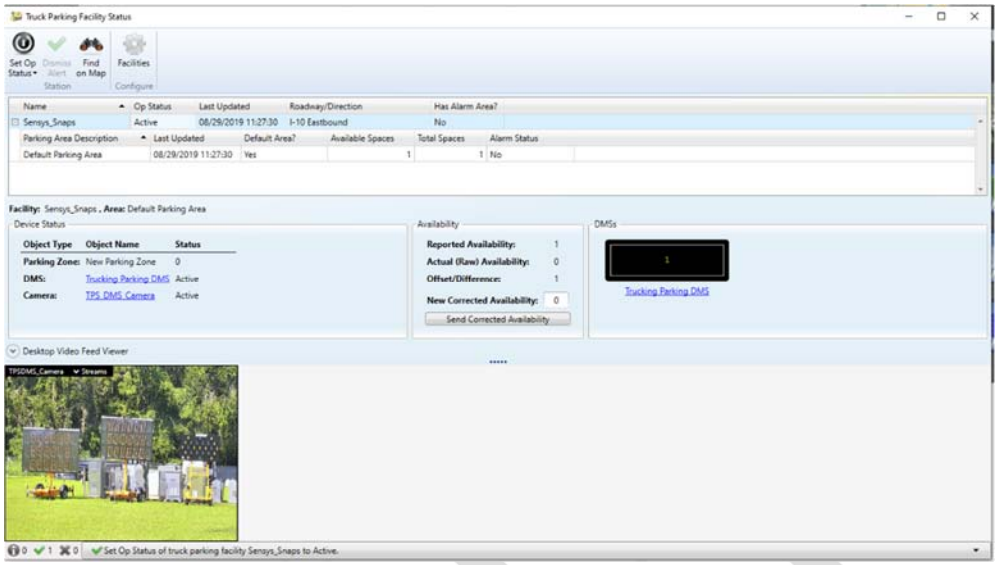

Figure 30: SunGuide Software Detailed Truck Parking Facility Status

SunGuide TPS Alerts

<u>Guidance</u>: Provide information for SunGuide generated TPS alerts and outline the RTMC operator's roles and responsibilities in response to the TPS alert.
<u>Sample SunGuide Alert Description</u>:

If the number of detected available truck parking spaces falls below the configured minimum number, SunGuide will display a TPS alert on the RTMC operator's screen. This alert will show the RTMC operator the facility information. The operator will then verify the alert via CCTV camera. Below is a figure of the SunGuide® software TPS Alert.

Figure *31*: SunGuide Software Truck Parking Facility Alert

Sample Operator Response to TPS Alert Description:

The operator must invoke the associated preset for the camera and visually verify the number of available spaces to ensure accuracy of the alert. If the number of spaces is accurate, the operator will dismiss the alert. If the number of reported spaces is inaccurate compared to what is observed via CCTV camera, the operator will correct the number reported on the DTPS. The operator can then dismiss the alert and notify the system administrator of the error.

If truck parking availability for a facility goes below the low availability alarm threshold, the operator will only be alerted with the first instance. Each facility has a recovery threshold configured by the system administrator, used to indicate how many parking spaces need to become available before the facility is considered to be recovered. Once recovered, a facility is again eligible to produce another low availability alert to the operator if the available spaces go below the low availability alarm threshold.

TPAS System Monitoring

Guidance: Describe the procedure for monitoring each TPAS site to verify the accuracy of the SunGuide TPS.

Sample TPAS System Monitoring Description**:** Every four hours, the RTMC operator must verify the accuracy of the SunGuide TPS. The operator should open the Truck Parking status window to determine what SunGuide is reporting for the status of the TPAS site. The operator must visually verify the accuracy of the SunGuide TPS information using the TPAS site CCTV cameras. The RTMC operator must also verify that the FL511 website is reporting the same information as the TPS. If the operator notices a discrepancy between what the SunGuide TPS is reporting compared to what is visually verified or on the FL511 website, the operator must manually update the DTPS or set the site as "Out of Service" in the SunGuide system and report the issue to the system administrator.

Off-Hours TPAS Operations

Guidance: Describe the process of transferring responsibilities to another RTMC if the district's RTMC is not a 24/7 facility.

Sample Description of Transfer of Operations: If the RTMC is not a 24/7 facility, the operator must transfer monitoring responsibilities to an adjacent RTMC that is available 24/7. When operations resume, the operator must contact the RTMC that has control of the TPAS system to transfer control back to their RTMC.

TMC Standard Operating Guidelines

Color Dynamic Message Signs (DMS) Guidelines

Appendix C

Guideline Sections for Color DMS Use

- Purpose
- Policies for Using Colors and Graphics
- Design and Development
- Management and Operations

Purpose

The use of Color DMS is beneficial to the traveling public because of the added value it brings to existing messages.

Policies for Using Colors and Graphics

The use of graphics, symbols, and colors on DMSs are permitted only if the DMS can replicate the appropriate color combinations, lettering style, sign/symbol size consistent with the Manual on Uniform Traffic Control Devices (MUTCD). Spacing between the message lines should be between 25 percent and 45 percent of the letter height.

The use of Color DMS shall follow the MUTCD Chapter 2L, Guidance and Requirements for Changeable Message Signs. For DMS with full-color, full-matrix capabilities, the allowable colors used for the legends and backgrounds are provided in the MUTCD, Table 2A-5.

The following sign characteristics should be followed when using Color DMS:

- Display only one message per phase.
- Graphics can be displayed either in a stand-alone fashion or as a supplement to the text.

Design and Development

A pixel pitch equal to or less than 35 mm is required for full-color DMS, in accordance with the Standard Specifications for Road and Bridge Construction, Section 700-4.3.2.

- Message Load: MUTCD Section 2L.05 should be followed.
- Message Format
    - Flexibility is given for the graphic location; however, when the graphic is located vertically in relation to the associated text, the graphic must be vertically centered with the associated text line(s).
    - If using graphic only with no text, the graphic can be in any location.
- Message Content

    - Each message shall consist of no more than two phases. A phase shall consist of no more than three lines of text. Each phase shall be understood by itself, regardless of the sequence in which it is read.
- Colors: Colors shall be in accordance with the MUTCD, Table 2A-5.
    - Red is not an allowable option.
- Fonts: Fonts should follow MUTCD guidance. Narrow fonts may be used if needed.
- Sign Design:
    - Sign placement may be overhead or side-mounted.
    - Graphic size should extend the entire height of the panel if used as a standalone graphic.
    - Graphic placement should be to the left of the text when only one graphic is being displayed on a sign panel along with the text.
    - Borders can provide an opportunity for increased enhancement; however, the following considerations should be taken:
        - The border color should not be used when it limits the message or washes out the message during nighttime display. The message is the priority, not the use of the border.
    - To adjust from daytime to nighttime, the sign must be configured to auto-adapt (use photocell).

Figure 32: Color Dynamic Message Signs

Color DMS shall NOT contain the following characteristics:

- Flashing.
- Animation. Non-traffic related moving graphics, such as snowflakes, are not allowed. See MUTCD Section 2L.04, paragraph 01.
- Catchy or creative phrases.
- Mixed text or background colors. All text should be the same color on the same sign. Background colors should use uniformed (non-gradient) coloring on the same sign.

Approval of alternative messages will be requested from the District Traffic Operations Engineer (DTOE) with approval being granted via email from State Traffic Engineering and Operations Office (STEOO).

Special guidance and SunGuide software enhancements may be needed in the future to accommodate more advanced graphic and text configurations that are currently not possible with the existing SunGuide software.

The District TSM&O Program Engineer is responsible in each district for the compliance of posted messages with existing FDOT Policies and Procedures and should confirm that message/graphic testing was performed for legibility prior to finalization of approved graphic and color type combinations. Furthermore, messages should be verified for accuracy via upstream CCTV cameras where applicable.

TMC Incident Executive Notification Memorandum

Appendix D

TMC Incident Executive Notifications – Updated 6/25/20

1. Executive notifications shall be made for incidents meeting the following criteria:

a. Any limited access highway crash involving the death of five or more persons or more than 10 vehicles (per Procedure 850-005-001-j).
b. Any fatality in an FDOT work zone on a limited access facility.
c. Fatality or serious injury to a FDOT employee or contractor performing work on any roadway.
d. Any limited-access highway crash involving multiple vehicles where fog or smoke is involved.
e. Any bus crashes (including school buses) with fatalities or injuries (modified 850-005-001-j).
f. Any incident that causes a limited-access highway to be closed for an estimated duration of more than one hour (modified 850-005-001-j) in one or both directions of travel. All lanes blocked, including shoulders. A notification is not needed for a ramp closure.
g. All bridge failures or closures (per 850-005-001-j). (Not Scheduled Events)
h. A wildfire that closes a limited-access highway. All lanes blocked including shoulders. A notification is not needed for a ramp closure.
i. Any wrong-way driving crash on a limited-access facility, including ramps.
j. Flooding or sinkhole that closes a state road. All lanes blocked, including shoulders. A notification is not needed for a ramp closing.

2. Executive Email notifications shall be sent for:

a. Initial notification of the event;
b. Updates:
    1) A significant change in status (i.e., reopening of a travel lane for a facility that was completely closed, closure of additional travel lanes, etc.);
    2) Requests made by FDOT Executive Leadership or the FDOT Emergency Management Watch Officer;
    3) For closures with an expected duration less than 24 hours, send update approximately 2 hours after the last Executive Email notification.
    4) For closures with an expected duration more than 24 hours, send an update prior to the close of each business day.
c. Final clearance for the event.

3. Executive Notification Distribution. At a minimum, notifications will be sent to:

a. FDOT-EMEXE@dot.state.fl.us
b. FDOT-EMFED@dot.state.fl.us
c. fred.heery@dot.state.fl.us
d. christine.shafik@dot.state.fl.us
e. shawn.kinney@dot.state.fl.us
f. District Leadership

4. Executive Notification Content

a. Initial Notifications:
   1) Subject Line shall read: **Event Type/Description, Facility Name, Direction, At Location, County**
   2) The red portions are the portions of the email template that the TMC/RTMC fills out and that can be changed. Other than the red portions, do not change the template except to add your District leadership, PIO, etc. into the cc: line.
   3) If the fatality occurs in an FDOT work zone, include the related information in the "Narrative".
   4) Do not include any sensitive information about the incident or personal identifying information for any of the people involved.
   5) If any portion of the notification template is unknown or unavailable, simply write Unknown in the associated field. The RTMC does not need to wait until all notification fields are known to send the email.
   6) These Executive Email notifications should not be sent for Scheduled Road Work and Special Events.
   7) If Executive Leadership or the FDOT Emergency Management Team needs additional info, they may request information over the phone or request that an Email notification be sent out using the template.

b. Updates/Final Notifications
   1) The Subject line will remain the same.
   2) The distribution will remain the same.
   3) The first text in the body of the email shall be: UPDATE.
   4) Only the information being updated will change and shall be highlighted (See example in the template).

5. Templates

Please use the attached templates for Executive Notifications.

INITIAL TEMPLATE

Time of Incident: **24-Hour Date/Time format – MM/DD/YYYY 00:00:00**

Incident Type: **Vehicle Crash**

Location: **Facility Name, Direction of Travel, SunGuide EM location of the event with qualified 'At', 'Beyond', 'Before' and County**

Mile Marker: **Mile Marker #**

Facility Status: **Closed, All travel lanes and shoulders**

Duration of Closure: **X Hour(s) Y Minute(s) or 0 Minutes if there is no closure**

Confirmed Fatalities: **Only enter the # of Confirmed Fatalities**

Confirmed Injuries: **Only enter the # of Confirmed Injuries**

Number of Vehicles: **# of Vehicles**

Types of Vehicles: **Car, SUV, Bus, etc.**

Narrative and Response Action(s): **Brief general description of what happened, and response actions being taken. No unconfirmed, sensitive, or information or personal identifying information (PII) shall be included.**

SunGuide Event Number: **XXXXXX**

Please direct all questions to: (Point of Contact and Title) at (XXX) XXX-XXXX or (Point of Contact Email)

UPDATE TEMPLATE

UPDATE

Time of Incident: **24-Hour Date/Time format – MM/DD/YYYY 00:00:00**

Incident Type: **Vehicle Crash**

Location: **Facility Name, Direction of Travel, SunGuide EM location of the event with qualified 'At', 'Beyond', 'Before' and County**

Mile Marker: **Mile Marker #**

Facility Status: **All lanes open**

Duration of Closure: **X Hour(s) Y Minute(s) or 0 Minutes if there is no closure**

Confirmed Fatalities: **Only enter the # of Confirmed Fatalities**

Confirmed Injuries: **Only enter the # of Confirmed Injuries**

Number of Vehicles: **# of Vehicles**

Types of Vehicles: **Car, SUV, Bus, etc.**

Narrative and Response Action(s): **Brief general description of what happened, and response actions being taken. No unconfirmed, sensitive, or personal identifying information (PII) shall be included. Narrative will be in chronological order with the newest information highlighted.**

SunGuide Event Number: **XXXXXX**

Please direct all questions to (Point of Contact Title & Name) at (XXX) XXX-XXXX or (Point of Contact Email)

Florida Missing Persons and Blue Alert Programs

Appendix E

Florida Missing Persons and Blue Alert Plans

AMBER, Missing Child, and Silver Alert Plans

In 2000, the Florida Department of Law Enforcement (FDLE), along with our state, local, and private partners, developed a plan to establish the Florida AMBER Alert. The AMBER Alert provides law enforcement with a tool to quickly and effectively notify the general public of critical information regarding a child who has been abducted and is endangered. It is disseminated to the public through the Emergency Alert System (EAS) by broadcasting the alert on television and radio in addition to the Florida Department of Transportation's (FDOT) highway Dynamic Message Signs (DMS) and other highway advisory methods and/or the Department of Lottery's (DOL) lottery machines.

In 2003, as part of the Florida AMBER Plan, FDLE also established the Missing Child Alert. This alert can be used when a child is missing and law enforcement has reason to believe that his/her life is in danger, but there is no indication that the child has been abducted.

Together these tools provide Florida's residents and visitors with information that can help to save the life of a child and keep his/her community safe.

To sign up to receive email alerts when an AMBER or Missing Child Alert is activated, visit www.missingchildrenalert.com.

In 2008, FDLE established the Silver Alert Program Plan. The Silver Alert is a plan to help law enforcement officers rescue persons with Alzheimer's or dementia who become lost while driving in a vehicle.

To sign up to receive email alerts when a Silver Alert is activated, visit https://lists.elderaffairs.org/listmanager/listinfo/silveralert.

For more information please visit http://www.fdle.state.fl.us/MCICSearch/Index.asp or contact by phone at 1-888-356-4774.

Blue Alert Plan

In 2011, the Florida Legislature established the Florida Blue Alert Plan. The Blue Alert utilizes the technologies employed by the Amber Alert Plan to notify the public of critical information when a law enforcement officer is killed, suffered serious bodily injury, or is missing while in the line of duty and the suspect, who is considered to pose an imminent threat to the public, is still at large. In some of these cases, additional information is available for broadcast such as a detailed description of the suspect's vehicle or other means of escape, and/or the license plate of the suspect's vehicle.

Under the Blue Alert Plan, the FDLE, in conjunction with the Florida Department of Highway Safety and Motor Vehicles' Florida Highway Patrol (FHP), FDOT, and DOL would immediately broadcast important information about the offender when this information would help avert further harm or assist in the apprehension of the

suspect. A Blue Alert is disseminated to the public through the EAS by broadcasting the alert on television, radio, and dynamic message signs located along the state's highways.

To sign up to receive email alerts when a Blue Alert is activated, visit https://member.everbridge.net/index/892807736727806#/signup

For more information please visit http://www.floridabluealert.com/ or contact by phone 850-410-7645.

AMBER Alert Criteria

To activate an AMBER alert the following five (5) criteria must be met:

- The child must be under 18 years of age.
- There must be a clear indication of an abduction.
- The law enforcement agency's preliminary investigation must conclude that the child's life is in danger.
- There must be a detailed description of the child, abductor, and/or vehicle to broadcast to the public.
- The activation must be recommended by the local law enforcement agency of jurisdiction.

Activation Process:

- The local law enforcement agency will contact the FDLE Missing Endangered Persons Information Clearinghouse (MEPIC) at 1-888-356-4774.
- The FDLE works in conjunction with the local law enforcement agency of jurisdiction to determine if the information is to be broadcast on a regional or statewide basis.
- The FDLE, working in conjunction with the local law enforcement agency of jurisdiction, prepares information for public distribution.
- The FDLE ensures, based on its content, that the information is broadcast through the EAS, DMS (requires license plate information), lottery machines, wireless emergency alert (WEA), email through http://www.missingchildrenalert.com/ and other appropriate resources.

Available Missing Endangered Persons Information Clearinghouse (MEPIC) Resources:

- Local media outlets
- Local Crime Stoppers
- A Child is Missing, Inc. (1-888-875-2246)
- FBI National Center for the Analysis of Violent Crime (1-800-634-4097)
- National Center for Missing and Exploited Children (1-800-843-5678)
- (Florida Branch 1-561-848-1900)

The AMBER Review Process

All AMBER Alert activations are brought before a special committee of state agency partners, law enforcement representatives, and broadcasters to ensure that the program's goals are being met and that each activation meets the criteria and is conducted in a timely manner.

Missing Child Alert Criteria

To activate a Missing Child Alert, the following four (4) criteria must be met:

- The child must be under 18 years of age.
- The law enforcement agency's preliminary investigation must conclude that the child's life is in danger.
- Descriptive information and a photograph of the child must be available.
- The agency of jurisdiction must approve the issuance of the Missing Child Alert.

Activation Process:

The local law enforcement agency will contact the FDLE MEPIC at 1-888-356-4774.

The FDLE, working in conjunction with the local law enforcement agency of jurisdiction, prepares information for public distribution.

The FDLE ensures, based on its content, that the information is broadcast through DMS (requires license plate information), lottery machines, email through http://www.missingchildrenalert.com/ and other appropriate resources.

Available MEPIC Resources:

- Local media outlets
- Local Crime Stoppers
- National Center for Missing and Exploited Children (1-800-843-5678)
- (Florida Branch 1-561-848-1900)
- A Child is Missing, Inc. (1-888-875-2246)

State Silver Alert Criteria

To activate a State Silver Alert, the following criteria must be met:

- The person must be 60 years and older; or, the person must be 18-59 and law enforcement has determined the missing person lacks the capacity to consent and that the use of dynamic message signs may be the only possible way to rescue the missing person.
- The person suffers from an irreversible deterioration of intellectual faculties (e.g., Alzheimer's disease or dementia) that has been verified by law enforcement.
- The person is driving a motor vehicle with an identified tag.
- Local law enforcement has determined that the person's disappearance poses a credible threat to his/her welfare and safety.

Available MEPIC Resources

- Florida Department of Elder Affairs (850-414-2000)
- Media Alert (813-282-8612)
- A Child is Missing, Inc. (1-888-875-2246)
- Florida Department of Highway Safety Motor Vehicles Medical Reporting Form

Activation Process:

- The local law enforcement agency will contact the FDLE Missing Endangered Persons Information Clearinghouse (MEPIC) at 1-888-356-4774.
- The FDLE, working in conjunction with the local law enforcement agency of jurisdiction, prepares information for public distribution.
- The FDLE ensures, based on its content that the information is broadcast through the DMS (requires license plate information), lottery machines, email through https://lists.elderaffairs.org/listmanager/listinfo/silveralert and other appropriate resources.

Activations from Law Enforcement

The local law enforcement agency calls the FDLE Missing Endangered Persons Information Clearinghouse (MEPIC) at 1-888-356-4774.

The FDLE works in conjunction with the local law enforcement agency of jurisdiction to determine if the information is to be broadcast via radio, television, displayed on FDOT's message signs and/or DOL's LED messages on lottery machines on a regional or statewide basis.

The FDLE works in conjunction with the local law enforcement agency of jurisdiction to prepare information (i.e., child, suspect, and/or vehicle, contact information) for public distribution using approved format(s) for broadcasters, FDOT, and DOL.

The FDLE records the Amber Alert information on the EAS equipment located in the MEPIC area.

The FDOT staff (available 24-hours) ensures that the road signs are activated and canceled.

If FDLE determines if the FDOT DMSs are to be used, FDLE contacts the Florida Highway Patrol Communications Center Shift Commander in Orlando at 407-737-2271 in order to alert duty officers and other call-takers of the AMBER Alert. The FDLE then emails all available information concerning the missing/abducted child to the FHP Communications Center in Orlando. FHP Shift Commander in Orlando is then responsible for relaying all information via telephone and fax to the appropriate to the Shift Commander(s) at appropriate FHP Communications Center(s) in the region(s) where the activation is occurring.

If FDLE determines the FDOT DMS and 511 System are to be used, FDLE contacts FDOT's Orlando Regional Transportation Management Center (RTMC) by calling 407-736-1900. FDLE emails the actual DMS Message to the Orlando RTMC at D5.RTMC@DOT.state.fl.us, using the attached format.

The Orlando RTMC staff relays the request to appropriate RTMC staff in the state to activate the Florida Amber Plan. The FDOT displays the alert message on all requested DMS unless a traffic emergency occurs that requires an individual or group of DMS to display a motorist safety message. The FDOT will record a brief AMBER Alert message on the 511 System. The 511 System is used only while the DMS are displayed.

The FDOT displays the AMBER Alert message until the child is recovered or for a maximum of 24 hours. If the child is still missing after the maximum display hours, the FDLE will contact the FDOT to re-activate the DMS only in the specific area that law enforcement believes the child may be located.

The FDOT displays the Missing Child Alert message for a maximum of six hours. If the child is still missing after the maximum display hours, the FDLE will contact the FDOT to re-activate the DMS only in the specific area that law enforcement believes the child may be located.

The FDOT displays the Blue Alert message for a maximum of six hours. If the suspect has not been located after the maximum number of display hours, the FDLE will contact the FDOT to re-activate the DMS only in the specific area that law enforcement believes the person may be located.

The FDOT displays the Silver Alert message for a maximum of six hours. If the missing person has not been located after the maximum display hours, the FDLE will contact the FDOT to re-activate the DMS only in the specific area that law enforcement believes the person may be located.

If there are multiple alerts activated during the same time the FDOT follows this order of priority: AMBER Alert, Missing Child Alert, Blue Alert, and Silver Alert.

If there are multiple AMBER Alerts, Missing Child Alerts, or Blue Alerts activated during the same time, the FDOT will display each one on every other DMS.

FDLE follows the same activation steps listed above if an additional activation is required containing revised vehicle information and/or broadcast area.

Once FDLE is contacted by local law enforcement that a child has been recovered/located, the FDLE immediately contacts all partner agencies.

Changes to the AMBER Plan Process

If the formats or tools used to activate, update, or cancel an AMBER/Missing Child Alert change, the FDLE will communicate with the broadcast partners to make the necessary adjustments.

If changes are necessary, good faith efforts should be made by the FDLE and all partners to ensure these changes do not adversely impact the AMBER/Missing Child Alert or the partners' business practices.

Blue Alerts

The local law enforcement agency will contact the FDLE Intelligence Watch and Warning at 850-410-7645 to request activation. The on-call Special Agent Supervisor from the region will determine if the case meets the below criteria:

Officer Killed/Injured

- A law enforcement officer has been killed, suffered serious bodily injury, or assaulted with a deadly weapon.
- The suspect has fled the scene of the offense.
- The investigating agency determined that the suspect poses an imminent threat to the public or other law enforcement officers.
- There is a detailed description of the suspect's vehicle, or other means of escape, and/or the
- license plate of the suspect's vehicle is available for broadcast.
- The dissemination of this available information to the public will help avert further harm or assist in the apprehension of the suspect.

Officer Missing

- A law enforcement officer is missing in the line of duty.
- The officer is missing under circumstances evidencing concern for the officer's safety.
- There is information about the officer's physical description, and the description of any vehicle involved, including the license plate number or other identifying information, to be broadcast to the public and other law enforcement agencies, which could assist in locating the missing law enforcement officer.

Alert Activations from Law Enforcement

The local law enforcement agency contacts the FDLE Intelligence Watch and Warning (IWW) at 850-410-7645 to request activation. The on-call Special Agent Supervisor from the region determines if the case meets the criteria.

The IWW will work with the investigating agency to prepare information for public release, including the suspect and/or vehicle information. This includes:

- Notifying law enforcement agencies throughout the state.
- Displaying vehicle information on DMS (requires license plate information), lottery machines, and the 511 system.
- Activating the Emergency Alert System on the radio and television in the surrounding area the event occurred.
- Emailing members of the public who have registered to receive Blue alert notifications through FloridBlueAlert.com.

For additional information, please contact FDLE at 850-410-8585 or toll-free at 1-888-356-4774.

STATE OF FLORIDA

AMBER PLAN (Dynamic Message Systems)

FROM: FLORIDA DEPARTMENT OF LAW ENFORCEMENT, TALLAHASSEE

SENT BY: Lyndsey Pitts

AMBER ALERT NAME: Missing Child

TO: ORLANDO RTMC **Area(s) for activation:** Turnpike, Statewide
Area(s) for secondary activation: Remaining districts

FAX NUMBER: (FHP) 407-737-2217 (DOT) 407-736-1918 **DATE:** 7/6/2017

URGENT URGENT URGENT URGENT URGENT

REQUIRED MESSAGE

C	H	I	L	D		A	B	D	U	C	T	I	O	N	
					A	L	E	R	T						
			C	A	L	L		*	3	4	7				

R	E	D		2	0	1	5								
F	O	R	D		F	1	5	0							
F	L		T	A	G		Y	Y	Y	Z	Z	Z			

STATE OF FLORIDA

AMBER ALERT (511 Traveler Information System)

FROM: FLORIDA DEPARTMENT OF LAW ENFORCEMENT, TALLAHASSEE

SENT BY: PETER WARREN

AMBER ALERT NAME: Missing Child

TO: ORLANDO RTMC **Area(s) for activation:** Turnpike, Statewide

FAX NUMBER: (DOT) 407-736-1918 **DATE/TIME:** 7/6/2017

URGENT URGENT URGENT URGENT URGENT

RECORDED MESSAGE

An AMBER ALERT Has Been Issued On Missing Child Out Of North Lauderdale. Look For A 2015 Red Ford F150 Fl Tag YYYZZZ.
CALL *347.

STATE OF FLORIDA

MISSING CHILD ALERT (Dynamic Message Systems)

FROM: FLORIDA DEPARTMENT OF LAW ENFORCEMENT, TALLAHASSEE

SENT BY: LYNDSEY PITTS

MISSING CHILD ALERT NAME:

TO: **ORLANDO RTMC** **Area(s) for activation:** Statewide, Turnpike
Area(s) for secondary activation: Remaining districts

FAX NUMBER: (FHP) 407-737-2217 (DOT) 407-736-1918 DATE: 10/6/2017

URGENT URGENT URGENT URGENT URGENT

REQUIRED MESSAGE

M	I	S	S	I	N	G		C	H	I	L	D			
					A	L	E	R	T						
			C	A	L	L		*	3	4	7				

W	H	I	T	E		2	0	1	7						
F	O	R	D		F	1	5	0							
F	L		T	A	G		W	H	G	1	2	3			

STATE OF FLORIDA

MISSING CHILD ALERT (511 Traveler Information System)

FROM: FLORIDA DEPARTMENT OF LAW ENFORCEMENT, TALLAHASSEE

SENT BY: LYNDSEY PITTS

MISSING CHILD ALERT NAME:

TO: **ORLANDO RTMC** **Area(s) for activation:** Statewide, Turnpike

FAX NUMBER: (DOT) 407-736-1918 DATE/TIME: 10/6/2017

URGENT URGENT URGENT URGENT URGENT

RECORDED MESSAGE

A Missing Child Alert has been issued for _____ from Ft. Myers, Florida. Look For A 2017 White Ford F150 Florida Tag WHG123. CALL *347.

STATE OF FLORIDA

SILVER ALERT (Dynamic Message Systems)

FROM: FLORIDA DEPARTMENT OF LAW ENFORCEMENT, TALLAHASSEE

SENT BY: LYNDSEY PITTS

SILVER ALERT NAME:

TO: **ORLANDO RTMC** **Area(s) for activation:** Statewide, Turnpike
Area(s) for secondary activation: Remaining districts

FAX NUMBER: (FHP) 407-737-2217 (DOT) 407-736-1918 DATE: 10/6/2017

URGENT URGENT URGENT URGENT URGENT

REQUIRED MESSAGE

		S	I	L	V	E	R		A	L	E	R	T		
			C	A	L	L		*	3	4	7				

W	H	I	T	E		2	0	1	7						
F	O	R	D		F	1	5	0							
F	L		T	A	G		W	H	G	1	2	3			

|

STATE OF FLORIDA

SILVER ALERT (511 Traveler Information System)

FROM: FLORIDA DEPARTMENT OF LAW ENFORCEMENT, TALLAHASSEE

SENT BY: LYNDSEY PITTS

SILVER ALERT NAME:

TO: **ORLANDO RTMC** **Area(s) for activation:** Statewide, Turnpike

FAX NUMBER: (DOT) 407-736-1918 DATE/TIME: 10/6/2017

URGENT URGENT URGENT URGENT URGENT

RECORDED MESSAGE

A Silver Alert has been issued for _____ from Ft. Myers, Florida. Look For A 2017 White Ford F150 Florida Tag WHG123.
CALL *347.

STATE OF FLORIDA

BLUE ALERT PLAN (Dynamic Message Systems)

FROM: **FLORIDA DEPARTMENT OF LAW ENFORCEMENT, TALLAHASSEE**

SENT BY: **FDLE Watch Desk (1-800-342-0820 or 850-410-7645)**

BLUE ALERT NAME: **NEED TO ADD Region & Date**

TO: Orlando DOT

Area(s) for primary activation: **DOT Regions – refer to DOT map**
Area(s) for secondary activation: Remaining Districts

FAX NUMBER: **(FHP) 850-921-9664** **(DOT) 407-736-1918** **DATE/TIME:** **Need to complete**
PHONE NUMBER: **(FHP) 850-245-1402** **(DOT) 407-736-1900**

URGENT URGENT URGENT URGENT

REQUIRED MESSAGE – First 3 lines are ALWAYS the same

L	A	W		E	N	F	O	R	C	E	M	E	N	T	
					A	L	E	R	T						
				C	A	L	L		*	3	4	7			

				B	L	U	E		1	9	9	5			
				F	O	R	D		F	1	5	0			
		F	L		T	A	G		A	B	C	1	2	3	

1st Line: Color & Year, 2nd Line: Make & Model 3rd Line: Tag # & State

STATE OF FLORIDA

BLUE ALERT (EAS Form)
EXAMPLE

☐ **REQUEST TONE ALERT (USE FCC CAE CODE) IN EAS AREAS**	**(This will be the EAS regions that you will determine based on the region within the state – select from Regions 1-12)**

(Attention Broadcasters: Please Read Immediately)

URGENT URGENT URGENT URGENT

ANNOUNCER:
(Sample text)
A Florida Blue Alert has been issued regarding _____ (or individual's name if available) who is believed to have shot (or injured if appropriate) a Florida Law Enforcement officer (or deputy, etc). The individual may be driving a (description of car) with Florida tag (tag number goes here) which was last seen at (address/location goes here). If you have any information on the whereabouts of this individual or vehicle, please contact the (name of agency of the alert) at telephone number (number goes here) or call 911. Do not attempt to approach the vehicle or subject as they should be considered armed and dangerous.

Guardrail Approach Terminal and Crash Cushion Snapshot Process

Appendix F

Guardrail Approach Terminal and Crash Cushion Snapshot Process

Objective

The Office of Maintenance has requested the assistance of the RTMC operators to take a snapshot of any crash that involves guardrail approach terminals or crash cushions. The snapshot will be included in the maintenance report, which will help the Maintenance Office see how the vehicle impacted the guardrail approach terminal or crash cushion. The snapshot will also assist in evaluating how the guardrail approach terminals and crash cushions operate in the field.

Needs

For a CCTV snapshot of the crash when the vehicle hits the guardrail approach terminal and/or crash cushions, maintenance would prefer a snapshot with the vehicle in the location of the crash.

Procedure:

1. The RTMC operator scans the CCTVs.
2. The RTMC operator sees a crash involving a guardrail approach terminal or crash cushion.
3. The RTMC operator takes a snapshot and documents the items below:
    a. Camera location and camera name
    b. Date/Time
    c. Roadway and direction
    d. Mile Marker (if possible)
4. At the end of every shift, the RTMC operator transfers the snapshots and documented information to a computer with email access.
5. The RTMC operator sends the snapshot and documented information to the Maintenance Office via email.
    a. Send the snapshots to the following email address as it corresponds to the district where the guardrail approach terminal or crash cushion damage took place:

D1: CO-ISPED1
D2: CO-ISPED2
D3: CO-ISPED3
D4: CO-ISPED4
D5: CO-ISPED5
D6: CO-ISPED6
D7: CO-ISPED7
FTE: CO-ISPED8

Wrong-Way Driving Event Standard Operating Guidelines

Appendix G

Wrong-Way Driving (WWD) Standard Operating Guidelines (SOG) for Regional Transportation Management Centers (RTMCs) and Traffic Management Centers (TMCs)

Prepared for:
Florida Department of Transportation

Traffic Engineering and Operations Office

1. Introduction

Wrong-Way Driving (WWD) occurs when a driver intentionally or unintentionally drives on the wrong side of a divided highway against the direction of traffic flow. When notifying motorists of an approaching WWD event, even a few seconds can be critical in saving lives. In many cases, the Florida Highway Patrol (FHP) will receive a call reporting a WWD event and they will notify the Regional Transportation Management Center (RTMC) or Traffic Management Center (TMC).

In some cases, the field detection device will detect a WWD event and send the notification to the RTMC or TMC. WWD detection systems, such as Wavetronix and TAPCO, send WWD alerts to the RTMC or TMC by using the SunGuide® software. The SunGuide software can communicate with WWD detection devices and can be configured to generate events and activate response plans automatically.

This document provides Standard Operating Guidelines (SOG) for the RTMC and TMC operators to utilize the Intelligent Transportation Systems (ITS) infrastructure (where available), along with Closed Circuit Television (CCTV) and Dynamic Message Signs (DMS) to detect, monitor, respond to, and manage a WWD incident.

2. TMC Operator Procedure

Upon notification of a WWD occurrence, either by a detection system or by a call from FHP or a motorist, the RTMC and TMC operators will execute the following procedures:

2.1. Automated e-mails

At their discretion, districts may opt to create a configurable distribution list and send email alerts to the members of that list. SunGuide automatically sends out an email alert to a configurable distribution list upon receiving notification of a WWD occurrence from a WWD detection system.

2.2. SunGuide Software Event Management

The SunGuide software will be used to assist in the management of the events with the following steps:

1. Manage the SunGuide-generated WWD alert and take ownership of an event or manually create a new WWD event. If a notification is received outside of the SunGuide software, then manually create a WWD event and response plan.

    1.1. Operators are expected to encounter the following scenarios while handling WWD events in the SunGuide software:

    - Field detection device integrated with the SunGuide software (automatic event, manual response)

        1. SunGuide Incident Detection Subsystem (IDS) detects a WWD incident,
        2. The IDS displays the system alert.
        3. The operator verifies the event using the camera view generated automatically by the WWD detection system or by the SunGuide software.

4. If a false positive is verified, the operator does not create any event. If WWD is confirmed or a false positive is not confirmed, the operator creates a WWD event.
5. The operator handles the alert by clicking "Create New Event."
6. The operator requests SunGuide to generate the response plan.
7. The operator amends the response plan, including DMS selection and messaging, as needed (see Section 1.2 for details on DMS selection).
8. The operator activates the amended response plan.

- Alert is received from a detection device not integrated with SunGuide software (manual event, manual response):

  1. The operator is notified.
  2. The operator verifies the event using the camera view generated automatically by the WWD detection system or by the SunGuide software.
  3. If a false positive is verified, the operator does not create any event. If WWD is confirmed or a false positive is not confirmed, the operator creates a WWD event.
  4. The operator manually creates the event.
  5. The operator creates the response plan, including DMS selection and messaging (see Section 1.2 for details on DMS selection).
  6. The operator activates the response plan.

- WWD call(s) received from law enforcement officer(s) (FHP or Road Ranger Service Patrol):

  1. The operator is notified.
  2. The operator manually creates the event.
  3. The operator creates the response plan including DMS selection and messaging (see Section 1.2 for details on DMS selection).
  4. The operator activates the response plan.

- WWD call(s) received from motorist(s):

  1. The operator is notified via FHP.
  2. The operator(s) simultaneously manually creates the event and verifies the location and direction of the wrong-way vehicle.
  3. The operator creates the response plan, including DMS selection and messaging (see Section 1.2 for details on DMS selection).
  4. The operator activates the response plan.

1.2. For manually created response plans, initially, activate the closest 10 miles of Dynamic Message Signs (DMS) as part of the response plan.

a. If the WWD is detected via a WWD detection system, only DMSs along the roadway direction of the detected WWD is activated.

b. Activate DMSs in both directions of the roadway if there is not sufficient confidence in the notification source of the correct direction of the roadway. For example, a WWD detected by detection device, not integrated into SunGuide, would have high confidence in the roadway direction of the WWD, while a motorist calling FHP may not have high confidence in the direction of roadway he/she is on.

c. Use the following message on the roadway with the WWD detection/report on DMS with 19 or more characters in width:

d. Use the following message on the roadway with the WWD detection/report on DMS with less than 19 characters in width:

a. Response Plan Verification

i. Verify the response plan was activated correctly. Use CCTV to verify DMS messages are displaying the preconfigured message.

b. Responder Coordination

a. Notify Road Ranger Service Patrols and provide WWD location information.

b. Contact FHP, and other agencies as necessary, to provide them with the WWD detection and location information to ensure they are aware of the alert, regardless if they are configured to receive an automated e-mail.

c. Event Verification

Ideally, WWD event verification will occur simultaneously with the event creation and response plan activation. If possible, one operator will manage the event while another verifies. The operator will use the following steps to verify the WWD event:

3. Attempt to find the WWD event on camera.
4. If a real-time video of the WWD detection is available, the operator must monitor the real-time video to determine the authenticity of the WWD detection. If the real-time video shows the WWD vehicle turns around and

proceeds in the correct direction, the operator should deactivate the DMS WWD messages if the messages have already been displayed.

5. If the WWD vehicle is found, drop onto the video wall, and drop onto video for other agencies as well if managing their video walls.
6. If the WWD vehicle is not found in 10 to 15 minutes of the notification, call FHP to verify the status of the WWD event. The time can be extended if deemed appropriate by the TMC Supervisor, i.e., if there is not optimal CCTV coverage of the area near the reported WWD detection or if the location was not clear and a larger area is being searched.

1.2.1. If FHP confirms that the WWD was not found, blank the DMS and close the event.

1.2.2. If the vehicle is found and involved in a crash, blank the WWD DMS messages, clone the WWD event, and make the crash event secondary to the WWD event, and manage the crash as a High-Profile event with existing event management procedures.

d. Event Closure

5. Close the event once approved by the TMC supervisor or equivalent.
6. Manage secondary events to the WWD event, without keeping the WWD event open.

5. Wrong-Way Driver Alerts in SunGuide

The FDOT has modified its SunGuide software to alert RTMC Operators when a WWD event is detected by ITS countermeasures. When a WWD event is detected on an exit ramp by a deployed detection system, the SunGuide software can display an alert in the SunGuide System Alerts window. It is critical for the RTMC operator to respond to the SunGuide WWD alert immediately. All RTMC operations staff must act in an efficient, coordinated response to the WWD alert.

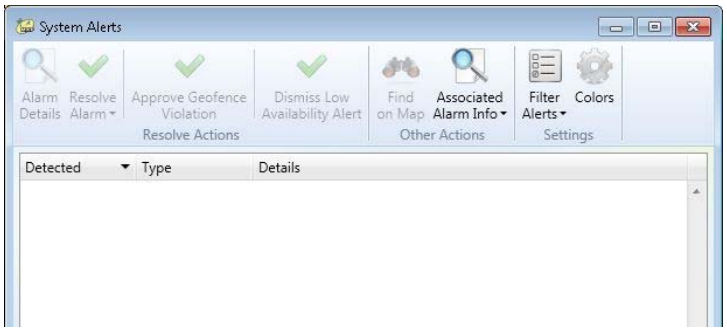

Figure 33: SunGuide System Alerts Window

6. SunGuide WWD Messaging Options

The following options, if configured beforehand and properly used, will reduce the time needed to post WWD messages. An RTMC or TMC may have its preferred method of activating DMS.

Method 1: Map-Based WWD Event Creation

1. Event entry for a WWD event can be used in SunGuide with a Right-click on the SunGuide map where the WWD event was reported being seen.
2. Select "Add New WWD Event." The nearest Event Management (EM) locations are grabbed (radially outward from where the mouse was clicked in step 1), and the signing will be posted in this local area.
3. The operator then selects either device linking or a radius to display the DMS messages. The signs will display for 10 miles along the freeway segment selected with device grouping or all the DMSs in SunGuide's control within the 10-mile radius will display the DMS messages. The WWD response plan is automatically activated by clicking the "Add Event" button.
4. The event entry will create a record in the SunGuide chronology reporting.
5. Document all activities in the SunGuide event accordingly to reference the actions taken and any relevant details of the event.

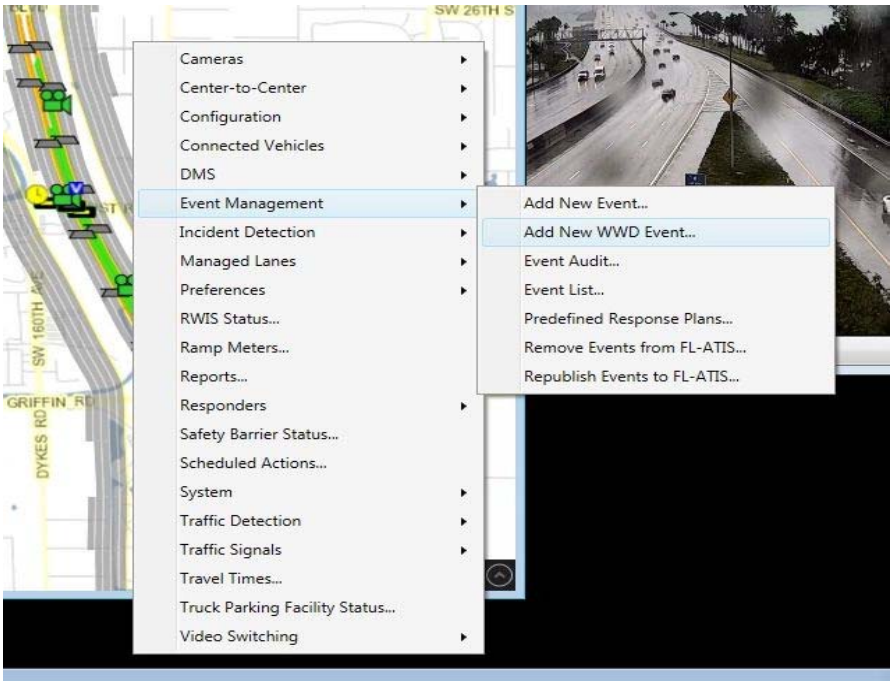

Figure 34: Event Management>Add New WWD Event

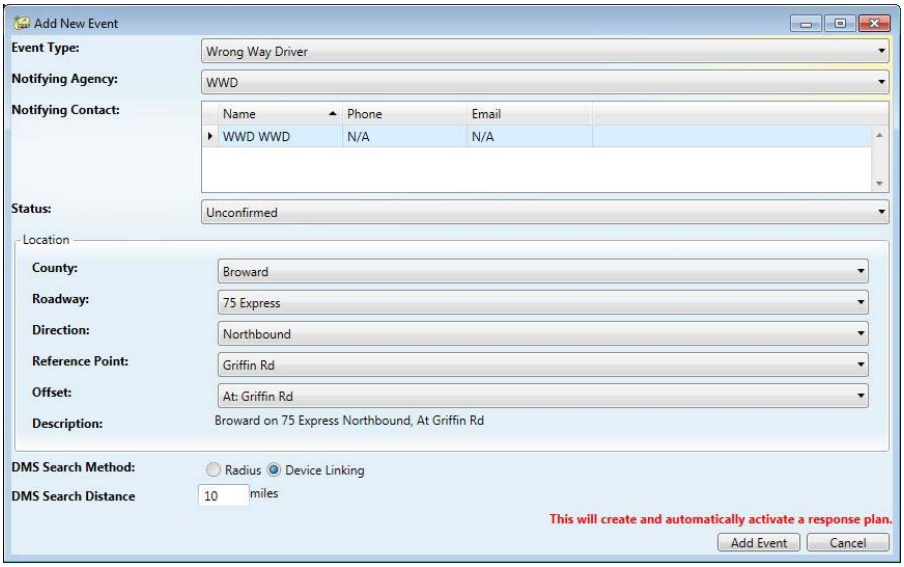

Figure 35: Add New Event Window

<u>Method 2</u>: Using SunGuide Scheduled Actions to Generate WWD Messages

1. The posting of the DMS WWD warning signs can be accomplished through the use of scheduled actions.
2. The Scheduled Action interface must be open and awaiting the operator to use it. When open, the operators can select the predefined zone or zones where the WWD event was reported from the lists of groups of DMS signs and activate the WWD warning messages in that zone. Operators may activate DMS on both sides of the freeway in the reported area through scheduled actions.
3. If possible, another operator will create a SunGuide event concurrently with the same messages for the same group of DMSs. Setting the same priority could replace the already displaying messages on selected DMSs, and this step will capture the DMS that was displayed for the chronology report.
4. Document all activities in the SunGuide event accordingly. Include detailed notes about the use of Scheduled Actions as the first response to the situation.

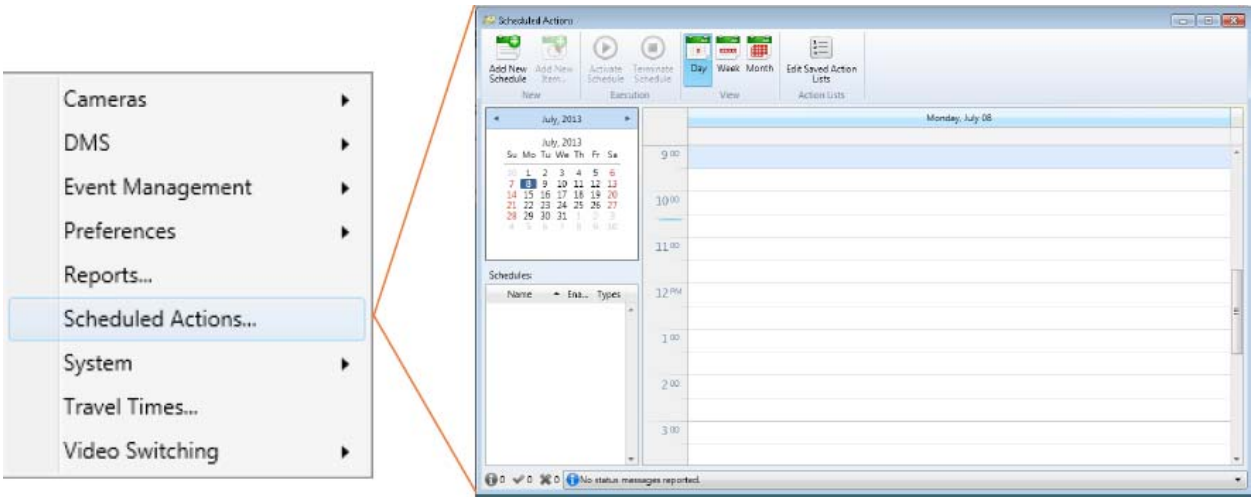

Figure 36: Scheduled Actions Window

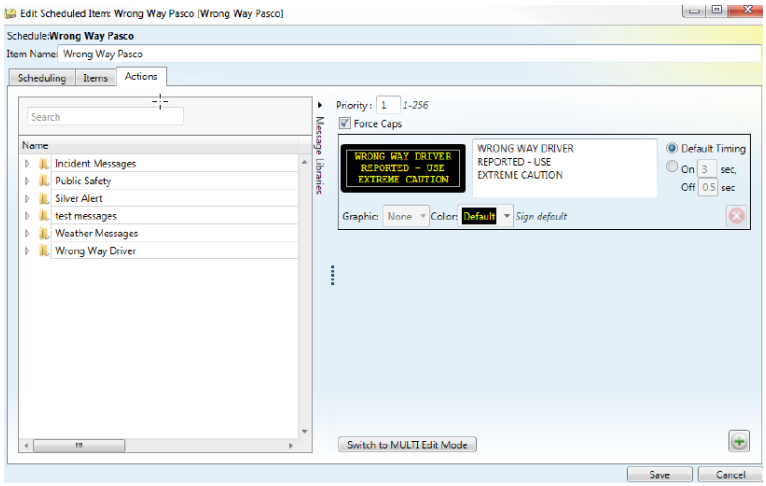

Figure 37: Edit Scheduled Item Wrong Way Pasco Window

Appendix D

District 5
Regional Transportation Management Center
Standard Operating Guidelines (SOGs)

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1. Introduction

This document, presented by the District Five Florida Department of Transportation (FDOT) Transportation Systems Management and Operations (TSM&O) office, contains FDOT's District Five's Regional Transportation Management Center (RTMC) Standard Operating Guidelines (SOG). Its objective is to help facilitate the proper operation of Florida's roadway transportation system by providing general guidance to TMC administrative and management personnel in the form of a strategic blueprint for success. This blueprint outlines recommended TMC stakeholder roles, functions, and regulations, and identifies desired results that are all based on a comprehensive study of the best nationwide and statewide practices.

In summary, this document describes "what is to be carried out and accomplished" from a top-down perspective. It is meant to serve as essential guidance to aid stakeholders and managers in the further development of individual TMC Standard Operating Procedures (SOP). It includes SOGs as they relate to TMC stakeholder responsibilities, Intelligent Transportation System (ITS) devices and tools, managing roadway events, system monitoring, and more.

This document contains standard performance measures that will be used to help the TSM&O and district office monitor the extent to which quantifiable progress is being made against pre-determined key goals associated with efficiency and effectiveness.

The TSM&O office intends that this be a living document to ensure that SOGs and performance measures remain up-to-date, accurate, and meaningful. The goal is to present opportunities for all stakeholders to provide input and feedback on this document as well as to propose new measures or revised language, as needed, to ensure that the most valuable and effective practices are in place.

The District Five SOG is intended to be supplemented by more detailed instructions provided in SunGuide training, SOPs, and other reference material such as the Manual on Uniform Traffic Control Devices (MUTCD). These guidelines should be referenced regularly by operations staff.

Figure 1: The District Five Regional Transportation Management Center (RTMC) in Sanford, FL.

2. General Overview

2.1 ICM Mission Statement

To provide a safer transportation system that ensures the mobility of people and goods, enhances economic prosperity, and provides real-time traveler information and system reliability through Integrated Corridor Management (ICM) strategies.

2.2 ICM Vision Statement

ICM is defined as a collection of operational strategies and advanced technologies that allow transportation subsystems, managed by one or more transportation agencies, to operate in a coordinated and integrated manner.

The Federal Highway Administration's (FHWA's) vision of ICM is that transportation networks will realize significant improvements in the efficient movement of people and goods through institutional collaboration, integration of existing transportation infrastructure along major corridors, and management of that infrastructure as wholly multi-modal systems.

ICM Staff will implement these strategies and visions through aggressive cooperation with partner agencies coupled with proactive transportation management within the RTMC and the cohesive management of both the freeways and the arterials in District Five. By leveraging relationships and network connections between FDOT and their partners, traffic can be moved more efficiently and with a common goal in mind.

2.3 Scope of Work

The District Five RTMC is tasked with the monitoring, reporting, and management of traffic conditions on jurisdictional roadways within FDOT District Five, which includes the following nine counties: Brevard, Flagler, Lake, Marion, Orange, Osceola, Seminole, Sumter and Volusia. The RTMC provides coverage for critical selected highways and arterials within District Five including, but not limited to Interstates, Toll Roads, State Roads and US Highways, as well as various key arterial roadways. The overall goal of ICM is to operate the transportation network in a balanced way that utilizes both the freeways and arterials to improve the overall safety, efficiency and reliability of the network. By combining Arterial Management with the Freeway Management System (FMS) as one transportation network, under one umbrella, the program provides District Five and its stakeholders a seamless operation.

As a part of ICM, baseline conditions have been established for each corridor. ICM staff identifies any deficiencies, monitors the corridor on a regular basis to identify any degradation of the corridor requiring corrective action, and then initiates such corrective action. Work is performed using a variety of devices, systems and software, including the SunGuide® software, which is exclusive to FDOT and utilized at Transportation Management Centers (TMC) statewide, to detect and respond to planned and unplanned events that arise on the roadways, and to mitigate their effects. Real-time incident information is also posted to Florida 511 to alert motorists. Because roadways within the District are the primary source of conveyance for goods and people, it is imperative to the economic vitality and general well-being of the region to ensure that traffic flows safely and efficiently, and can be diverted effectively if the need arises.

2.3.1 Roadway Coverage

Currently, the District Five RTMC provides real-time traffic information for:

Roadway	Counties	Coverage
Interstate 4 (SR-400)	Orange, Osceola, Seminole, Volusia	MM 58 - MM 132
Interstate 95 (SR-9)	Brevard, Flagler, Volusia	MM 160 - MM 298
Interstate 75 (SR-93)	Marion, Sumter	MM 307 - MM 374
SR-408 (East-West Expressway, toll)	Orange	MM 0 - MM 23
SR-414 (Maitland Blvd Ext., toll)	Orange	MM 4 - MM 9
SR-417 (Greenway, toll)	Orange	MM 5 - MM 37
SR-429 (Western Beltway, toll)	Orange	MM 8 - MM 34
SR-451 (toll)	Orange	MM 4 - US-17/92
SR-453 (toll)	Lake, Orange	MM 0 - MM 3
SR-528 (Beachline Expressway, toll)	Brevard, Orange	MM 8 - MM 31
SR-528 (Beachline)	Brevard, Orange	MM 31 - MM 55
SR-538 (Poinciana Pkwy, toll)	Osceola	MM 0 - MM 7
Arterials (State Roads, US Highways)	Brevard, Flagler, Lake, Marion, Orange, Osceola, Seminole, Sumter, Volusia	Varies

Table 1: Covered Roadways

2.4 ICM Stakeholders

The coordination process within the RTMC involves several public and private sector partners, including:

- Public Safety/First Responders including:
  - Police Departments
  - Sheriff's Offices
  - Fire Departments
  - Emergency Medical Services (EMS)
  - Fish and Wildlife Commission (FWC)
  - Florida Forest Service (FFS)
  - Local Animal Control
- State and local Departments of Transportation
- State and Local Emergency Operations Centers (EOCs)
- Expressway Authority
- FDOT Central Office
- District Five FDOT Staff
- Public Information Officers
- Other District and Local TMCs
- Local City and County Agencies
- Department of Environmental Protection (DEP)
- Towing and Recovery
  - Rapid Incident Scene Clearance (RISC) Vendors

- Road Ranger Services
- Roadway Maintenance Contractors
- ITS Maintenance Contractors
- Media Outlets
- Educational Institutions
- Road users

2.5 Facility Information

2.5.1 Hours of Operation

The District Five RTMC operates seven days a week, twenty-four hours a day, and three hundred sixty-five days a year. While standard operations require ICM staffing to work within the RTMC, special events can dictate ICM staffing to report to, and operate out of, remote facilities such as Emergency Operations Centers (EOCs) and Local Agency TMC's.

2.5.2 RTMC Layout

The RTMC is co-located with the Florida Highway Patrol (FHP) center for state law enforcement dispatch, an entity consisting of dispatchers for FHP Troop D and Florida Fish and Wildlife Commission (FWC). The RTMC consists of four "pie piece" desk groupings, a central command area and FHP/FWC Dispatch. Each desk grouping faces a videowall and the video displayed there focuses on the roadways covered by that "pie piece". When looking at the FDOT logo in the room, the videowalls are labeled 1-4 counting from left to right. Within the central command area lies space for RTMC Management and Traffic Incident Management (TIM) personnel.

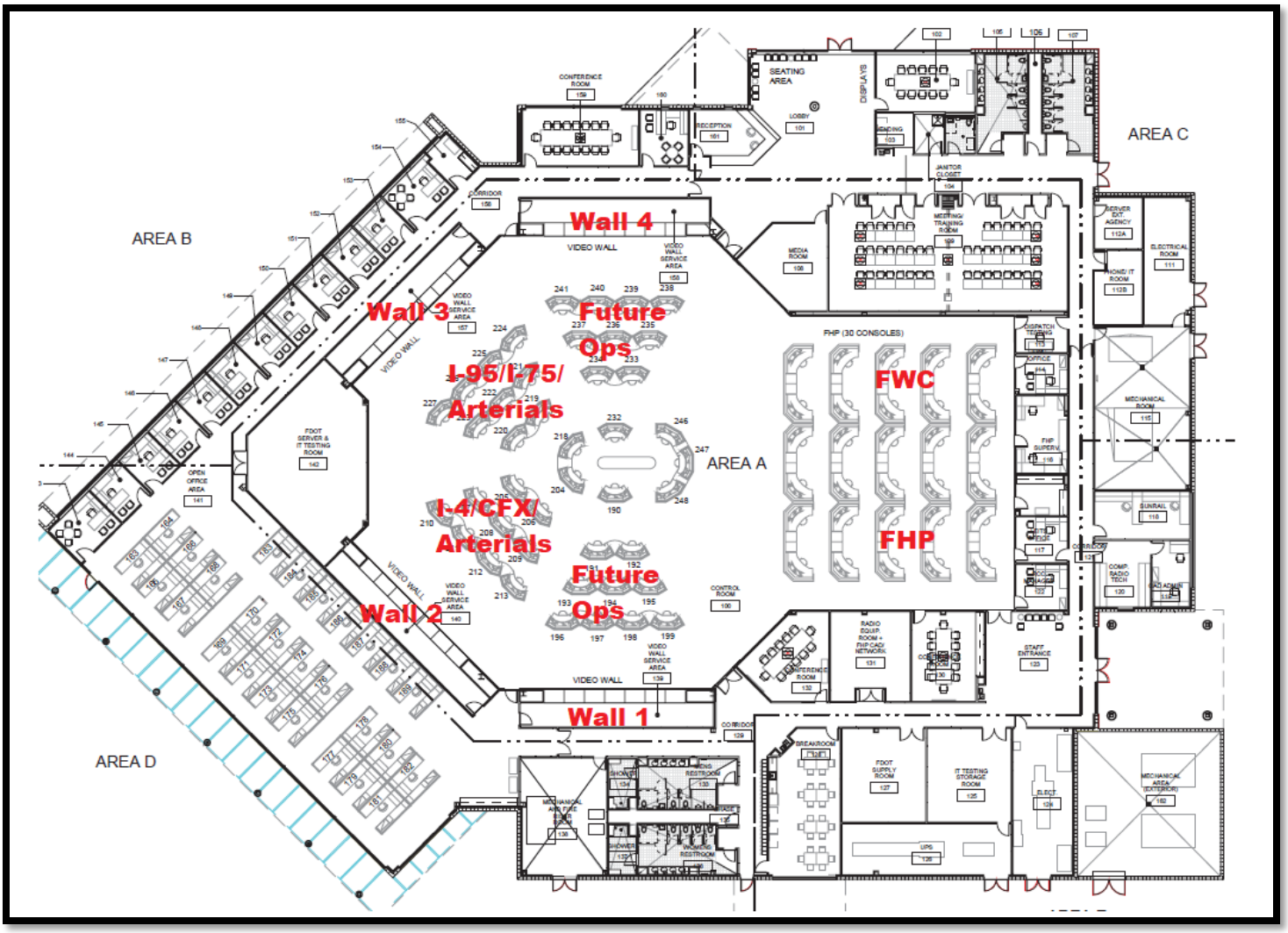

Table 2: RTMC Building Layout

2.5.3 Security and Access

The District Five RTMC Floor is a secure area and entrance requires the use of an electronic passkey obtained via an FDOT facilities work order request. No passkeys will be issued to non-operational personnel. Lost passkeys shall be reported immediately to RTMC management so that the card can be deactivated. To receive a passkey, one must pass both FDOT security and State Law Enforcement Radio Systems (SLERS) testing. For visitors and other personnel (contractors, consultants, etc.) to enter the RTMC, communications center or equipment rooms, they will be required to contact FDOT or the appropriate FDOT representative for access. Visitors and/or other personnel must be escorted by someone from FDOT or their designee. Appointments shall be made for all maintenance and installation work involving the equipment or communications rooms. All visitors to the equipment or communications rooms must sign in and sign out per building policy and FHP regulations.

A full background investigation completed by the Joint Task Force (JTF) for Law Enforcement us required for any personnel who will be working on the RTMC floor due to use of the SLERS and potential exposure to confidential information. A clear background check is required for employment within the RTMC. An applicant can be denied access for any of the following reasons:

- The applicant has been convicted of a felony offense.

- The applicant is currently on probation for any offense or has charges pending (felony or misdemeanor).
- The applicant has been convicted of a misdemeanor offense involving any type of theft, violence, or drug offenses within the past three years.
- The applicant's driver license is currently suspended or revoked for any reason.
- The applicant has been convicted of a crime involving domestic violence or currently has a restraining order involving domestic violence or threats.
- The applicant has been arrested for any charge involving resisting arrest, battery, or assault on a law enforcement officer.
- The applicant is wanted for any criminal offense.
- The applicant is illegally residing in or is not approved to work in the United States.
- The identification of adverse intelligence information regarding the applicant.
- At the discretion of the Security Manager based on any other adverse information regarding the applicant.

In addition to the FDOT security and SLERS testing, each ICM Staff Member must also complete the Criminal Justice Information Systems (CJIS) testing. The CJIS provides a range of state of-the-art tools and services to law enforcement, national security and intelligence community partners, and the public. The purpose of the ICM Staff Member completing this training is to ensure that each employee is properly trained on appropriate behavior associated with being exposed to sensitive information that can be transmitted from FHP or other law enforcement agencies.

To obtain an electronic passkey which grants access to the RTMC Floor, each employee must successfully complete all the above listed testing which is provided by RTMC management during the application process. Additional computer-based training regarding workstation and internet usage, building policies and professional etiquette is also administered.

For those working within the District Five RTMC that do not require access to the RTMC Floor, the SLERS background check is not a requirement.

2.5.4 Safety Guidelines

All staff is ultimately responsible for their own safety. RTMC personnel must abide by all federal and state laws and regulations as well as the procedures established by FDOT and the staff member's employer concerning safety. If injured on the job, it is each staff member's responsibility to promptly obtain first aid and to report the injury to RTMC and FDOT management.

All personnel should look for hazards and be aware of their surroundings. Changes to the work area may have occurred during time away from work. Be alert, use common sense and good judgment when encountering a questionable situation and do not be afraid to ask questions. Always be aware of the safety procedures for your job and follow them.

All staff must immediately report to their supervisor, manager, or a member of FDOT staff any unsafe work practices or unsafe conditions, either verbally or in writing, such as:

- Unsafe condition(s) of motor vehicle, equipment, facilities, or property owned, leased, or operated by the Department, the Department's contracted vendors/consultants, and/or other building occupants where conditions may jeopardize the safety of the employee, other employees, or the public.

- Any practice or operation being carried on by other employees which may jeopardize the safety of the employee, other employees, or the public.

2.5.5 Evacuation of the RTMC

While unlikely, if an evacuation of the RTMC is required, the ICM Staff on duty are required to follow key procedures to ensure a safe exit. For security purposes these procedures will not be made public in this document but are available in the D5 RTMC consultant SOPs.

Satellite operations are available via the District Office in DeLand, but coordination with the Department is required to initiate that response. During an evacuation it is imperative that key personnel and agencies are notified immediately so an appropriate response can be implemented quickly and efficiently. For more details on this process please see Appendix B regarding the District Five RTMC Disaster Recovery Plan.

All building occupants are required to meet in the parking lot on the north side of the building for an attendance check. You may not leave the area, via foot or vehicle, without first checking in with RTMC and FDOT management at the evacuation rendezvous point.

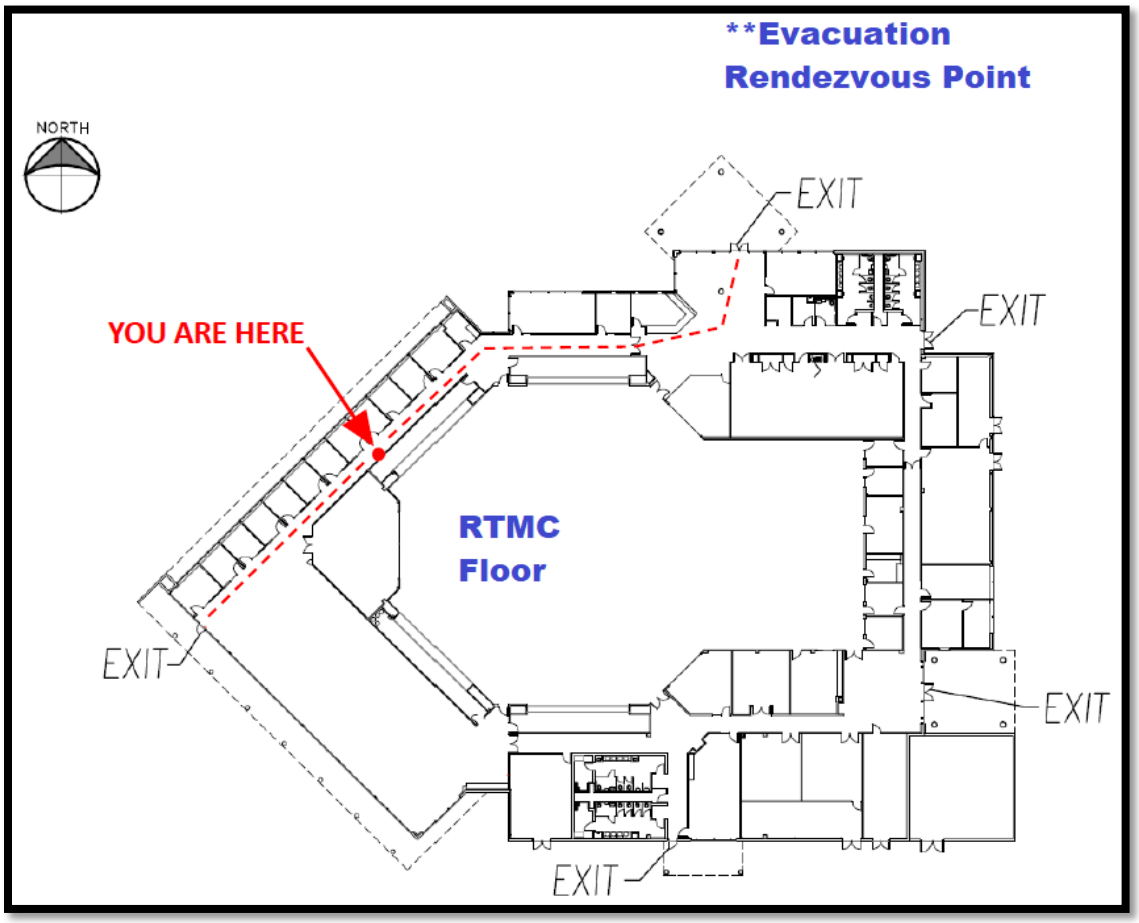

Table 3: District Five RTMC Evacuation Map

2.5.6 FHP Regulations on RTMC / Communications Center Access

Effective January 1, 2013 an escort is required for any non-approved personnel entering the RTMC/Regional Communications Center (RCC). Those individuals who have completed the JTF Background Check and the

Criminal Justice Information System (CJIS) online awareness training are considered approved personnel and do not need an escort.

If unescorted access is being requested for someone who has not completed the SLERS and CJIS prerequisites, they must be identified with credible identification and have their name run through the JTF security website by FHP personnel or other individuals with authorized access to the JTF website. When more than one person arrives together, that will stay together while in the center, only one of the persons needs to be checked. The other personnel will be considered as escorted by the person verified as approved.

Example: If someone from Activu arrives, they must be escorted because we have not performed a background check on Activu personnel, however, if the Activu person is working with a Transcore employee and the Transcore employee has been approved, the Transcore employee is permitted to escort the Activu person in the RTMC. In this situation, ALL (including the approved person) must sign the log to enter the facility.

All RTMC staff, ITS Group employees, FHP and FWC personnel have completed the background investigation and can enter the room without signing the log. All other non-RTMC/FHP/FWC personnel must log in when entering the facility even if an escort is not required.

For more detailed information regarding the signed District Five RTMC building SOP please reference Appendix A.

2.5.7 Smoking Policy

The District Five RTMC is a non-smoking facility. No one is permitted to smoke inside the center. However, a smoking patio is located outside the center. ICM Staff can smoke only during scheduled breaks and shall notify the Supervisor or Lead Operator on duty prior to leaving for a break.

2.5.8 Drug-Free Workplace

The District Five RTMC is committed to providing a safe work environment and fostering the well-being and health of its employees. That commitment is jeopardized when any RTMC employee illegally uses drugs or alcohol on the job, comes to work with these substances present in his/her body, or possesses, distributes, or sells drugs in the workplace. Therefore, it is a violation of RTMC procedures for any employee to possess, sell, trade, or offer for sale illegal drugs or otherwise engage in the illegal use of drugs, intoxicants, or alcohol on the job. It is prohibited for anyone to report to work under the influence of illegal drugs, intoxicants, alcohol, or to use prescription drugs illegally. Nothing precludes the appropriate use of legally prescribed medications. A violation of these safe work environment practices is subject to disciplinary action up to and including termination of employment.

2.6 FDOT Equipment Usage and Proprietorship

2.6.1 Department's Policy

All staff accessing Department information technology resources are expected to use good judgment and common sense to avoid abuse and inappropriate use of resources. Employees shall not access, send, store, create, or display inappropriate materials including but not limited to gambling, any illegal activity, sexually

explicit materials, or materials that include profane, obscene, or inappropriate language, or discriminatory racial or ethnic content.

2.6.2 Statement on External Devices

Any individual authorized to use Department computers, and who does so use a Department computer, may not insert, or connect an unapproved external device. Unapproved external devices include but are not limited to items such as USB storage devices and phone chargers. Any individual who inserts or connects an unapproved device is in violation of Department policy.

2.6.3 Computer and Internet Policy

Employees are granted use of FDOT computers and the Internet to carry out the mission of the Department and to promote efficiency and improved communications with our internal and external customers. The Internet should be used for business purposes only and should fall within compliance with the expectations described in the Department's security policy. Internet access is only authorized through the Department's proxy server. Usage is monitored and detailed records are maintained for use in detecting abuse or misuse of this resource without notice to employees.

For more detailed information please read through the FDOT Security Policy available on FDOT's District 5 website www.cflsmartroads.com.

Everyone accessing Department information technology resources is expected to use good judgment and common sense to avoid abuse and inappropriate use of resources.

2.6.4 Florida Statute 119: Florida's Public Records Law

Pursuant to Florida State Statute 119 (FSS 119):

FSS 119.01(1): It is policy of this state that all state, county, and municipal records are open for personal inspection and copying by any person. Providing access to public records is a duty of each agency.

FSS 119.011(12): "Public records" means all documents, papers, letters, maps, books, tapes, photographs, films, sound recordings, data processing software, or other material ***regardless of physical form****, characteristics, or means of transmission, made or received pursuant to law or ordinance or in connection with the transaction of official business by any agency.*

Employees of the RTMC will be using Department computers and interacting on phone lines which are recorded. It is of the utmost importance that each individual employee familiarizes themselves with the broad and sweeping public records laws of the State of Florida. Any phone contact with the co-located state law enforcement dispatch center is recorded and subject to disclosure to the public. When calling other agencies by phones, be conscious of the fact that their line may also be recorded. Files stored on Department computers become public record which must be retained by the state for inspection by the public upon demand. Emails sent using the FDOT email system are also considered public record. It is for those reasons that no personal

documentation should ever be saved on a Department computer or network and FDOT email should only be used for work related communication.

2.6.5 Contact with the Media and the Public

At no time is it permissible for RTMC personnel to comment to the media without the express permission of the FDOT Project Manager. All media inquiries shall be forwarded to the FDOT Project Manager.

For those individuals that do contact the RTMC, please take a message with a name and return phone number. E-mail this to the RTMC FDOT Project Manager. They will return the call.

For information relating to incidents, the RTMC will continue to contact other District Traffic Management Centers to keep each other up to date regarding incidents and resultant roadway conditions. If a TV Station or Third-Party Provider calls the RTMC requesting incident information, the RTMC is to direct them to contact the Public Information Officer for the law enforcement agency working the incident.

Contact Information	
TSM&O Contract Manager	**District Public Information Director**
Jay Williams	Jessica Ottaviano
FDOT District 5	FDOT District 5
4975 Wilson Road	719 S. Woodland Blvd
Sanford, FL 32771	Deland, FL 32720
Office: 321-257-7243	Office: 386-943-5473
Jay.Williams@dot.state.fl.us	Jessica.Ottaviano@dot.state.fl.us

Table 4: FDOT District Five Project Manager and Public Information Officer Contacts

Most calls received directly from the public will be for Road Ranger service. When this happens, the employee should take down all pertinent information including a name and call back number, then depending on the location of the motorist, dispatch the closest Road Ranger on duty in that area or notify the appropriate operations team. If no Road Rangers are in service, refer the caller to the appropriate law enforcement agency, or state law enforcement dispatch center for assistance.

2.7 Personnel Decorum

This section describes the professionalism, ICM Staff conduct and policies to follow when working in the RTMC.

2.7.1 Appearance Guidelines

The RTMC is a professional environment, and employees are always expected to present a professional, business-like image. Acceptable personal appearance, as well as proper maintenance of work areas, is an ongoing requirement of employment at the RTMC.

ICM staff will be provided collared shirts with logos and should wear khaki or dress pants and appropriate closed-toed shoes. Jeans are permitted on Fridays, weekends, and major holidays, and shall be in respectable condition, free of holes, patches, or other blemishes. Employees are responsible for the laundering and cleanliness or his/her uniforms.

ICM staff is expected to be well-groomed and manicured. Hairstyles, wigs, moustaches, sideburns, and other grooming effects should be neat and well kept. At no time are hats permitted in the RTMC. Any employee who

does not meet the standards of this guideline will be required to take corrective action, up to and including leaving the RTMC. Violations of this guideline may also result in disciplinary action.

Employees must wear their identification badges in a manner where they are always visible.

2.7.2 Behavioral Policy

The following are examples of infractions of rules of conduct that may result in disciplinary action, up to and including termination of employment. *This is not an exhaustive list.*

- Theft or any unauthorized possession, removal, or attempted removal of Consultant Firm, FDOT, Central Florida Expressway (CFX) or FHP property or the property of other employees
- Falsification of job application, resume, timesheet, or any other personnel document
- Violation of the Department or Consultant Firm's substance abuse drug free workplace policy; this includes the possession of illegal drugs on the RTMC premises
- Gambling on premises or while on working time, whether on or off RTMC premises
- Fighting or threatening violence in the workplace
- Threatening, intimidating or coercive behavior, abusive or vulgar language or any other language or conduct that interferes with the performance of other employees
- Disruptive activity in the workplace
- Violation of the policies against harassment
- Possession of a weapon or any other unauthorized item that could pose a risk to the safety of others
- Excessive tardiness or absence with or without notice or leaving during a shift and not returning to work without approval from management
- Insubordination (including, for example, any refusal to comply with instructions or to carry out work assignments) or lack of cooperation, whether in language or conduct
- Unauthorized use of Consultant Firm/ FDOT/ CFX/ FHP materials, time, equipment, or other property
- Repeated violation of Dress Code Policy
- Watching TV other than News or Weather at the RTMC
- Use of cell phones or business lines for personal use when not necessary
- Abandonment of job – The Consultant Firm is responsible for a 24/7/365 operation. The employee is required to notify his/her Supervisor or appropriate on-duty staff when a Supervisor/Lead isn't available if they are going to be late or are unable to report to work. Notice should be made 8 hours prior to their scheduled shift. Repeated disregard for proper notification is addressed as job abandonment.
- Sleeping on the job
- Racial, sexual, religious, etc., discrimination and harassment

While the foregoing list identifies activities and conduct for which ICM personnel may be terminated or disciplined, it is only representative and not inclusive. It should not be inferred that these or similar activities must be present to justify termination of employment. The expectation for all employees is always to behave in a professional manner and demonstrate respect for others.

2.7.3 ICM Staff Conduct

It is important that ICM employees always remember that they represent not only themselves, but also their firm and FDOT. Employees at the RTMC are expected to present a professional image and demeanor. Common courtesy and respect for all personnel within the building is expected of all ICM employees. Loud talking, yelling

and other disruptive behaviors are not permitted at any time. Remember; the RTMC is co-located with a state law enforcement dispatch center and such disruptive behaviors can have serious implications on dispatch operations.

2.7.4 Personal Electronics Policy

Personal phone calls, text messages, personal emails, etc. shall be handled outside of the RTMC Floor area. In accordance with the FHP Communications Manual, ICM staff must refrain from personal cellular telephone usage while on the RTMC Floor. Other forms of personal electronics such as laptop computers shall not be used on the RTMC Floor. While personal cell phones are not prohibited from being on the RTMC Floor, they must have their ringer set to the vibrate/silent mode and the phone should not be answered unless an emergency occurs. Coordination with RTMC management should occur if personal phone calls are needed while on the RTMC floor.

It is prohibited for any ICM Staff to take video or pictures of the FHP or FWC dispatch consoles, the portion of the room that is assigned to FHP and FWC, or previous or current incidents. If video or still images are taken of these areas and then shared via text, email, or any other form of electronic sharing, ICM Staff are subjected to disciplinary action up to and including termination of employment.

2.7.5 Telephone Etiquette

The staff of the RTMC will receive calls from a variety of sources including agencies and the public. All calls will be handled in a courteous and professional manner, regardless of the content of the call or the attitude of the caller. When answering any incoming calls from the outside line, the ICM Staff Member should use a standard greeting of:

"RTMC, this is (your name). How may I help you?"

Calls will also be received from the dispatch center co-located with the RTMC. These calls come in through a separate phone line, informally known as the *FHP phone*. This line may be answered simply with *"Front desk"* and all conversations should be kept short and professional as they are recorded.

2.7.6 Attendance Policy

ICM staff should be advised that shift start and end times, as well as scheduled days, are subject to change based on business need.

ICM staff will report to the RTMC by the scheduled start of the work shift unless otherwise authorized by an appropriate supervisor.

If ICM staff cannot report by the assigned time, but will be able to report late, the employee must verbally contact his/her immediate supervisor before the start of the shift to explain the situation and to provide an estimated time of arrival. ICM Staff are expected to report for their assigned shift except when prevented by injury, illness, or an emergency. ICM staff reporting after their shifts scheduled start time will be considered "late" unless previous approval has been arranged with a manager.

Any leave of absence, with or without pay, shall be approved prior to the leave commencing unless emergency circumstances prevent such action. Leave without proper approval will be addressed by management.

2.8 Operational Account Access

All ICM Operations personnel must obtain a Windows User Profile, FDOT email account, and SunGuide® access as part of the RTMC onboarding process. In addition to completion of the previously mentioned CJIS training, the new employee will also complete a Security Access Request (SAR) Form defining the appropriate level(s) of access for their intended position.

To obtain an FDOT email account, each employee will complete the FDOT Technology Resource Awareness Certification Kit (T.R.A.C.K.) course. Once completed, the FDOT Computer Security Access Request (CSAR) form shall be submitted to FDOT's District Five Traffic Operations Department. They will return a Transportation Technology Acceptable Use Agreement (AUA) that requires the new employee's signature, which will then be resubmitted to FDOT.

A Jira ticket will then be created, and the new employee's supervisor will work directly with FDOT to facilitate access to the FDOT workstations. The following items shall be included in the JIRA ticket:

- Proof of SLERS approval
- CJIS Certificate of Completion
- FDOT T.R.A.C.K. Certificate
- AUA document
- SAR Form

Continued training modules that are required by FDOT for account access include the following:

- FDOT Fire Prevention Training
- FDOT Public Records
- FDOT Equal Employment Opportunity
- FDOT Zero Tolerance for Violence

3. Integrated Corridor Management

The vision of Integrated Corridor Management, as mentioned in Section 2: General Overview, is to leverage relationships and network connections between FDOT and local agencies to manage corridors as a multimodal system and make operational decisions that benefit those corridors as a whole. When these agencies work together, traffic can be moved more efficiently and with a common goal in mind.

3.1 Freeway Operations

The freeways covered by the RTMC provide the bulk of incidents which the RTMC will encounter during daily operations. I-4, I-95 and I-75 are all covered in some part by the RTMC, and they are the major avenues of commerce. For this reason, FDOT has invested heavily into ITS, to mitigate the effects of traffic. That ITS network consists of devices such as speed detectors, cameras, and Dynamic Message Signs (DMS).

On I-4, I-95 and I-75, detectors can be found approximately ½ to 1 mile apart. The data collected is used to calculate travel times, and provide RTMC Operators with speed, volume, and occupancy data for any given segment of interstate. There are two types of detectors currently in use, those which are cut into the ground, magnetic loop detectors, and those which are posted on the side of the road, known as radar detectors.

Cameras along the interstate highways are the primary means of monitoring active incidents and events. These cameras can pan, tilt, and zoom, making them incredibly powerful tools in incident detection and confirmation.

DMS on interstate highways are placed strategically as to allow pertinent information to reach motorists. Information ranges from travel times to road closures, public safety announcements (PSAs) and even adverse weather conditions.

By working closely to monitor conditions of the freeways, Operators can coordinate resources to respond when incidents do occur. Some incidents require the presence of Asset Maintenance (AM) staff to aid in the provision of a safe work zone at an incident scene, repairs to damaged assets along the freeway, or alternate route detours during full closures. Working together with the other key players in the RTMC can provide a unified response and aid in clearing the roadway more quickly which in turn can reduce the danger to first responders and other motorists.

3.2 Arterial Operations

Incident management along the freeway has a direct impact on surrounding arterial roadways. Arterial operations mitigate this impact with the use of diversion timing plans, which focus on shifting traffic off the impacted interstate segment to the arterial roadway network to bypass the congestion. Arterial Operators complement the efforts of the Freeway Operators by managing surface roadway traffic efficiently during an incident. To this effort, Arterial Corridor Managers utilize local agency Arterial Traffic Management System (ATMS) platforms to monitor and, under the direction of the Signal Timing Engineer, implement traffic signal patterns to best accommodate the increased demands at the impacted traffic signals during an event. This occurs via coordinated and close communications between the Managers, Operators, and the local agencies.

As with freeway operations, arterial operations can require the presence of AM personnel to aid in resolving damage to the roadway, physical re-routing of traffic and the creation of safe work zones during incidents.

3.3 Express Lanes Operations

Express lanes are optional travel lanes, located on an interstate or toll road, that customers can choose to use when they want a more predictable travel time. Customers in the express lanes pay a dynamically priced toll

that increases as traffic begins to build in the express lanes and decreases as traffic reduces. Express lanes are designed with a limited number of entrance and exit points to serve longer, more regional trips. Customers must have an active and properly mounted SunPass or other interoperable transponder, as no cash or TOLL-BY-PLATE is accepted in the express lanes.

3.4 Traffic Incident Management

According to the FHWA, Traffic Incident Management (TIM) is the planned and coordinated multi-disciplinary process to reduce the duration and impact of incidents and improve the safety of motorists, crash victims, and emergency responders.

TIM is a function of the federal Emergency Transportation Operations (ETO) program, which consists of integrated interagency communications, on-scene Traffic Incident Management operations, and regional/statewide programs and institutional coordination.

District 5's TIM program goals align with the FHWA TIM program goals of:

- Responder safety
- Safe, quick roadway clearance, whereby reducing the risk of secondary crashes
- Prompt, reliable interoperable communications

3.4.1 Benefits of TIM

3.4.1.1 Increased Driver Safety

Tens of thousands of motorists are killed in highway crashes each year. Effective implementation of TIM strategies can save the lives of drivers and emergency responders, alike, who are often killed or injured at incidents scenes by passing vehicles. On average, nearly fifty responders (including fire/rescue, law enforcement, safety service patrol, and tow truck operators) are killed each year while working in or alongside the roadway. Countless others are injured and/or experience property damage that costs taxpayers millions of dollars.

Effective TIM measures can also reduce the occurrence of secondary crashes. The likelihood of a secondary crash occurring increases by 2.8 percent for each minute the primary incident continues to be a hazard, increasing the risk to driver and responder lives, while compounding congestion and further delaying response and recovery times.

3.4.1.2 Congestion Relief

Proper TIM practices can aid in the relief of congestion on our District's roadways. Traffic incidents account for approximately 25 percent of all congestion on US Roadways. Every minute of blockage on a freeway travel lane increases delay after the incident is cleared by a factor of four. Idling traffic costs the US trucking industry over $7.8 billing annually.

3.4.1.3 More Effective Preparation for Larger-Scale Emergencies/Disasters

TIM is scalable. The improved coordination between responder agencies for routine, roadway response activities translates to improved coordination for larger-scale incidents and emergencies, both man-made and natural.

3.4.1.4 Public Resources Go Further

Effective implementation of TIM strategies can lead to gains in efficiencies of existing resources of stakeholder agencies improving service levels and performance to the communities these agencies serve.

3.4.1.5 Reduced Emissions

Environmental benefits accrue when congestion is reduced, and less fuel is spent idling. Implementing TIM quick-clearance and ICM diversion strategies helps to minimize stops and starts by all vehicles, including tractor trailers, which produce significantly more emissions than passenger vehicles.

3.4.2 Incident Command

The Incident Command System (ICS) is a component of the National Incident Management System (NIMS). ICS provides a nationally standardized approach to the command, control, and coordination of inter-agency emergency response operations. The standardization hierarchical structure of ICS is the foundation of the National Unified Goal (NUG) for Traffic Incident Management, which is:

- enhanced emergency responder safety;
- safe and quick clear roadway incidents; and
- prompt, reliable, interoperable communications.

The RTMC's TIM Specialists serve as the FDOT District 5 incident command, facilitating communications and coordination with the Department's incident response resources and outside emergency response partners for large-scale or complex traffic incidents, and during special events that result in significant increases of vehicular traffic. These events include music festivals, conventions, sporting events, space launches, protests, dignitary visits, hurricane evacuations, etc. Additionally, TIM Specialists make high-level decisions with regards to the utilization and dispatch of TIM resources such as Road Rangers, RISC vendors, Safe Tow vendors, etc.

3.4.3 District Five TIM Teams

District 5 has four (4) TIM teams, which are intended to provide a unified, regional approach to Traffic Incident Management, while recognizing the differing characteristics and unique needs of each geographical area represented.

The teams are:

- I-4/Metro Orlando (Lake, Orange, Osceola, and Seminole Counties)
- I-75 Area (Lake, Sumter, and Marion Counties)
- I-95 North (Flagler and Volusia Counties
- I-95 South (Brevard County)

The District's TIM Program Manager serves as the facilitator of quarterly TIM meetings for each team. Emergency response partners and transportation professionals, from the respective geographical area, meet to network and discuss a variety of topics intended to foster a collaborative environment in Traffic Incident Management. Topics for these meetings include:

- After Action Reviews (AAR) of recent incidents – lessons learned and improvement plans
- Emergency responder safety issues
- TIM training

- Best practices
- New technologies in TIM
- Roadway safety concerns
- Construction and maintenance projects that may impact incident response

Information about District 5's TIM program and meetings can be found at www.CFLTIM.com.

3.5 ICM Staff

ICM requires a diverse group of people who are trained in different fields. The current ICM Staffing Plan identifies the following operational positions:

- Project Manager
- RTMC Manager
- Traffic Signal Timing Engineer
- Corridor Manager
- Operations Analyst
- Supervisor
- Lead Operator
- Operator
- TIM Program Manager
- TIM Specialist
- Communications Administrator
- SunGuide Administrator
- IT Personnel
    - Workstation Support
    - Server Administrator
    - Network Administrator
    - ATSPM Administrator
- Other RTMC Staff: As Needed

3.5.1 Project Manager

The ICM Project Manager's responsibility is to provide the ICM personnel with the resources, oversight and guidance needed to fulfill their duties as efficiently as possible, and to ensure the quality control and administration of all contract activities. This individual provides oversight of all work performed under this contract, prepares and submits monthly invoices and progress reports, tracks project budget and provides monthly updates, status of work and cost summaries, and administers a resource allocation plan, ensuring that the appropriate resources are available and provides periodic task schedules for the project. The Project Manager provides adequate staff and resources for all tasks and activities throughout the duration of the contract and ensures the operations staff has the required qualifications and all background check documentation is submitted to and approved by the FDOT before staff is hired. They establish and monitor performance management measures for the ICM staff, ensure the periodic update of this SOG and training manuals to reflect the latest operations practices, participate in monthly progress meetings with FDOT staff to discuss the current task list, and ensures that all deliverables are delivered to, reviewed, and approved by FDOT

3.5.2 RTMC Manager

The RTMC Manager is responsible for overseeing the daily operations of the RTMC. He/she is responsible for all contract ICM staff, as well as the work necessary to provide for the general management, oversight, QA/QC, and administration of the contract and management support personnel. This includes such tasks as developing, reviewing, and modifying as needed various ICM operational documents, such as this SOG, a Disaster Recovery Plan, etc. The RTMC Manager is responsible for general oversight and management of all aspects of the contract. They meet with the FDOT Project Manager and other FDOT personnel regularly to discuss general progress and direction of the ICM operations and interface with representatives of other agencies/organizations on issues related to the ICM operations. It is expected that the RTMC Manager will have RTMC-related activities as a full-time task. They provide for the complete and proper employment, training, scheduling, and oversight of ICM operations staff and are responsible for project QA/QC and for all ICM staff working at the RTMC as part of this contract. The RTMC Manager maintains records and documentation as directed to support the overall ICM operations at the RTMC and attends meetings with or on behalf of the FDOT to assist in operational issues and further FDOT's mission and goals.

3.5.3 Traffic Signal Timing Engineer

The Traffic Signal Timing Engineer serves as the arterial lead for the ICM Program with responsibility for technical aspects of the project in relation to arterial operations. They manage the ICM arterial operations by directing and coordinating activities consistent with the established goals, objectives, and policies following the direction set by the FDOT Project Manager. The Traffic Signal Timing Engineer provides oversight of corridor managers, arterial analysis, and operators using and applying extensive knowledge of project management theories and practices. They attend ICM related meetings as directed by the FDOT and perform all other tasks as assigned by FDOT.

3.5.4 Corridor Manager

The Corridor Manager is responsible for executing all ICM related activities along the assigned corridors. ICM Corridor Managers are traffic signal timing specialists, experienced in the field of traffic operations, and extremely familiar with operations and issues along their corridors. They use data from various sources, as well as firsthand observations, to determine the effectiveness of current signal operations strategies and recommending and implementing improvements as necessary, working under the direction of the Traffic Signal Timing Engineer. They work to identify and resolve maintenance issues or changes in traffic patterns impacting the intended operation of the corridor and utilize advanced engineering knowledge, combined with extensive experience and training, for preparing deficiency reports and mitigation plans to improve traffic flow or safety in compliance with applicable standards or regulations. The Corridor Manager also responds to citizen complaints personally, understanding their issues, addressing as appropriate, explaining the outcomes, and documenting the communications.

3.5.5 Operations Analyst

The Operations Analyst is responsible for back office technical support of the ICM program. The Operations Analyst will be responsible for providing a wide variety of engineering support services as defined by the Traffic Signal Timing Engineer and in support of the Corridor Managers. They analyze operational data related to the ICM program, including travel time, throughput, stops and delays, and other corridor related functions. They perform cost-benefit analyses based on operational and traffic safety data analyses and establish and maintain ICM tracking logs, in conjunction with the corridor managers.

3.5.6 Supervisor

The Supervisors manage all Operators and report directly to the RTMC Manager. They assist in the development of protocols, standard operating procedures, and ensuring compliance with the FDOT and CFX guidelines and practices. The Supervisors assist Operators with event management when needed and on a 24/7 basis. This requires on-call status during non-working hours, which us shared amongst the Supervisors. They facilitate operations by guiding critical ICM operation decisions, developing special events response plans, guidance during severe events and generating severe event response reports. The Supervisors present operational staff with an understanding of their role in the overall context of transportation systems and incentivize them to perform day to day tasks. They provide regular input on overall performance of the ICM staff including continuous improvement feedback from lessons learned and deal with personnel issues of the staff.

Operationally, the Supervisor accommodates the data/video needs of special agencies and third parties such as the FDOT or CFX's media partners, gathers incident information to be shared with the TIM Program staff, they're responsible for QA/QC of messages being placed on DMS and 511 for all active incidents providing input on and coordinating all other pre-planned DMS and 511 messages from FDOT/CFX/construction/other agency coordination meetings, and monitors the FHP CAD system. The Supervisor pulls SunGuide reports to perform incident reviews and to ensure that the database of past incidents is properly maintained. They generate daily equipment/system failure logs identifying the specific device or system function that requires maintenance for CFX and the FDOT when requested. The Supervisor is responsible for overseeing all ongoing incidents and providing guidance to the Operations team when needed in accordance with the established SOG and SOPs.

3.5.7 Express Lanes Supervisor

The Express Lanes (EL) Supervisor focuses solely on express lanes operations and the staff supporting it, and they report directly to the RTMC Manager. They assist in the development of protocols, standard operating procedures, and ensure compliance with SOG and SOPs. The EL Supervisor assists EL Operators with event management when needed and on a 24/7 basis. This requires on-call status during non-working hours. They must possess a knowledge of roadway devices, SunGuide and the Statewide Express Lanes Software (SELS)

Express Lanes Supervisor duties include, but are not limited to providing oversight for real-time incident management along the EL corridor, assisting in training, generating reports, updating/reviewing relevant documentation and daily debriefs, acting as a liaison between the RTMC, partnering agencies, the media, and the public, acting as a Quality Control Specialist to monitor personnel's performance, assisting in troubleshooting issues, maintenance, and upgrades of SELS and acting as a conduit for communicating ITS device issues.

3.5.8 Lead Operator

The ICM Lead Operator oversees operations, directing ICM Operators and assures all incidents are handled according to FDOT and CFX policies. Additionally, the Lead Operator assists Operators during busy times, checks all paperwork, checks all data entry, and verifies ITS Devices and systems are working properly. The Lead Operator is also responsible for the principal monitoring of the roadways including detecting, confirming, updating, and responding to scheduled and unscheduled traffic events, congestion, and travel time irregularities within the ICM coverage area. They also provide quality assurance on the day-to-day handling of all events in the RTMC.

Lead Operator duties include but are not limited to the following facilitating operations by guiding critical ICM operation decisions, developing special events response plans, providing guidance during severe events and

generate severe event response reports. They're the primary contact for two-way communications flows with external agencies including those by voice, mail, fax, Internet, and other electronic data and they facilitate the information exchange between the ICM operators and on-site FHP staff. Lead Operators complete checklists at the beginning of each shift exchanging information with the Lead Operator he/she is relieving at the beginning of the shift as well as at the end. They alert Operators to new memorandums, procedures, policies, and special projects and requests and ensure that workers are alert and focused during their shifts and that all incidents are monitored on a continuous basis. The Lead Operators continually verifies that every RTMC DMS has the correct spelling displayed and is updated on the FL 511 system, is involved with or aware of each incident that occurs on shift, and aids in the dispatch of Road Rangers.

3.5.9 Operator

The ICM Operator is responsible for using the various roadway and ICM tools to monitor and respond to traffic conditions. The ICM Operator will create, update, and close events when appropriate, and communicate with other roadway stakeholders and partners throughout the process to ensure incidents are managed as one team. ICM Operators will generally perform one of both of the following duties depending on the shift:

Freeway Operator duties include but are not limited to operating all ITS devices in the RTMC using computer-based traffic management systems, namely SunGuide®, and employ these tools to manage traffic and incidents on roadways, provide accurate roadway information to the public, and improve the TSM&O network for all users. They enter incident information into computer systems using ICM software and dispatch Road Rangers. They must be familiar with the roadways and understand the purpose and location of each ITS device (i.e. DMS, detector stations, Closed Circuit Television (CCTV), and 511. Freeway Operators must cooperate with RTMC partners (FHP, FDOT and CFX On-Call staff, Road Rangers, Local Law Enforcement, Fire Rescue, etc.) as well as Emergency Operations Centers, adjacent TMCs and other FDOT Districts to coordinate resources for incidents. It is important that they relay incident and roadway information to other FDOT/CFX departments and coordinate with Asset Maintenance staff to respond to roadway events.

Arterial Operators monitor the status of traffic signal and system operations, corridor congestion, and traffic flow, etc. by technology tools including advanced traffic management systems, travel time monitoring, and CCTV cameras. They support the Signal Timing Engineer in identifying traffic congestion along the arterial network, based on pre-defined performance measures, while implementing pre-defined traffic mitigation measures in a timely manner. The Arterial Operators detect, confirm and track equipment faults affecting arterial operations and produce daily equipment malfunction and connectivity reports in such a way that allows for weekly, monthly, and yearly analysis. They coordinate with RTMC and other operations staff with regards to external agency communications and general control room coordination, and other staff from signal maintaining agencies to obtain a full understanding of all arterial activity status.

3.5.9 Express Lanes Operator

The EL Operator will be responsible for SELS activities and incident management along the EL corridor. These responsibilities include but are not limited to managing events and coordinating with EL Road Ranger dispatch on events within the EL, disseminating traffic information via the FL 511 system, coordinating with the TIM Program staff during incident management, and coordinating with AM if property damage occurs. EL Operators perform device checks, notifying the ITS Group and entering malfunctioning devices into MIMS. They verify toll amount notifications at set intervals per segment, coordinate executive and local notifications and complete end of shift reports.

3.5.10 TIM Program Manager

The TIM Program Manager has a background in emergency response and is responsible for the development, implementation, and oversight of the District's TIM program, including the establishment of goals, performance measures, benchmarks, policies, and procedures. The TIM Manager researches and implements best practices in Traffic Incident Management to further the District's goal of safe, quick clearance, enhanced communications and responder safety, and serves as the District's liaison to emergency response partners and incident command for large-scale events such as major space launches and hurricane evacuations.

3.5.11 TIM Specialist

The TIM Specialist has a background in emergency response and serves as the District's incident command on a day-to-day basis, providing support to the District's emergency response partners and RTMC operators in the management and coordinated response of all traffic incidents and/or special events. TIM Specialists provide critical incident information such as location confirmation, vehicles types, severity of incident, fuel leaks, hazmat conditions, etc. to the appropriate responding agencies, and coordinates Road Ranger, RISC, and Safe Tow response accordingly. Additionally, the TIM Specialists monitor contract compliance for TIM resources and assist with TIM reports, After Action Reviews (AAR), and agenda development for quarterly TIM meetings.

3.5.12 TIM Communications Administrator

District 5's Communications Administrator has a background in emergency response and computer programming. This position is responsible for the development, implementation, and maintenance of the network communications system utilized by RTMC operators, Road Rangers, and other incident responders as determined by the District and TIM Program Manager. The Communications Administrator is responsible for conducting routine security and performance assessments of the network communications systems, and of system users. Additionally, the Communications Administrator assists with monitoring contract compliance, TIM reports, After Action Reviews (AAR) and agenda development for quarterly TIM meetings.

3.5.13 IT Personnel

3.5.13.1 Workstation Support

3.5.13.2 Server Administrator

3.5.13.3 Network Administrator

3.5.13.4 ATSPM Administrator

3.5.13.5 SunGuide Administrator

The SunGuide Administrator is responsible for maintaining the current version of SunGuide utilized for RTMC Operations. They also assist in testing new versions of the software and work with operations during deployment. The SunGuide Administrator is also responsible for the configuration of new and existing devices in SunGuide providing standardization of firmware and settings for each device. They support RTMC operations, assist with SunGuide software and server errors using Microsoft Failover Cluster Manager and monitoring the

SunGuide status logger, and assist with SQL database querying of the SunGuide database. The SunGuide Administrator upkeeps user logins and active user lists for ICM Operators, Road Rangers and Maintenance staff,

3.5.13.6 Firewall Administrator

3.5.13.7 Security

3.5.14 Other RTMC Staff: As Needed

3.5.14.1 Communications Specialist

Will act as the source for project related information. This position will prepare and disseminate collateral materials to the public using plain language; develop strategies, alliances and corporate partnerships; prepare and present project information for meetings; coordinate resolution of issues; maintain a database of stakeholders; prepare information for updating website(s); perform media responses by interview or in writing as needed (with collaboration with the FDOT/CFX PIO); coordinate and staff formal and informal public meetings; and execute other duties relevant to the position.

3.5.14.2 Programmer

The programmer position will perform software upgrades/enhancements for the FDOT District 5 Maintenance and Inventory Management System (MIMS), Maintenance and Inventory Mobile Application (MIMA), Road Ranger Mobile Application (RRMA), Interagency Video Event Data Distribution System (IVEDDS), and SunGuide® Website Maintenance. Required experience includes web-based programming, graphical design, Microsoft SQL Server 2008/2012, Geographic Information System (GIS), and (Internet Information Services (IIS).

3.5.14.3 Graphic Designer/Video Production Coordinator

This staff member designs collateral materials; creates templates and newsletter layouts; performs other duties relevant to the position. Under general direction, plans and facilitates studio and field-based video production, including the planning, filming, editing, sound mixing, graphic design and compression output of a wide range of products, and performs other related duties as assigned.

3.5.14.4 Webmaster

This staff member designs, develops, manages and maintains websites; examines and analyzes site traffic; provides quarterly report summarizing site usage and recommendation to maximize effectiveness; regulates and manages access rights of different users on websites; creates and modifies appearances and settings of websites; tests websites for functionality and usability; fixes links that don't work and pictures that aren't appearing properly; performs site promotion, sends out email, voicemail, newsletters, etc.; performs other duties relevant to the position and in support of the ICM mission.

3.6 Tools

FDOT District Five operates and maintains the existing freeway management system and Arterial Management System (AMS). ICM Staff operate the existing systems by using these tools:

3.6.1 Software

- SunGuide
- CFX SunGuide
- MIMS

- BlinkLink
- Toll Dynamic Message Signs (TDMS)
- Bluetooth Management Software
- ATMS
- CMS
- BlueMac
- Gridsmart
- Maxview
- Tactics
- Centracs
- ATSPM
- *(more to come from IT)*

3.6.2 Hardware

- RTMC workstations
- Videowalls
- SLERS Radios
- Push-to-Talk Cellular Phones
- RTMC Phone System

3.7 Resources

ICM Staff utilize the following resources while operating:

- RTMC Network Drives containing a multitude of electronic files
- Websites
- FDOT provided applications

4.0 ICM Software

4.1 SunGuide

SunGuide Software is the common software platform for all TMC operations in the state of Florida. This modular system is comprised of several subsystems that are integrated to allow for incident management, data collection, field device control, travel time posting, and more. RTMC staff shall learn and become proficient with SunGuide tools and procedures such as event logging, incident management timestamping, and associating secondary events with primary events to support performance measure reporting, outcome reporting, and validation of RISC contractor milestone accomplishments. ICM Staff shall be trained and certified on the latest official version of SunGuide. For more information SunGuide Software, reference the user's manual online at SunGuide® Software - Release.

4.1.1 CCTV and Video Wall

CCTV cameras are used for a wide variety of purposes, including the early detection of events, incident verification, monitoring situations that need attention, and giving support to responders on scene. CCTV images are typically displayed at operator workstations or on a matrix of television monitors used as a single display that is commonly known as a "video wall." Each individual monitor can be used to display a single image or can

be used to compose part of a larger image. By using a video wall, ICM Staff have the flexibility of customizing the presentation of the information as conditions warrant.

- **CCTV Camera Use**: CCTV cameras and related equipment shall be used for traffic, incident management, and information purposes only. No one, including law enforcement, shall use the system for any other purpose.
- **Privacy for Private Property**: CCTV camera usage shall adhere to all federal and state privacy laws. For example, surveillance of private property and use of the system with the intent of invading the privacy of those individuals that could be seen through CCTV cameras is prohibited, even as a technical capability.
- **Recording Video Image**: Video images are not and shall not be recorded, and no tapes or video files shall be maintained. Snapshots may be taken for incident review, training, or research. Video may be recorded only for research purposes and only if requested and approved by the District Traffic Operations Engineer (DTOE), in advance, for specific times and dates for specific cameras.
- **Masking Camera Views**: For CCTV cameras that are next to residential locations, camera "masks" or "beards" shall be placed over the camera feeds to protect civilian privacy.
- **Default Camera Views**: CCTV cameras shall be set to the default view of watching the traffic flow. With images being used by the public and multiple agencies, it is essential that views shall be left on the traffic flow, but license plates and individuals shall not be identifiable.
- **CCTV Camera Image Restrictions**: When graphic personal injuries, fatalities, or hazardous materials spills are suspected in a traffic incident or crash, ICM Staff may need to zoom in to collect information that is needed by the FHP, EMS, FDOT, or for other information purposes. When this occurs, ICM Staff shall restrict the CCTV camera image from any external video feeds. As soon as necessary information is collected or at the request of the FDOT or FHP dispatchers, ICM Staff may zoom out the CCTV camera image so that graphic or personal image are not clearly visible on the video display wall.
- **CCTV Camera Image Restriction Verification**: Once the CCTV camera image is restricted from public view, ICM Staff shall view the CCTV camera image on the www.FL511.com website and all other external sources possible, to verify and document that the access has been restricted.
- **Video Wall Display**: During non-incident times, feeds and tours of cameras shall be streaming on the video wall from multiple regions and zones. At the minimum, the video shall display:
    - A selection of CCTV camera images including "video tours" and single camera images
    - Any active incidents
    - Video dashboards
    - Performance based dashboards
    - Meteorological sources
    - Incident notification resources
    - Workstation sharing
    - Level 3 incident timer

4.1.2 Transportation Sensor Subsystem

Transportation Sensor Subsystem (TSS) provides the RTMC with real-time information on roadway traffic such as volume, occupancy, and speed. They are an invaluable part of RTMC operations as they are often one of the first sources for alerting of any congestion or roadway incidents, especially in rural areas.

4.1.3 Dynamic Message Sign

Dynamic Message Signs (DMS) are one of the most important and effective means for communicating information and recommendations to motorists regarding traffic congestion, crashes, lane closures, advance warning, and more. Thus, it is necessary that DMS provide prompt, reliable, accurate, and relevant information to be effective and provide motorists with the confidence they need to make informed decisions. FDOT's guiding principles on posting DMS messages must conform to the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD).

4.1.3.1 MUTCD Guidelines

The MUTCD provides strict guidelines regarding what can be posted and how it can be posted to a DMS. Some of those are:

- No advertising messages. DMS shall display only traffic operational, regulatory, warning, and guidance information.
    - They may also be used to display safety messages, transportation-related messages, emergency homeland security messages, and America's Missing: Broadcast Emergency Response (AMBER) alert messages. (This includes the posting of LEO, Missing Child and Silver Alert messages.)
- DMS should be limited to no more than 3 lines, with no more than 20 characters per line.
- Word messages should be composed of all upper-case letters.
- DMS shall automatically adjust their brightness under varying light conditions to maintain legibility.
- Use of newer technologies to display full-color legends (I.E. roadway shields) is encouraged for greater legibility and enhanced recognition of the message.
    - Shields should not be used unless they can be displayed in the appropriate color combinations.
- Each message on a single DMS shall not consist of more than 2-phases.
    - A phase shall consist of no more than 3 lines of text.
    - Each phase shall be understood by itself regardless of the sequence in which it is read.
    - No more than three units of information should be displayed on a phase of a message.
        - Units of information are as follows:
            - What happened? CRASH
            - Where? AHEAD 2 MILES or AT MM 285
            - What is advised? 2 RIGHT LANES BLOCKED
    - Messages shall be centered within each line of the sign.
- Techniques of message display such as fading, rapid flashing, exploding, dissolving, or moving messages shall not be used.
- The display time for a single phase shall never be less than 2-seconds or more than 8-seconds.
    - The duration between the display of two phases shall not exceed 0.3-seconds.

4.1.3.2 DMS Stored Message and Message Library

SunGuide offers the ability to configure and store messages within each DMS. All mainline DMS are stored with a configured travel time. This travel time message is set with an automated priority of 255 making it the lowest level priority message for these signs. All DMS can accept a custom message. Unless the incident demands a 2-page message, an Operator should post a single page message and allow the message to auto-merge with the sign's travel time. This allows for unique information dissemination providing a travel time and incident next/ahead message to motorists.

SunGuide also allows for a configurable DMS Message Library to house custom message templates and approved message types. These messages are configured based off the MUTCD guidelines and approved by FDOT. The Message Library should be referenced each time an Operator is sending a message to a DMS. Appropriate templates should be followed and if unique situations occur where a template is not available, the Operator should seek guidance from the Shift Supervisor. For suggested message populated via SunGuide's Response Plan Generator (RPG), the software has been configured with these guidelines in mind, but quality checking what is suggested is always required.

4.1.3.3 DMS Message Priority Levels

DMS have a feature which allows the Operator to prioritize certain messages. Only the highest priority message will display, unless a lesser priority message is merged with the high priority message, all other messages will be queued. Using the proper priority for messages makes the process much more efficient. The following table should be used as a guide on how to properly prioritize custom messages:

Message Type	SunGuide Priority Level	Notes
Unplanned Incidents w/ Lane Block	1 to 2	Crash, DAV, etc.
Planned Incidents w/ Lane Block	3 to 4	Road Work
Congestion, Visibility & Weather	5 to 7	Congestion before Weather/Visibility
AMBER/Silver/Missing Child/LEO Alert	8 to 10	Use with Message Duration Feature
Safety Campaign & Other Requested Uses	11 to 14	Use with Message Duration Feature
Daily Safety Message	15	Changed Daily
Travel Time Message	255	Default Priority

Table 5: DMS Message Priority Levels

4.1.3.4 Event Level Severity and DMS Messaging

Depending on how severe an incident is, DMS should be activated for a preselected radius.

Event Severity		Lane Blockage	DMS Radius
Level 1	Minor	< 50%	15-mi
Level 2	Moderate	50%	25-mi
Level 3	Severe	> 65%	50-mi

Table 6: Event Level Severity and DMS

When incidents occur near major intersecting freeways or expressways, messages should be posted on those potentially impacted roads as well.

4.1.3.5 Effective DMS Queue Management

By using different priorities on different messages, an Operator can merge custom messages together or with the stored travel time. Messages can be auto merged or manually merged. Auto-merging will only work when the travel time is the only message in the DMS queue prior to sending a custom message. If there are two or more messages already in a DMS queue, then a newly sent message with the auto-merge box checked will not actually merge. This is because SunGuide does not know what existing message in the queue to merge the newest custom message with. In this scenario, a manual merge must be done if that is desired.

4.1.3.6 Scheduled Messages

SunGuide can schedule messages to display for selectable date ranges and time periods. When scheduled messages are posted to DMS they automatically post during the scheduled dates/times. Often these messages are public safety related and intended to merge with travel times. When an incident occurs and the desired message is a custom message merged with a travel time, the DMS queue must be blanked before sending the custom incident message. This will remove the scheduled message and allow for the custom incident message to auto-merge (or manually be merged) with the travel time.

4.1.3.7 DMS for Safety Campaigns, Special Events and Port Canaveral

From time to time, the RTMC will receive a request from FDOT Central Office to use DMS for safety or awareness campaigns such as Construction Work Zone Safety, Drunk Driving, or Move Over campaigns. These campaigns, when approved by Central Office, will have specific time restrictions which are typically off peak. These types of messages get displayed for a pre-determined date range and depending on the message, on specific DMS.

Certain events also require the need for specialized use of the DMS. Daytona Races, Beach Access and Capacity Levels, and Kennedy Space Center Launches are just a few examples of events which have required assistance from the District Five RTMC in the past. When events require such DMS to display information, the RTMC will be notified in advance and the RTMC Manager will develop an action plan. The action plan details time restrictions, the approved message, and other pertinent information regarding the request. The action plan is shared with all ICM Staff in advance of the event via email.

Some DMS have a specific purpose; such is the case of the Port Canaveral DMS. These DMS are integrated into a static sign which has the cruise ship port terminal designation. The Harbor Master at Port Canaveral Police Department is responsible for supplying the District Five RTMC with an updated schedule of ships in port, at which terminals and on which dates so the signs can be updated accordingly. These Port DMS do have the ability to be utilized for incident information if needed.

4.1.3.8 Blank Out Signs

Daytona Event Management Blank Out Signs (BOS) are located surrounding the Daytona International Speedway. The purpose of these signs is to assist in directing motorists during large scale events in the area and/or for redirecting motorists during major incidents impacting the region. They are not dynamic, meaning they cannot accept custom messages like normal ADMS or DMS. These signs are configured to display a series of stored messages. Each sign has between one and three stored messages available. Control of the BOS is managed through a separate software outside of SunGuide called IBI SEM. Log-in credentials are required for access.

4.1.3.9 Toll Dynamic Message Signs

The Toll Dynamic Message Signs (TDMS) are two lane DMS used by Central Florida Expressway Authority (CFX). These DMS are provide guidance to motorists through all toll plazas within CFX jurisdiction. These signs are also used during times when contractors perform maintenance on the toll plazas where they may block a lane. ICM Staff activate predefined messages to provide advance warning for motorists approaching the plaza. During evacuation, these DMS provide information to motorists in reference to suspended tolls due to natural disasters or special events.

4.1.4 Event Management

Event Management (EM) in SunGuide is one of the fundamental tools used in day-to-day operations in the RTMC. Understanding the Event Management subsystem and its functions is an integral part of performing operations correctly.

4.1.4.1 Event Types

The majority of incidents (planned or unplanned) that the ICM Staff will respond to occur on a fairly regular basis, and because of their frequency, procedures have been put in place to ensure quick, efficient and uniform responses to these incidents. Listed below are each event type that will occur while operating in the District Five RTMC.

Abandoned Vehicle

This event type should be used for any incident that can be described as an abandoned vehicle along one of our covered roadways. Typically, these are marked (or "red tagged) by our Road Rangers and the event status is changed to Unresolved until the vehicle is removed from the roadway. When applicable, we save camera presets so that Operators can periodically check the status of the abandoned vehicle. Once the vehicle has been removed from the roadway, the Operator closes the event and deletes the camera preset.

Amber Alert

This event type should be used when FDLE activates an Amber Alert. All details involving vehicle information, missing child, etc. should be included in the event details and comments section. You will post DMS for FDOT D5 through the event by using a predefined plan.

Bridge Up

This event type is not frequently used but can be selected when/if a bridge is ever stuck in the up position not allowing traffic to pass over it. This mainly affects our coastal counties where bridges cross over the intercoastal.

Congestion

This event type should be used for any congestion that builds on a covered roadway. If the congestion is caused by an incident, then the congestion should be included in the incident's event, whatever type it may be. Once all responders have left the incident scene, and congestion remains, then the Operator clones the Crash event, changes the event type to Congestion and follows the congestion until it clears.

Crash

This event type should be used for any incident that can be described as a crash involving one or more vehicles. Crashes may or may not contain lane blockage.

Debris on Roadway

This event type should be used for any debris that is present on a covered roadway. The debris may or may not contain lane blockage.

Disabled Vehicle
This event type should be used for any incident that can be described as a disabled vehicle along one of our covered roadways. The disabled vehicle may or may not be causing lane blockage.

Emergency Vehicles
This event type should be used for any incident containing multiple emergency vehicles out on the roadway. It can be used to describe unique incidents where we do not have a more applicable event type available. This event type may or may not contain lane blockage.

Evacuation
This even type should be used during evacuations of areas that are part of our covered roadway network. During this type of event please seek assistance from RTMC Management.

Flooding
This event type should be used when water is present on the roadway in such a way that it is causing an issue for traffic. This event type could require lane blockage, publishing to FLATIS 511 and notification to an Asset Maintenance Contractor.

Interagency Coordination
This event type should be used when you have an official detour set up due to a serious crash on one of our covered roadways. For example, I-75 NB is closed at MM 327 due to a vehicle fire crash involving a fatality. You have a vehicle fire event for this crash. FHP informs they will close the roadway for a detour I-75 NB at MM 321. This event type should be selected as Interagency Coordination.

LEO Alert
This event type should be used when FDLE activates an LEO Alert. All details involving vehicle information, missing child, etc. should be included in the event details and comments section. You will post DMS for FDOT D5 through the event by using a predefined plan.

Missing Child Alert
This event type, like an Amber Alert, however the missing child is believed to in danger of death or serious bodily injury but not kidnaped.

Off Ramp Backup
This event type should be used when we have congestion that starts on an exit ramp and backs down onto the Interstate. These types of events should stay as Off Ramp Backup until the congestion spreads across all travel lanes and/or backs up for more than a mile.

Other
This event type should be used for incidents that do not fit into any other category. For example: Test event, Plane landing, etc. You will want to describe in the event's comments section what the event details.

Pedestrian

This event type should be used when there is a pedestrian walking on one of our covered roadways. These event types do not get published to FLATIS 511.

Police Activity
This event type should be used for incidents involving a criminal aspect. They will typically have multiple law enforcement vehicles on scene and may or may not contain lane blockage.

PSA
This event type should be used for Safety Campaigns. When posting DMS through Predefined Plans for Safety Campaigns you should select an event type of PSA. You should always select the event location as the RTMC (SR-436 NB at Kalmia Dr). These event types do not get published to FLATIS 511.

Road Work-Emergency
This event type should be used when emergency lane closures are required to repair the roadway. Emergency lane closures often occur outside of normal roadwork hours which are overnight between 10pm – 6am.

Road Work-Scheduled
This event type should be used for scheduled road work. See the weekly road work document for a list of current, scheduled road work.

Silver Alert
This event type should be used when FDLE activates a Silver Alert. All details involving vehicle information, missing child, etc. should be included in the event details and comments section. You will post DMS for FDOT D5 through the event by using a predefined plan.

Special Event
This event type should be used for events that occur related to public venues. You will likely only use this event type if you are activating DMS through a predefined plan for events at the Citrus Bowl, Amway Arena, Dr Phillips Center, etc. These types of DMS usage MUST BE APPROVED by the DTOE.

Traffic Signal Flash
This event type is used for arterial operations when a traffic signal is stuck on flash mode.

Traffic Signal Dark
This event type is used for arterial operations when a traffic signal is out.

Vehicle Fire
This event type should be used for incidents involving vehicles that are on fire.

Visibility
This event type should be used when smoke is causing an issue on one of our covered roadways. If you publish this event type to FLATIS 511, it will read as “Incident in XX County…”

Weather
This event type should be used for weather related incidents (rain, fog, tornadoes, etc.) You will use this event type when posting the Rain Messages on DMS through a predefined plan.

Wrong Way Driver

This event type should be used when we experience a wrong way driver incident. Wrong Way Drivers will typically be reported by Law Enforcement or through our BlinkLink software if on applicable roadways. You will want to ensure you notify FHP (or appropriate Law Enforcement) and any Road Rangers in the area.

4.1.4.2 Event List

The Event List window brings together several important tools which help facilitate incident management. The main Event List displays which events are active with lane blockage, active without lane blockage, unconfirmed, unresolved, closed and marked as other. Incidents can be arranged several ways, but the default settings arrange them by event number. Operators may also filter events so that only that Operator's events show in the list.

Located on the navigation bar at the top of the window are a number of features including but not limited to creating a new event, opening and event's details, opening a response plan, finding the event location on the Operator Map, locating the nearest camera, auditing the event and identifying responder status.

4.1.4.3 Event Details

SunGuide Events are the primary records for all incidents that occur along covered roadways in the District 5 RTMC. Any incident that the RTMC is made aware of has an event created for it if available reference points are saved within the SunGuide software. Reference points are continually being added to the D5 instance of SunGuide as operations expands from freeways to arterials and even into local agency TMC's operations.

Each event allows for the input of critical details such as location, lane blockage, responder timestamps, contact information, weather conditions, comments from the Operator, and more. Each event has an Event ID, a unique identifier number with which that event can exist in the system. All events are stored within a database for historical review utilized heavily in post-incident reviews and performance measuring.

Other pertinent details, Road Ranger dispatch, types of injuries, types of vehicles involved in an incident, nearest CCTV, and Primary/Secondary Events should be completed to the degree which information is available. Detailed comments with available information are especially valuable, as they may provide clarification when events are reviewed by Central Office or at TIM Meetings.

4.1.4.4 Predefined Plans

Some incidents or events happen so frequently that response to these incidents or events have become formalized. A variety of predefined plans exist which have certain response elements incorporated into them. Predefined plans can send messages to several dynamic message signs instantly once activated.

Plans can also be created and saved for easy access when events are expected to occur regularly over a period. For a list of useful predefined plans, see the Predefined Plan Manager in SunGuide.

4.1.4.5 Event Chronology Report and Audits

Events consist of critical incident details which FDOT and other agencies may want to review. At any time and for any reason, event transcripts can be pulled and reviewed. Therefore, a high degree of professionalism and detail is vital to the validity of each event. While there is a plethora of useful information contained within the predefined structures of each event (i.e. lane block, responder times, etc.), one of the most useful pieces of information is the comments from the Operator. Detailed comments provide the most useful insight into the event which helps the reviewer understand the event better. A high degree of detailed commentary is essential

for major incidents; this helps to communicate strengths and weaknesses of each agency, key issues for redress, and helps to form best practices.

It is also prudent to use good judgment in what is entered into each event. While useful information and a storyline are important, it is best to refrain from frivolous or trivial commentary, or to make rash implications. Comments should be limited to matters of fact, initial and continuous reports from official and reputable sources, or other pertinent information regarding the incident. Remember, SunGuide reports are documents used to formalize and perpetuate knowledge during official business by a state agency; as such they are subject to FSS 119.

4.1.4.6 Response Plan Generator

Response plans are used in SunGuide to activate the previously mentioned predefined plans, send incident notification emails, publish information to Florida's 511 system and send messages to dynamic message signs. Each SunGuide event has the option of activating a response plan to perform any combination of the actions. When initiated, SunGuide will suggest a response plan containing different items based off saved details within the event. It is the responsibility of the RTMC Operator to verify that the suggested items and contents are correct before approving the response plan for activation.

Once activated, response plans must be updated as event details change. Change in lane blockage, congestion parameters, and the time in which those conditions endure require recurring reactivation of the response plan. Once lane blockage and congestion parameters clear, the response plan should be terminated to remove, or resolve, any currently activated features. For example, if an event was published to 511 it must be removed from the system once the incident has cleared.

4.1.5 Truck Parking Availability System

The Federal Motor Carrier Safety Administration (FMCSA) regulates Hours of Service (HOS) for truck drivers and mandates their rest periods. FMCSA requires truck drivers rest for at least 10 hours per day after every 14-hour shift or risk fines and disciplinary action. However, the truck drivers face two main issues on their trips:

- Lack of safe and convenient parking options
- Lack of real-time information regarding parking availability and wayfinding

Florida experiences truck overflow parking at some rest areas while several others remain underutilized indicating lack of parking information management. Due to this, several truck drivers resort to the unsafe and illegal methods of parking on the interstate mainline, ramp shoulders, or in vacant lots.

To combat this problem, the Truck Parking Availability System (TPAS) was developed for use. FDOT conducted a research project to identify supply and demand characteristics for commercial truck parking in Florida. They also performed a technology assessment that could be used to improve parking information management. After reviewing the results, it was determined to utilize both wireless in-pavement sensors to determine vehicle presence and traffic count devices to determine ingress and egress at truck parking lot areas. Regardless of how the truck counting occurred, a CCTV camera was installed for the RTMC Operator to use as a verification tool to ensure the correct count was being presented to drivers. Space availability is visible to truck drivers via TPAS DMS located 3-5 miles upstream from the parking lot location. This advanced warning allows the truck drivers to make a more educated decision on whether to stop and rest now or later.

4.1.5.1 SunGuide's TPAS Subsystem

SunGuide's interface with the TPAS allows for Operators to easily view the posted parking space availability values and verify that information using the associated CCTV videos. It is standard procedure for these TPAS DMS to be quality checked every 4 hours to ensure the information is updated as it should as trucks enter and depart the parking lots. If the space availability needs editing, the RTMC Operator can make that change using the Truck Parking Facility Status window.

4.1.6 Incident Detection

4.1.6.1 TSS Alerts

Speed detectors play a vital role in the ITS network. These devices are constantly measuring important data, such as roadway speed, volume, and occupancy. This data is used in a variety of ways to supplement operator capabilities. In one method, data collected from detectors is compared to established thresholds, when those thresholds are exceeded; an alert is generated which the operator must respond to. These are known as Transportation Sensor Subsystem (TSS) Alerts. When thresholds are exceeded, the operator may also notice a change in color on their SunGuide speed map; this is another tool to help gauge traffic conditions. In another method, detector data is collected and analyzed by SunGuide, and is then formed into a travel time for a specific link. These travel times are then posted to dynamic message signs. Travel times are updated every minute.

As mentioned, detectors collect three types of important data:

- Speed – Detectors can measure vehicle speeds by lane. Clicking on a detector icon will open that detectors' TSS Status information panel. Using cameras to determine speed is deceiving, in this regard, Operators should use detector data when attempting to determine speeds.
- Occupancy – This is defined as the percentage of time that vehicles are in the detection zone. Occupancy rates in the 10% to 15% range are good indicators that congestion is building. Close attention is required in these sections to ensure a timely response. Traffic can very quickly change from traveling at the posted speed limit to stop-and-go conditions.
- Volume – This is the number of vehicles traveling in the lane during the last 30 seconds.

District 5 has a combination of radar and loop detectors along its freeways. Microwave vehicle detection system (MVDS) are the flat panel boxes seen up on poles along the freeways. These shoot radar down at the travel lanes and are configured to bring that data back into SunGuide. Inductive loops are also used throughout the District and are made up of pieces of wire buried in the asphalt that collect data as vehicles drive over top of them.

4.1.6.2 FHP Alerts

SunGuide receives events from external sources such as Florida Highway Patrol. Alerts help facilitate incident detection in a timely fashion so that operators may respond to incidents appropriately. These alerts are pulled directly from the FHP Computer Aided Dispatch (CAD) software. SunGuide configuration limits the alerts so that only FHP CAD incidents logged on selected roadways will appear within the SunGuide system. FHP Alerts have valuable information associated with them, such as trooper dispatch and arrival times, dispatcher comments, and incident location. Because FHP Alerts operate off GPS coordinates, creating events directly from these alerts can result in incorrect direction or reference point (usually by 1 or 2 miles). In this respect, it is always recommended that the Operator check for accuracy with events created directly from FHP Alerts.

4.1.6.3 Road Ranger Geofence Alerts

Road Ranger Geofence Alerts are configured in SunGuide as a safety tool to monitor current location of patrolling Road Rangers. Geofences have been configured to trigger an alarm should a Road Ranger's AVL travel farther than one mile from the interstate in which that truck is assigned to.

4.1.6.4 Weather Alerts

SunGuide can receive alerts generated by the National Weather Service (NWS). When these alerts are configured to populate in SunGuide, it is the responsibility of the Operator to verify conditions via camera. In areas where camera coverage is limited or non-existent, no response shall be taken due to the inability to confirm when the conditions have cleared. NWS Alerts can be generated for the following types of weather:

- Tornado Watch or Warning
- Fog
- Hurricane
- Tropical Storm

*Weather Alerts are not configured to populate in D5's current version of SunGuide. We monitor weather by accessing local news sites and/or weather sites.

4.1.6.5 WAZE Alerts

The Florida Department of Transportation has a data sharing partnership with Waze (www.Waze.com), a free navigation app that uses information from millions of drivers to outsmart traffic in real time. FDOT and Waze non-exclusively cross-licensed their traffic data to each other to enhance each partner's ability to provide needed traffic information to the traveling public.

Under this agreement, Waze allows FDOT access to Waze real-time data to manage roadways and operations, and for traffic incident notification services. FDOT will provide appropriate credit indicating Waze as the data source (i.e., "Traffic Incident and Road Closure Data provided by FDOT and Waze"). In return, FDOT will allow Waze to use agency data within its app and packaged for local partners with the same credits applicable.

Florida 511 provides real-time traffic information on Florida's interstates, toll roads and major metropolitan roadways. Waze data will augment data collected by FDOT to provide traffic information on crashes, congestion, construction, as well as providing segment travel times.

Waze is a free navigation app for iOS, Android and Windows smartphones that calculates real-time road conditions based on traffic data from local drivers, known as "Wazers". Wazers report traffic pileups, road hazards, construction sites and more, and their GPS patterns build and modify an up-to-the-minute accurate local map as they drive. This information is then used to calculate the fastest routes for any destination and help citizens avoid road congestion.

Waze incidents are transmitted to SunGuide through the status channel of Center to Center (C2C). The Operator Map will display the icons with a visual Waze indicator to allow Operators to clearly see which events icons are for Waze events and which are not. Waze incidents are assigned a confidence level as Wazers confirm or deny the continued presence of a reported incident. The confidence level rating is 0-5. Anything with a confidence level of 0-3 are filtered out and not sent to SunGuide. This assures that the Waze Alerts that do populate in SunGuide have a higher likelihood of being present at the reported location.

*Waze Alerts are not currently configured to populate in D5's current version of SunGuide. We monitor the www.Waze.com website for information related to these types of reported incidents.

4.1.6.6 Wrong Way Driver Alerts

The Central Florida Expressway Authority (CFX) has deployed Wrong Way Driver (WWD) equipment at various ramps along their roadway network. This WWD equipment is designed with 2 sets of detection devices located at the bottom of an exit ramp (near the surface street) and at the top (near the expressway). When the first set of devices are triggered a "lite" alert is sent to the vendor software BlinkLink and a set of red flashing WRONG WAY signs are activated on the ramp. These "lite" alerts are often caused by maintenance personnel, traffic on the ramp, vehicles being detected on the surface street, and vehicles that self-correct. When the second set of devices are triggered a "hard" alert is sent to BlinkLink causing an audible alarm to sound alerting the Operator that immediate attention is required. These "hard" alerts are typically caused by vehicles that have indeed driven the incorrect direction on the ramp in question and have failed to self-correct their direction of travel after the first set of devices. The triggering of this second threshold of detection devices is what produces the WWD Alert in CFX SunGuide for which the Operator must then manage.

While the D5 instance of SunGuide is not currently configured with any wrong way driving detection, this is something that will be coming as a statewide initiative was implemented to add WWD detection to all construction project that involve ramps to interstates.

4.1.7 Report & Performance Measures

SunGuide offers a plethora of report types for all the different subsystems contained within the software. Traffic speed and volume, event chronology, responder times, DMS messages, and performance measures are just a few of the many report templates available. Each report allows for general or more granular searching with selectable filter fields. SunGuide permissions are granted to higher level ICM Operations staff giving them the ability to run reports.

Performance measures are a useful tool in determining value of the efforts put forth by the TMC. They can evaluate the effectiveness in which the TMC is being managed and quantify the benefits of the TMC to the traveling public.

4.1.7.1 Roadway Performance

The D5 RTMC develops a quarterly report for FDOT evaluating the Transportation Systems Management and Operations (TSM&O) strategic plan guidelines. The three main categories the report focuses on are mobility, safety, and infrastructure. Target goals are established based on twelve-month averages and performance against those goals are monitored.

4.1.7.2 Mobility

The mobility section focuses on the travel time index (TTI), planning time index (PTI) and traffic volumes. TTI is the ratio of the travel time at peak periods to the time required to complete the same trip at free-flow speeds. PTI represents the total travel time that should be planned when an adequate buffer time is included. The buffer time is calculated as the difference between the 95th percentile travel time and the average travel time. Volume represents the hourly traffic count. TTI, PTI and volume are examined for both morning and afternoon peak periods for all segments of freeways and expressways along with key arterial routes where data is available. The data for these metrics are sourced from SunGuide the different local agency traffic engineering software platforms.

4.1.7.2 Safety

Safety emphasizes the Department's strategy and principles of the Strategic Highway Safety Plan which includes collaboration for roadway safety, safer behaviors, safer vehicles, and safer roadways. The key metrics evaluated are number of roadway fatalities, total secondary crashes, roadway clearance time, Open Roads Policy, Road Ranger response times, and RISC clearance times. Other data reported on in this field are total number of incidents managed, number of COIN events, number of RISC events, and number of implemented diversion routes. The data for these metrics are sourced from SunGuide.

4.1.7.3 Infrastructure

Part of the TMC's responsibility is to monitor the performance of the ITS network. Device uptime, network uptime and systems uptime are evaluated for efficiency under this section. The data for these metrics are sourced from MIMS, SolarWinds, Activu, SunGuide and InService.

4.1.7.4 Operations Performance

The TMC Staff performance measures are set forth in the statewide Transportation Management Center Standard Operating Guidelines developed and maintained by FDOT Central Office (CO). The six required fields to evaluate are:

- Operator Data Entry Error Rate (≤ 2 Percent Target)
- Event Confirmation Time (≤ 03:00 Minutes Target)
- Time to Post to DMS (≤ 03:00 Minutes Target)
- DMS Efficiency Rate (≥ 98 Percent Target)
- Road Ranger Dispatch Time (≤ 03:00 Minutes Target)
- Third-Party Agency Notification (≤ 07:00 minutes)

In addition to these required fields, the following are monitored for accuracy:

- Alert Resolution Time
    - TSS Alarms (≤ 03:00 Minutes Target)
    - FHP Alerts (≤ 3:00 Minutes Target)
- FLATIS Event Publishing Efficiency Rate (≤ 06:00 Minutes Target)
- Event Management Metrics (≥ 98 Percent Target)
    - Weather Conditions Updated Properly
    - Nearest CCTV Saved
    - Asset Damage Checkbox Marked
    - Asset Maintenance Contact Name Recorded
    - Incident Description Comments Recorded

The above data used to compile these performance measures are sourced from SunGuide and the Operations Task Manager.

4.1.7.5 Operations Task Manager

District 5's Operations Task Manager (OTM) software has been installed for performance reporting. OTM has reporting available on various operational fields such as TSS Data, FL-ATIS, Operator Logs, TMC Responders, Incident Notification, and Operator QC. It is currently being configured to populate D5 data more consistently. The final configuration of this software will allow for additional performance measures to be established.

4.1.8 Center to Center

The Center-to-center (C2C) Publisher is an existing SunGuide software component responsible for publishing information to external systems via the C2C infrastructure. C2C Publisher will request and subscribe to all TPS information from databus, package it in the C2C XML structure, and publish it to a C2C provider. C2C also provides the ability for ICM Staff to publish floodgates (statewide and local) and banner alerts for any major (level 3) event to www.FL511.com. C2C has other functionalities within SunGuide for subsystems such as CCTV, DMS, Highway Advisor Radio (HAR), Road Weather Information System (RWIS) and more.

4.2 Maintenance & Inventory Management System

The Maintenance and Inventory Management System, or MIMS as it is commonly referred to as, is used by FDOT and their ITS maintenance contractors to track all ITS device related issues. As part of this process, the RTMC Operators complete a nightly systemwide check of all ITS devices creating and updating trouble tickets as needed for issues found. MIMS is also used to report network outages throughout District 5's ITS network. As the ITS maintenance contractors respond to trouble tickets and correct issues, they will contact the RTMC to verify that the affected devices are now operational. If they are, the RTMC Operator is responsible for marking the asset operational and placing a comment into the MIMS ticket stating the issue has been resolved.

4.3 Advanced Traffic Management System

Advanced traffic management system (ATMS) software allows the centralized monitoring and control of traffic signals within each maintaining agency limits. One of the objectives of the ICM program is to use the available ATMS software to operate and manage the effects of traffic conditions and to identify traffic signal equipment malfunctions. The ATMS system utilized by Orange County is Siemens Tactics, while City of Orlando and Seminole County utilize Trafficware ATMS.now.

4.4 Central Management Software

Central Management Software (CMS) is used in the management, configuration and reporting of Opticom systems which are used in the preemption of signals for emergency vehicles (high priority) and transit vehicles (low priority).

4.5 Bluetooth Management Software

Bluetooth Management software allows ICM operators to access real-time traffic information collected by the Bluetooth devices along the ICM corridors. ICM operators are able generate various reports and monitor device functionality. Seminole County Bluetooth travel time software is BlueTOAD while FDOT uses BlueMAC for the Bluetooth deployments in Orange and Osceola County.

4.6 Bluemac

The Bluemac software provides ICM Corridor Managers the ability to receive accurate data and analytics to make sound decision during the implementation process. This software is also used to generate various reports by ICM Corridor Managers such as travel time reliability, Origin-Destination analysis, traffic trends, and automobile dwell times. Bluemac uses Bluetooth technology to collect the data. Another software function provided to ICM Corridor Managers is the ability to use this software for before-after evaluations, how have travel times changed over time.

4.7 Gridsmart

The Gridsmart client connects to the Gridsmart Vehicle Detection cameras which are deploy in the field. The client can be used to collect data (turning movement counts for example) and make configuration changes in the field devices.

4.8 Maxview

ATMS software allows the centralized monitoring and control of traffic signals within each maintaining agency limits. One of the objectives of the ICM program is to use the available ATMS software to operate and manage the effects of traffic conditions and to identify traffic signal equipment malfunctions.

4.10 Tactic

ATMS software allows the centralized monitoring and control of traffic signals within each maintaining agency limits. One of the objectives of the ICM program is to use the available ATMS software to operate and manage the effects of traffic conditions and to identify traffic signal equipment malfunctions.

4.11 Centracs

ATMS software allows the centralized monitoring and control of traffic signals within each maintaining agency limits. One of the objectives of the ICM program is to use the available ATMS software to operate and manage the effects of traffic conditions and to identify traffic signal equipment malfunctions.

4.12 ATSPM

Automate traffic signal performance measures (ATSPM) is a software which uses the high-resolution data collected by signal controllers to provide signal performance metrics on the historical and real time performance of signalized intersections.

Appendix E

District 5
Traffic Incident Management
Standard Operating Procedure (SOP)

Standard Operating Guideline
Florida Department of Transportation District Five
Regional Traffic Management Center

	System/Topic: Traffic Incident Management	Policy Identified For: FDOT District 5
		Issue Date: 11/1/2020
	Subject: TIM Operations	Revision Date: 11/1/2020
		Total Pages: 2

I. PURPOSE

A. To provide an overview of D5 Traffic Incident Management and the functionality of the TIM Specialist position, both of which are intended to support Florida's Open Roads policy through the facilitation of safe, quick roadway clearance.

TIM is goal-oriented, utilizing whatever tools and resources are available to facilitate responder safety, effective communications, and safe, quick incident clearance.

II. DEFINITIONS/ACRONYMS

Below are a list of terms and acronyms commonly used in TIM.

A. ALERT – Notification of an incident or change in travel conditions that exceeds established thresholds
B. **CFX** – Central Florida Expressway Authority
C. DISTRICT 5 – The Florida Department of Transportation District Five Area
D. **EOC** – Emergency Operations Center
E. **FD** – Fire Department
F. **FHP** – Florida Highway Patrol
G. **LEO** – Law Enforcement Officer
H. **ME** – Medical Examiner
I. MUTUALINK – FDOT's multimedia communications platform
J. PTT – Push to Talk system
K. RTMC – Regional Traffic Management Center
L. **SLERS** – State Law Enforcement Radio System (also known as FHP radio)
M. **SUNGUIDE** – FDOT's proprietary ATMS (Advanced Traffic Management System) software
N. TIM – Traffic Incident Management
O. **TRS** – TIM Reporting Services
P. ZELLO – Communication system that allows personal to talk to people and communicate efficiently.

III. TIM Specialist

A. Individuals with experience in emergency response who work alongside RTMC Operators (freeway and arterial). The TIM Specialist position is responsible for monitoring District Five and CFX roadways and providing communications and coordination support with outside emergency response partners, including Road Rangers, fire/rescue, FHP, city/county law enforcement officials, towing companies, etc.

The TIM Specialist also monitors incident scenes for safety including proper vehicle and MOT placement, and will request additional resources and/or use of DMS signs for incident specific safety-related messaging.

IV. RESPONSIBILITIES

A. Monitor Sunguide and third-party applications for incident alerts; alert RTMC operators

B. Monitor SLERS and Zello PTT for notification of incidents, efficiency and appropriateness of communications

C. Locate incidents on camera and alert RTMC operators and/or other outside partners

D. Monitor Sunguide events and Road Ranger activity to ensure safety, contract compliance, and efficient use of resources

E. Communicate with outside partners (emergency responders, tow companies, etc.)

F. Communicate with TIM Manager about high profile incidents, or those that will have significant impact on District 5 roadways; share video through available resources, where appropriate

G. Conduct incident reviews; identify problems and successes to discuss in TIM meetings

Standard Operating Procedures
Florida Department of Transportation District Five
Regional Traffic Management Center

	System/Topic: Traffic Incident Management	Policy Identified For: FDOT District 5
		Issue Date: 11/1/2020
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Start of Shift

1. **Wipe down workstation and chair**

2. **Power up TIM workstation**
    a. Log into D5 Sunguide
    b. Log into CFX Sunguide
    c. Open multicast Districtwide Team Share
    d. Log into Outlook 365
    e. Log into Teams (D5 Camera Sharing event)
        . Share Districtwide Team Share
    f. Log into email
    g. Log into InService Management Portal

3. **Turn on and listen to/test communications devices**
    a. FHP/SLERS radio
    b. Push-to-Talk (Zello) - desktop or handheld

4. **Power up Mutualink workstation**
    a. Initiate continual monitoring events and display appropriate tour
    . Seminole County

5. **Click on Active911 link to open**

6. **Open Pulsepoint Web Application**
    a. Be sure Google Extension for refresh is on – 30 sec or < refresh
    b. Agencies to monitor:
        i. Brevard County Fire Rescue
        ii. Orange County Fire Rescue
        iii. Orlando Fire Department
        iv. Marion County Fire/Rescue
        v. Seminole County Fire Dept
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        ix. Vehicle Fire

7. **Check Road Ranger Statuses**
    a. Ensure any Road Rangers not on shift are logged out and those logged in show as such
    b. Monitor units to ensure GPS is working appropriately
    c. If not, contact Road Ranger to troubleshoot
        i. See **Section 2(A) Road Rangers** for troubleshooting tips

Daily Operations

1. **Review abandoned vehicles**
    a. Notify appropriate agency of any vehicles in unsafe locations or those that have been on the roadside for 6+ hours; request tow

2. **Monitor Road Rangers throughout shift (D5, CFX, and I-4 Ultimate)**
    . Ensure they remain logged into inService
        i. Notify Road Ranger if unit is not visible, or AVL is not functioning properly. Troubleshoot accordingly
            1. For I-4 Ultimate, notify their dispatch center
    . Monitor GPS
        i. If idle off-system for more than 30-min or outside of appropriate breaks, make contact with the Road Ranger (D5 and CFX only)
        ii. If idle at a scene for an extended period of time, locate via CCTV and/or make verbal contact with Road Ranger to confirm status (D5 and CFX only)
        iii. If Road Ranger is enroute to zone and will roll-up on a crash, provide them notification of the incident and request them to stop (D5 and CFX only; for I-4 Ultimate, notify their dispatch center)
            1. Notifications of these incidents is especially important for where lane blockage exists
        . Maintain situational awareness of Road Ranger locations and ensure efficient/closest unit dispatching
    a. Provide Road Rangers with any information or direction relating to response of incident

3. **Monitor Roadway Incidents/Activity**
    a. Utilize Pulsepoint, Active 911, FHP and TSS alerts for incident notifications
    b. Immediately notify appropriate operators of dispatched incident, if received outside of Sunguide

4. **Incident Management**
    a. Locate incident on camera and notify appropriate responding agency (goal < 2 min from point of notification)
        i. If incident was dispatched improperly, contact responding agency with correct location;
            1. If agency is on Mutualink, drop video and contact via ICOM or telephone
            2. Always confirm vehicle descriptions to ensure you are you looking at the same event
            3. Confirm direction of travel with a second TIM Specialist, RTMC Manager, or operator, if any doubt
            4. Provide partner agencies with as much location detail as possible, especially on congested roadways that may make access difficult
            - DO NOT direct or redirect emergency response units
                - Provide agency with detailed information that will allow them to choose their appropriate path
                - Only exception is interagency coordination for wrong-way access where roadway is completely closed; verified in field
            5. Provide additional information/details about incident to other responders, as needed
            6. Capture screenshots of major incidents and make notes in OneNote End of Shift (EOS) of details that would not likely be captured in Sunguide Event Chronology
                - Notate incidents for potential After Action Review (AAR) or TIM meeting discussion

b. For large-scale incidents that will have major impact on area roadways, notify the TIM Manager or their designee
    i. If agency is on Mutualink, drop video and contact via ICOM or telephone
    ii. Share display via Teams for FHP and other responders
    iii. f RISC-qualifying event, follow procedures in **Section 2(B) RISC**
c. Confirm Road Ranger is dispatched in a timely manner and that closest/most efficient unit is dispatched
    i. Evaluate scene and determine if a second Road Ranger, or other additional traffic control resources are needed and coordinate accordingly
d. Identify potential for ramp closures and assist with coordination as needed
e. Continually monitor event for potential safety concerns relating to emergency responders and the motoring public
    i. If traffic is approaching responders working in or alongside the roadway and "Move Over" message is warranted, post to appropriate DMS (if available) or coordinate with the RTMC operator working the event to do so
    ii. If vehicles are rapidly approaching a significantly slowed or stopped queue, post (or coordinate posting) of "Stopped Traffic Ahead" message on appropriate DMS, where available
f. Ensure all responders (or their dispatch centers) who are upstream of incident or along ramps are notified of changes to scene and/or scene clearance for safe, coordinated reopening of closed facilities
g. Add timely comments of actions taken and/or observations relevant to potential incident reviews to Sunguide events using InService Management portal

5. Monitor weather conditions

a. Monitor weather conditions using 3rd party websites (ex. windy.com or ventusky.com) and/or NWS weather alert system for potential severe weather incidents such as tornadoes, heavy winds, hail, etc.
    i. Provide PTT alert tone and audible warning to impacted groups of Road Rangers within 1-minute of notification; advise Road Rangers to take cover, as needed
    ii. Broadcast an InService alert to impacted groups of Road Rangers within 3-minutes of notification
    iii. Communicate weather concerns to FHP dispatch; establish mutual notification process for identified hazards and/or removal of units from roadway
        - Units are generally removed from the roadway when winds reach a sustained 40-45mph
        - Except for I-4 Ultimate Road Rangers, Road Rangers should be directed to suspend patrols and take cover when/if FHP removes troopers from the roadway. (Provide I-4 Ultimate with a courtesy notification. They will make their own operational decisions.)
            - This decision can be isolated to specific group(s) of Road Rangers based on geographical area of potential threat
        - Road Rangers, except I-4 Ultimate, should be instructed to resume patrols when FHP advises it is safe to do so. (Again, provide I-4 Ultimate a courtesy notification that FHP and D5 Road Ranger services are being resumed. They will

6. Communications

a. Utilize provided resources to monitor and communicate with outside agencies
    i. Telephone
    ii. Mutualink
    iii. Teams

b. SLERS
   i. Monitor FHP radio traffic for incident notifications and incident-related information/details that will be useful in coordinating response and recovery needs, as well as Executive TIM Notices and RTMC operations such as DMS, FL511, etc.
c. Push-to-Talk (Zello)
   ii. Monitor all active PTT channels to ensure proper communication and response between RTMC operators and Road Rangers
      1. Ensure all emergency alerts are responded to within 30-seconds
      2. Ensure all Road Ranger communications are responded to within 15-second goal (30-seconds max) If RTMC operators do not respond, immediately follow-up or answer for them if their workload prevents them from doing so
      3. If a Road Ranger requires emergency assistance, identify and confirm:
         - Location
         - Need
         - Any additional details

(A) Road Rangers

1. **Monitor systems and communications to ensure proper functionality**
    a. Laptops
        i. Assist Road Rangers with password changes or ITS support, where needed.
            1. Notify on-duty or on-call ITS personnel if unable to resolve at TIM level
            2. Assist ITS with coordination of laptop trade-outs for repairs, reimaging, or routine updates
            3. Troubleshooting
            4. If Road Ranger cannot log into Windows:
                - Password changes for Windows must go through ITS
            5. If Road Ranger is having issues with InService:
                - Password resets can be facilitated by TIM personnel via Sunguide
                - AVL isn't working or InService cannot connect to network:
                    i. Refresh
                    ii. Log out and back in
                    iii. Restart

    b. Push-to-talk (Zello)
        i. Ensure Road Rangers have reliable communications and provide technical support where needed
            1. Notify the Zello administrator if unable to resolve at TIM level

    c. SLERS
        i. Ensure Road Rangers have functional FHP/SLERS radios as a secondary communications mechanism and for daily monitoring during patrols
            1. Coordinate retrieval and shipping of D5 radios for maintenance or repairs

(B) RISC

1. **Identify RISC-qualifying incidents within 5 minutes of notification/CCTV verification**
    a. Considerations include:
        i. Type/size of vehicle
        ii. Spilled load
        iii. Ruptured fuel tank
        iv. Location
        v. Time of day

2. **Notify TIM Manager**

3. **Contact agencies on scene as quickly as possible to obtain information relevant to determining need for RISC activation**

3. **If RISC is warranted, provide information to FHP and request coordinated decision**

5. **If RISC is requested, coordinate with RTMC operator for notification of RISC vendor**
    a. RTMC operators will contact the tow vendor's dispatch and document times/notes in the event
        i. TIM Specialist should assist with calls and/or notations, if RTMC workload necessitates
    b. TIM Specialist should make contact with RISC vendor owner or manager, as provided in the contact list, and provide incident details and screenshots, if possible

6. **Assist RTMC operators with identifying RISC timeline benchmarks**
    a. Arrival of required equipment
    b. Notice to Proceed (NTP)
    c. Vendor Clearance
    d. RISC Clearance

7. **Make note of any irregularities or concerns regarding RISC performance, including safety or performance issues and/or what equipment is brought to the scene**

(i) Questions to Ask

The following are key questions to ask to determine the need for a RISC activation. The answers to these questions need to be relayed to FHP/responding agency ASAP to expedite activation.

1. **Are there any injuries?**
    a. Severity

2. **Is there a fuel spill? If so, estimate how much.**

3. **Is there major damage to the trailer and/or undercarriage (axles, etc) that will make towing complicated?**

4. **Did the truck lose its load? If so, what is it?**

5. **Is the truck loaded? If so, with what?**

Additional considerations/observations:

1. **Are commercial vehicles involved?**

2. **Is the incident having a significant impact on traffic (or the potential to)?**
    a. If on the shoulder, will the tow company have to take travel lanes for recovery?
    b. Is it in a highly congested area and/or at or approaching peak travel times?
        i. Most any major commercial incident on I-4 or 75 is going to be problematic
    c. Major arterials, especially those without alternate routes, are also notable considerations for a RISC activation.

(C) Safe Tow

1. Under Development

Express Lane TIM Operations

1. **Under Development**

CFX PTSU TIM Operations

1. **Under Development**

End of Shift

1. **Notify TIM Manager, or designee, of any ongoing major events that require monitoring**
2. **Notify TIM Manager, or designee, of any outstanding technical or operational issues that need to be resolved**
3. **Alert agencies on Mutualink or Teams of intent to close/discontinue any active events**
4. **Email TIM Team personnel of any outstanding issues for upcoming shift**
5. **Straighten/organize TIM station in preparation for next shift**

Special Event Traffic Management

1. **Staffing**
    a. TIM Personnel is expected to be available to work major events such as major weather events (hurricane evacuations), space launches, large Daytona Speedway events, etc.
        i. Major weather events (hurricanes) may require rotating shifts in a lockdown status, meaning TIM personnel will be expected to stay at the RTMC until the event is clear and/or the District EOC determines TIM monitoring/coordination are no longer needed
        ii. Personnel may be requested to go to an
        iii. Staffing needs will be determined based on historical data and management experiences; approval from Department and RTMC PM's is required

2. **Event preparation**
    a. TIM personnel will assist TIM manager with completion of pre-event checklists, where applicable
        i. Check ESU routes and mark-up plans, if needed
        ii. Check camera pre-sets for ESU flip down signs
    b. Road Ranger coverage
        i. TIM personnel will assist with gathering data from Sunguide and/or Road Ranger vendors to determine historical coverage and activity levels
        ii. For events outside of normal patrol hours, TIM Manager will present proposed staffing plan to the District for authorization

3. **Event monitoring**
    a. Elevated monitoring of major roadways in or around impacted area with prioritized quick-clearance efforts and high-level coordination with emergency response partners
    b. Immediate notification to TIM manager (and/or D5 EOC, if hurricane event) of any major traffic concerns or changes in service coverage
        i. Example, if Road Rangers are pulled off the roadway because of potentially hazardous weather conditions
    c. Monitor weather activity (NWS weather chat) and EOC notifications
        i. Immediate notifications to Road Rangers of hazardous conditions
        ii. Alert RTMC operators of any significant notifications for situational awareness
    d. Monitoring of Survey123 dashboard and WebEOC for situational awareness
        i. Communicate issues to RTMC operators for situational awareness

Continuity of Operations

1. **For staffing reductions, refer to the District-approved COOP (see link below) for correlating activity reductions.**
    a. https://teams.microsoft.com/l/file/0DD297C4-C73B-4CA8-BD9B-99862834A578?tenantId=db21de5d-bc9c-420c-8f3f-8f08f85b5ada&fileType=xlsx&objectUrl=https%3A%2F%2Ffldot.sharepoint.com%2Fteams%2FD5TSMO%2FShared%20Documents%2FRTMC-TIM%2FD5%20RTMC-TIM%20COVID%20Emergency%20Operations%20COOP%20v2.xlsx&baseUrl=https%3A%2F%2Ffldot.sharepoint.com%2Fteams%2FD5TSMO&serviceName=teams&threadId=19:2eb5c40523d7469bbea8ceefe4bcb8c6@thread.skype&groupId=39fbe1a0-d884-4d01-80b0-64737b40fa98

Inventory

Use designated processes, such as the TIM Reporting Services (TRS), for inventory control and documentation.

1. **Inventory**
    a. Using TIM Reporting Services (TRS), maintain an accurate and up-to-date inventory of all D5 ITS assets relating to TIM including, but not limited to:
        i. Laptops
        ii. Radios
        iii. RTMC Satellite Phone
    b. Ensure current location/assignment of equipment is properly documented and tracked
    c. Assist ITS with annual districtwide inventory by confirming location, assignment, and working condition of all TIM-related assets

TIM Administration

TIM Administration responsibilities include, but are not limited to:

1. **Preparation for quarterly TIM meetings**
    a. National and local struck-by incidents
    b. Identify relevant TIM topics for presentation/discussion
    c. Identify incidents for review/discussion
    d. Quarterly performance measures graphics/trends

2. **TIM website**
    a. Maintain/Update TIM website
        i. Meeting dates/times
        ii. Home page images
        iii. TIM resources

3. **TIM email**
    a. Monitor D5 TIM email for Road Ranger and website feedback

4. **Contract administration**
    a. Assist TIM manager with contract administration as outlined in sections **7(A) - Road Ranger Contracts** and **7(B) - Tow Contracts**

5. **Prepare quarterly performance measure reports for District 5 ICM reports**
    a. Identify and research trends for high incident locations or other issues that warrant District notification or further review

6. **TIM Reporting Services (TRS)**
    a. User management - provide Road Ranger vendor managers with system credentials
    b. Routinely review reports and summarize for TIM Manager, as needed

7. **Push-to-Talk (Zello) Administration** (Garrett Popovich)
    a. User management - provide Road Rangers, supervisors/leads, and RTMC operations with system credentials/access
    b. Channel/Talk group set-up
    c. Routinely review system health and efficiency

8. **Other tasks as designated by the TIM Manager or FDOT Personnel**

(A) Road Ranger Contracts

Road Ranger contract administration includes, but is not limited to:

1. **Utilize TIM Reporting Services (TRS) to:**
    a. Review and track all Road Ranger or TIM-related performance issues or compliments
    b. Document truck inspections for D5 Road Rangers as outlined in each contract
    c. Document and track personnel audits to ensure all required training and certifications are completed and documented as outlined in contracts

2. **Utilize Sunguide reports for quarterly evaluations of performance measures as outlined in each contract**

3. **Provide TIM manager with any necessary information relating to Road Ranger performance and/or contract issues:**
    a. Immediately notify vendor supervisor or corridor manager of any urgent operational or safety concerns
        i. Make contact and report the issue via telephone
        ii. Follow-up with email notification to TIM manager, including any incident-specific details, where needed
        iii. Document in TRS, when appropriate to do so

(B) <u>Tow Contracts</u>

Tow contract administration includes, but is not limited to:

1. **Utilize TIM Reporting Services (TRS) to:**
    a. Review and track all tow-related performance issues
    b. Document equipment inspections for D5 tow vendors as outlined in each contract
    c. Document and track personnel audits to ensure all required training and certifications are completed and documented as outlined in contracts

2. **Utilize Sunguide reports for quarterly evaluations of performance measures as outlined in each contract**

3. **Provide TIM manager with any necessary information relating to Road Ranger performance and/or contract issues:**
    a. Immediately notify vendor supervisor or corridor manager of any urgent operational or safety concerns
        i. Make contact and report the issue via telephone
        ii. Follow-up with email notification to TIM manager, including any incident-specific details, where needed
        iii. Document in TRS, when appropriate to do so
4. **Assist TIM manager with budget monitoring and vendor invoicing**
5. **Assist with CFX after-action reports using provided template**

Appendix F

District 5
I-4, Outside Ultimate, Road Ranger Contract

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CONTRACTUAL SERVICES AGREEMENT
STATE OF FLORIDA GOVERNMENTAL AGENCIES

Agreement No.	BE350
Financial Project I.D.	410957-1-72-07
Journal Trans./F.E.I.D. #:	F592982959-005
Benefiting Object Code:	NA
Benefiting Category:	NA
Appropriation Bill Number(s)/Line Item Number(s) for 1st year of contract, pursuant to s. 216.313, F.S.:	*(required for contracts in excess of $5 million)*
Procurement No.:	EXEMPT
DMS Catalog Class No.:	72141003, 80161505

BY THIS AGREEMENT, made and entered into this 6/27/2017 | 3:20 PM EDT by and between the STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION, hereinafter called the "Department" and Central Florida Regional Transportation Authority, dba Lynx , of 455 N. Garland Ave, Orlando FL 32801 an agency or educational unit as defined in Chapter 120, Florida Statutes, hereinafter called "Vendor", hereby agree as follows:

1. SERVICE

A. In connection with Road Ranger Patrol for Highway Assistance Services , the Department does hereby retain the Vendor to furnish certain services, information and items as described in Exhibit "A", attached hereto and made a part hereof.

2. TERM

A. Initial Term. This Agreement shall begin on date of execution and shall terminate on 6/30/2022. Services shall commence July 1, 2017 and shall be completed by June 30, 2022 or date of termination, whichever occurs first.

B. RENEWALS (Select appropriate box):.

☐ This Agreement may not be renewed

☑ This Agreement may be renewed for a period that may not exceed three (3) years or the term of the original agreement, whichever is longer. Renewals are contingent upon satisfactory performance evaluations by the Department and subject to the availability of funds. Costs for renewals may not be charged. Any renewal or extension must be in writing and is subject to the same terms and conditions set forth in this Agreement and any written amendments signed by the parties.

3. COMPENSATION AND PAYMENT

A. Payment shall be made only after receipt and approval of goods and services unless advance payments are authorized by the Chief Financial Officer of the State of Florida under Chapters 215 and 216, Florida Statutes. Deliverable(s) must be received and accepted in writing by the Contract Manager on the Department's invoice transmittal forms prior to payment. If the Department determines that the performance of the Vendor is unsatisfactory, the Department shall notify the Vendor of the deficiency to be corrected, which correction shall be made within a time-frame to be specified by the Department. The Vendor shall, within five days after notice from the Department, provide the Department with a corrective action plan describing how the Vendor will address all issues of contract non-performance, unacceptable performance, failure to meet the minimum performance levels, deliverable deficiencies, or contract non-compliance. If the corrective action plan is unacceptable to the Department, the Vendor shall be assessed a non-performance retainage equivalent to 10% of the total invoice amount. The retainage shall be applied to the invoice for the then-current billing period. The retainage shall be withheld until the vendor resolves the deficiency. If the deficiency is subsequently resolved, the Vendor may bill the Department for the retained amount during the next billing period. If the Vendor is unable to resolve the deficiency, the funds retained may be forfeited at the end of the agreement period.

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B. Any penalty for delay in payment shall be in accordance with Section 215.422, Florida Statutes.

C. The bills for fees or other compensation for services or expenses shall be submitted in detail sufficient for a proper preaudit and postaudit thereof.

D. The bills for any travel expenses, when authorized by terms of this Agreement and by the Department's Project Manager, shall be submitted in accordance with Section 112.061, Florida Statutes. In addition, if compensation for travel is authorized under this Agreement and by the Department's Project Manager, then the Department shall not compensate the Vendor for lodging/hotel expenses in excess of $150.00 per day (excluding taxes and fees). The Vendor may expend their own funds to the extent the lodging/ hotel expense exceeds $150.00 per day. The Department, in its sole discretion and pursuant to its internal policies and procedures, may approve compensation to the Vendor for lodging/hotel expenses in excess of $150.00 per day.

E. A vendor ombudsman has been established within the Department of Financial Services. The duties of this individual include acting as an advocate for vendors who may be experiencing problems in obtaining timely payment(s) from a state agency. The Vendor Ombudsman may be contacted at (850) 413-5516.

F. The Department, during any fiscal year, shall not expend money, incur any liability, or enter into any contract which, by its terms, involves the expenditure of money in excess of the amounts budgeted as available for expenditure during such fiscal year. Any agreement, verbal or written, made in violation of this subsection is null and void, and no money may be paid on such agreement. The Department shall require a statement from the Comptroller of the Department that funds are available prior to entering into any such agreement or other binding commitment of funds. Nothing herein contained shall prevent the making of agreements for periods exceeding one year, but any agreement so made shall be executory only for the value of the services to be rendered or agreed to be paid for in succeeding fiscal years. Accordingly, the Department's performance and obligation to pay under this Agreement is contingent upon an annual appropriation by the Legislature.

G. Records of costs incurred under terms of this Agreement shall be maintained and made available upon request to the Department at all times during the period of this Agreement and for three (3) years after final payment for the work pursuant to this Agreement is made. Copies of these documents and records shall be furnished to the Department upon request. Records of costs incurred shall include the Vendor's general accounting records and the project records, together with supporting documents and records, of the Vendor and all subcontractors performing work on the project, and all other records of the Vendor and subcontractors considered necessary by the Department for a proper audit of project costs.

4. <u>COMPLIANCE WITH LAWS</u>

A. The Vendor shall allow public access to all documents, papers, letters, or other material subject to the provisions of Chapter 119, Florida Statutes, and made or received by the Vendor in conjunction with this Agreement. Specifically, if the Vendor is acting on behalf of a public agency the Vendor shall:

(1) Keep and maintain public records that ordinarily and necessarily would be required by the Department in order to perform the services being performed by the Vendor.

(2) Provide the public with access to public records on the same terms and conditions that the Department would provide the records and at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law.

(3) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law.

(4) Meet all requirements for retaining public records and transfer, at no cost, to the Department all public records in possession of the Vendor upon termination of the contract and destroy any duplicate publicrecords that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the Department in a format that is compatible with the information technology systems of the Department.

Failure by the Vendor to grant such public access shall be grounds for immediate unilateral cancellation of this Agreement by the Department. The Vendor shall promptly provide the Department with a copy of any request to inspect or copy public records in possession of the Vendor and shall promptly provide the Department a copy of the Vendor's response to each such request.

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B. A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity, may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work, may not sumit bids, proposals, or replies on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes for CATEGORY TWO for a period of 36 months following the date of being placed on the convicted vendor list.

C. The Department shall consider the employment by any vendor of unauthorized aliens a violation of Section 274A(e) of the Immigration and Nationality Act. If the vendor knowingly employs unauthorized aliens, such violation shall be cause for unilateral cancellation of this agreement.

D. The Vendor agrees to comply with the Title VI Nondiscrimination Contract Provisions, Appendices A and E, available at http://www.dot.state.fl.us/procurement/index.shtm, incorporated herein by reference and made a part of this Agreement.

E. Pursuant to Section 216.347, Florida Statutes, the vendor may not expend any State funds for the purpose of lobbying the Legislature, the judicial branch, or a state agency.

F. Any Intellectual Property developed as a result of this Agreement will belong to and be the sole property of the State. This provision will survive the termination or expiration of the Agreement.

G. Federal-aid projects for highway construction shall comply with the Buy America provisions of 23 CFR 635.410, as amended.

H. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of federally assisted construction contract" in 41 CFR Part 60-1.3 shall comply with the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

5. <u>TERMINATION AND DEFAULT</u>

A. This Agreement may be canceled by the Department in whole or in part at any time the interest of the Department requires such termination. The Department further reserves the right to terminate or cancel this Agreement in the event an assignment be made for the benefit of creditors.

B. If the Department determines that the performance of the Vendor is not satisfactory, the Department shall have the option of (a) immediately terminating the Agreement, or (b) notifying the Vendor of the deficiency with a requirement that the deficiency be corrected within a specified time, otherwise the Agreement will be terminated at the end of such time, or (c) taking whatever action is deemed appropriate by the Department.

C. If the Department requires termination of the Agreement for reasons other than unsatisfactory performance of the Vendor, the Department shall notify the Vendor of such termination, with instructions as to the effective date of termination or specify the stage of work at which the Agreement is to be terminated.

D. If the Agreement is terminated before performance is completed, the Vendor shall be paid only for that work satisfactorily performed for which costs can be substantiated. Such payment, however, may not exceed an amount which is the same percentage of the agreement price as the amount of work satisfactorily completed is a percentage of the total work called for by this Agreement. All work in progress will become the property of the Department and will be turned over promptly by the Vendor.

E. For Contracts $1,000,000 and greater, if the Department determines the Contractor submitted a false certification under Section 287.135(5) of the Florida Statutes, or if the Contractor has been placed on the Scrutinized Companies with Activities in the Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List, the Department shall either terminate the Contract after it has given the Contractor notice and an opportunity to demonstrate the Department's determination of false certification was in error pursuant to Section

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287.135(5)(a) of the Florida Statutes, or maintain the Contract if the conditions of Section 287.135(4) of the Florida Statutes are met.

6. ASSIGNMENT AND SUBCONTRACTS

A. The Vendor shall not sublet, assign or transfer any work under this Agreement without the prior written consent of the Department.

B. ☑ This Agreement involves the expenditure of federal funds and hence, Appendix I is applicable to all parties and is hereof made a part of this Agreement

7. DISCRIMINATION

A. An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity, may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids, proposals, or replies on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity.

8. MISCELLANEOUS

A. This Agreement embodies the whole agreement of the parties. There are no promises, terms, conditions, or obligations other than those contained herein, and this Agreement shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties hereto.

B. It is understood and agreed by the parties hereto that if any part, term or provision of this Agreement is by the courts held to be illegal or in conflict with any law of the State of Florida, the validity of the remaining portions or provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular part, term or provision held to be invalid.

C. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida.

D. The Department may grant the Vendor's employees or subconsultants access to the Department's secure networks as part of the project. In the event such employees' or subconsultants' participation in the project is terminated or will be terminated, the Vendor shall notify the Department's project manager no later than the employees' or subconsultants' separation date from participation in the project or immediately upon the Vendor acquiring knowledge of such termination of employees' or subconsultants' participation in the project, whichever occurs later.

E. Vendor/Contractor:

1. shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Vendor/Contractor during the term of the contract; and

2. shall expressly require any subcontractors performing work or providing services pursuant to the state contract to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term.

9. The following attachments are incorporated and made a part of this Agreement:

Exhibit "A" Scope of Services, Pages A1 - A13
Exhibit "B" Method of Compensation, Pages B1 - B3
Terms for Federal Aid Contracts (Appendix I) Pages 1 - 3
Attachment 1, Sponsorship/Advertisement Agreement, Pages 1-5

10. Other Provisions:

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FLORIDA DEPARTMENT OF TRANSPORTATION

CONTRACTUAL SERVICES AGREEMENT
STATE OF FLORIDA GOVERNMENTAL AGENCIES

IN WITNESS WHEREOF, the parties have executed this Agreement by their duly authorized officers on the day, month and year set forth above.

Central Florida Regional Transit Authority dba Lynx
Name of Vendor

BY: _____
Authorized Signature

EDWARD L. JOHNSON
(Print/Type)

Title: CHIEF EXECUTIVE OFFICER

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

DocuSigned by:
BY: _____
09C36D48F5B74C8...
Authorized Signature

Alan E. Hyman, P.E.
(Print/Type)

Title: Director of Transportation Operations

FOR DEPARTMENT USE ONLY

APPROVED: DocuSigned by:
Michelle Sloan
BBF10369F488432...

LEGAL REVIEW: DocuSigned by:
Ryan Maffler
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BE350
SCOPE OF SERVICES
EXHIBIT"A"
ROAD RANGERS SERVICE PATROL
HIGHWAY ASSISTANCE SERVICES

I. OBJECTIVE:

The Florida Department of Transportation desires to provide free Highway Assistance Services during incidents to reduce delay and improve safety for the motoring public and responders.

II. SERVICES TO BE PROVIDED BY CONTRACTOR:

This contract consists of providing Road Ranger service patrol vehicles with qualified operators, Supervisor, and Road Ranger Contract Manager (at the discretion of the VENDOR) as outlined in this Scope of Services and a variety of free motorist services and related activities to be accomplished during patrol. Wrecker services will be provided by notifying Florida Highway Patrol of the need for their rotation wrecker service or towing service, as requested by the disabled motorist. **IN NO EVENT SHALL THE VENDOR OR THE ROAD RANGER SERVICE VEHICLE OPERATOR PROVIDE OR RECOMMEND ANY TOWING, REPAIR SERVICE OR FACILITY TO THE DISABLED MOTORIST. IF THE MOTORIST REQUESTS THE ASSISTANCE OF A MOTOR CLUB, THE OPERATOR WILL ASSIST THE MOTORIST WITH THE CELLULAR PHONE CALL.**

III. DEFINITION OF TERMS:

A. **DEPARTMENT**: Florida Department of Transportation
B. **F.H.P.**: Florida Highway Patrol
C. **VENDOR**: LYNX
D. **ROAD RANGER VEHICLE OPERATOR**: A hired driver or employee of the Vendor duly licensed and trained by the Vendor as driver operator of Vendors vehicles.
E. **M.A.S.**: Motorist Aid System.
F. **T.I.M.** Traffic Incident Management

IV. GENERAL CONTRACT REQUIREMENTS:

A. Road Ranger Service Patrol Sectors

1. Road Ranger Vehicles shall operate in designated Patrol Sectors as determined by the Department, which may vary based on need. Road Ranger Vehicles will normally enter and exit at the nearest interchange, rest area, or designated paved crossovers. Crossing the median will be allowed in emergency situations as defined by the Department in this scope of work. The Road Ranger Vehicles shall continuously patrol their respective sectors in continuous loops.

2. At any time during the contract's terms, the Department reserves the right to adjust Patrol Sector locations to better accommodate demand for the Service. This includes, but not limited to the following: attendance to safety events, community events, special events, evacuation events, etc. The Department will advise the Vendor of any required adjustment to a Sector location in writing 48 hours prior to the effective date of adjustment. Adjustments to Sector locations will not change the overall limits over which the Vendor is to provide service under this contract. This requirement will not increase the anticipated number of work hours to be provided under this contract.

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B. Instances in which a Road Ranger Vehicle may leave a Patrol Sector

Road Ranger Vehicles shall not leave their designated patrol sectors except:

a. For mechanical failure of the Road Ranger Vehicle. In this instance a backup vehicle shall be put into service or the existing Road Ranger Service Patrol limits shall be adjusted to cover the other vehicle's limits.

b. To replenish fuel at the nearest facility not to exceed 2 miles from sector or at the LYNX facility.

c. In response to an order from Law Enforcement Officer or Fire Department Official, or at the direction of the Department. If the Road Ranger Vehicle Operator is ordered by Law Enforcement Officer or Fire Department Official to leave the Patrol Sector, they shall contact the Road Ranger Supervisor and/or the FDOT Road Ranger Program Manager immediately.

d. To assist another sector as authorized by the supervisor and approved by the Department.

C. Road Ranger Service Patrol Activities Near End of Patrol Shift

When a Road Ranger Operator receives a request for service or assistance from either the Department or a Law Enforcement Officer near the end of the Operator's shift, the Operator shall respond. When the next shift becomes available, they shall come to the scene and relieve the previous shift. Any overtime acquired by this task, shall be included in the costs of this contract.

D. Maintenance of Road Ranger Vehicles

The Vehicles shall be kept neat and clean, and in good condition.

E. Inspection of the Road Ranger Vehicles by the Department.

All Road Ranger Vehicles and their associated equipment, accessories and parts shall be subject to periodic inspection by the Department. Unsafe, poorly maintained Vehicles, or improperly equipped Vehicles, as determined by the Department shall be removed from service and replaced at no cost to the Department. The Vendor shall immediately replace Vehicle(s) removed from service.

F. F.H.P. Towing Service Rotation System

If a motorist does not request a specified towing service, repair facility, or individuals to assist them, the Service Patrol Vehicle Operator will contact the F.H.P. and request that towing service be provided through the F.H.P. towing service rotation system.

V. **ROAD RANGER VEHICLE EQUIPMENT, ACCESSORIES, PARTS, AND COMMUNICATIONS EQUIPMENT REQUIREMENTS:**

A. ROAD RANGER Vehicle Requirements

1. Each Road Ranger Vehicle must be at a minimum a full size, 3/4 ton extended cab 4 door, long bed truck capable of carrying the equipment specified in this contract. Each vehicle must have functioning seat belts for all possible passengers. Each Road Ranger Vehicle will be equipped

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with an Automated Vehicle Location (AVL) system which provides at a minimum the following information: Latitude and Longitude, Vehicle Number, Speed, Direction.

2. Each Road Ranger Vehicle shall be painted white and shall have the following identification markings on both sides of the vehicle: 1. FDOT LOGO, Eleven inches (11") in diameter, 2. Sunguide LOGO, Eight and one-half inches (8.5") by nine and one-half inches (9.5"), 3. "ROAD RANGERS" painted or affixed in six-inch (6") black letters below the FDOT logo, 4. FREE SERVICE painted in two-inch (2") black letters below the FDOT logo, 5. "Dial *FHP" painted or affixed in tow-inch (2") white letters on a blue background, 6. Pickup trucks shall also paint or affix in two-inch (2") black letters "FREE SERVICE" on ht rear bumper or tailgate of the vehicle, 7. Each Road Ranger Vehicle shall display a three-digit number placed on or near the driver's and passenger's doors, the rear of the vehicle and the front of the vehicle that will individually identify each service patrol vehicle. The numbering sequence shall be as follows: DXX (D=District, XX=Sequential vehicle numbering beginning with 01)

3. The Department shall approve the design of all identification markings. All markings shall be maintained in a clean and readable condition throughout this contract. No reference to the VENDORs company name or logo shall be placed on the Road Ranger Vehicle. Any variations to the Road Ranger Vehicle (i.e. vehicle size or type) must be approved by the State Traffic Operations Engineer. Variance requests and justifications must be provided in writing. Exception: Sponsorship contract addendum requirements are to be followed for all aspects of the program as written in the agreement.

4. The LYNX Road Ranger Supervisor's vehicle will be equipped with a Laptop, purchased by the DEPARTMENT, and a wireless connection for monitoring the location of all Road Ranger Trucks in service under this contract through GPS. The Laptop is the property of the Department, will be inventoried annually, and will be returned to the DEPARTMENT upon termination of the contract.

B. **Equipment, Tools, and Expendables Requirements**

Each Road Ranger Vehicle shall have the following equipment, tools, and expendables at the start of each shift. Should any of the equipment, tools, and/or expendables malfunction or become depleted during the shift, the Road Ranger operator shall replenish or replace these items to the required quantities as early as possible throughout the shift.

Equipment

(1) Two (2) towing straps rated at three thousand (3,000) pounds minimum.

(2) Rubber face push bumper.

(3) Rear work lights and/or a 360 degree rotating spotlight

(4) Power outlets ("hot boxes", booster cables, or equivalent), front and rear-mounted, compatible with 12 volt booster cables.

(5) Two (2) heavy duty batteries, each with the minimum of 750 cold cranking amps (CCA).

(6) Functioning cab lighting.

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(7) Department approved arrow-board or truck mounted dynamic message sign. This unit shall be mounted atop the cab above the roof mounted light bar and be free to pivot into place as needed.

(8) A roof mounted light bar, front to rear controllable, utilizing white and/or amber colors. The use of red or blue flashing lights is prohibited.

(9) Universal ball mount with 1/7/8-inch, 2-inch ball, and 2 5/16 inch balls.

(10) One (1) Five (5) gallon trash can or heavy duty trash bags.

(11) Two (2) multi-purpose funnels with flexible spouts.

(12) Two (2) wood blocks each measuring 4-inches by 6-inches by 12-inches.

(13) Fifteen (15) Department approved 36-inch traffic cones, with reflective markings.

(14) One hydraulic floor jack, capable of lifting passenger vehicles.

(15) Air compressor capable of inflating tires of vehicles and operating an impact wrench.

(16) Heavy duty flashlight/traffic wand with spare batteries.

(17) One set of booster cables consisting of 3-gauge copper wire with heavy-duty clamps and one end adapted to the Road Ranger Vehicle's power outlets, minimum of 25 feet in length.

(18) Cell phone and Department approved radios.

Tools

(1) Shovels (1 each) Square-end, Round-end
(2) One (1) 24-inch street broom
(3) Lug Wrenches to fit all vehicles (metric and standard)
(4) Pry bar, minimum 36 inches in length
Air operated impact wrench with sockets to fit all vehicles (metric and standard)

Each Road Ranger Vehicle shall have a toolbox containing the following tools:

a. Screwdrivers, Standard 1/8, 3/16, 1/4, 5/16 (1 each), Phillips head #1 and #2 (1 each), and Star Driver (1 set)

b. Needle nose pliers (1 pair)

c. Adjustable rib joint pliers, 2 inch minimum capacity (1 pair)

d. Wire cutting pliers (1 pair)

e. Adjustable wrenches, 8 inch (1 each) and, 12 inch (1 each)

e. 5 pound hammer (1 each)

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f. Rubber mallet (1 each)

g. Electrical tape (20 yards)

h. Duct tape (20 yards)

i. Tire pressure gauge (1 each)

j. Mechanic's wire (25 ft roll)

k. Bolt cutters – 24 inch or larger (1 pair)

l. Complete set of open end and box wrenches (both metric and standard)

Expendables

(1) Diesel fuel (minimum 5 gallons) - In approved can or tanks.

(2) Unleaded gasoline (minimum 5 gallons) - In approved can or tanks.

(3) First aid kit (First Responder Kit, fully stocked) (1 each)

(4) Fire extinguisher, 5 pound Dry Chemical ABC (2 each) - Meeting all safety requirements, if seal is broken unit shall be tested, resealed and certified.

(5) Five (5)-gallons of radiator water in labeled container(s)

(6) Twenty four (24) highway wet flares, 30-minute burn.

(7) Ten (10) gallons of absorbent material for liquid spills.

(8) Twelve (12) bottles of drinking water in individually sealed bottles, minimum 16 ounces.

(9) Fifty (50) Department approved comment cards, provided by the VENDOR.

(10) Twenty-Five (25) Move it Law Cards, provided by the District, for distribution to crash victims who have questions regarding the Move It Law.

4. Replacing Road Ranger Vehicles

The VENDOR shall be responsible for replacing all Road Ranger Vehicles throughout the term of this contract. The VENDOR will be responsible for providing the Department with a schedule for replacing all vehicles during the term of this contract. The VENDOR will be responsible for the disposal of the replaced vehicles. If such vehicles are still eligible or considered still serviceable, the VENDOR shall seek approval from the Department to use these vehicles as a spare.

Funds provided through the Sponsorship Funding Services Program may be used towards vehicle replacement.

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C. Communications Equipment Requirements

1. Radios

Each Road Ranger Vehicle shall be equipped with the 1 State of Florida 800 Mhz portable radios to communicate with the District Regional Traffic Management Center (RTMC) and the Florida Highway Patrol. These radios will be also used to communicate with all other Road Ranger Vehicles. The Department shall be responsible for all radio repairs and maintenance. The radios are the property of the DEPARTMENT, will be inventoried annually, and will be returned to the DEPARTMENT upon termination of the contract.

2. Cellular telephones

Each Road Ranger Vehicle shall be equipped with a cellular telephone with radio talk features. The radio talk features will include individual radio talk features. The cellular telephones shall be capable of communicating with any necessary personnel from all points on the service route. The phones are also to be available for all motorist service contacts. The VENDOR shall be responsible for all costs associated with the cellular telephones throughout the term of this contract. The VENDOR shall obtain and maintain all necessary contracts for this service, which includes any replacement of damage cellular phones.

3. Public Address System

Each Road Ranger Vehicle shall be equipped with an external speaker and public address system, 100 watts minimum.

VI. <u>Road Ranger Vehicle Operator's Duties and Responsibilities:</u>

A. The Road Ranger Vehicle Operator shall perform the following duties within their specified times and locations of operation:

1. Road Ranger Duties

Continuously patrol the designated area seeking disabled vehicles, stranded motorists, debris in the roadway, spilled loads, vehicle crashes, obstructions to traffic, dead animals and other potential hazards, etc. and assist incident responders with traffic control.

2. Clearing, Clean up and Communication

a. Clear lanes of all disabled vehicles encountered in the Service Patrol Sector. It is the VENDOR responsibility to remove small non-hazardous debris from the roadway and paved shoulder area and place in areas designated by the Department. The Road Ranger Operator will notify the Department of any debris or obstructions on the roadway or paved shoulder area too large for the Road Ranger Operator to remove.

b. Call the following parties where appropriate, as soon as possible:

(1) Using the 800 Mhz radio, contact the F.H.P. for Incident Management of crashes, emergencies, and other law enforcement situations, or for rotation towing of vehicles.

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(2) Local Fire Departments for vehicle crashes, medical emergencies and verified fires. Also notify F.H.P.

a. The F.H.P. and DOT Maintenance Yard for large spilled loads or large debris, or in other situations such as long term closures that will need additional MOT equipment.

b. Call 911 for any necessary emergencies.

3. Assistance to Motorists

a. The Road Ranger Operators shall provide a free service, which includes prompt, courteous and skillful assistance to motorists as follows:

(1) Move the disabled vehicle from traffic lanes.

(2) Change flat tires.

(3) Provide jump-starts.

(4) Provide fuel to motorist enabling them to reach the closest fueling location. Provide water, etc. when necessary.

(5) Assist motorist with mechanical failures where feasible if they can be remedied quickly.

b. The VENDOR or Road Ranger Operators shall not charge any fees, accept any gratuities, recommend secondary towing service, or recommend repair/body shops. Violation of this requirement shall constitute grounds for immediate removal of employee and/or cancellation of this contract.

4. Advice to Motorists

a. Motorists shall initially be advised, prior to providing services, that moving, fueling, servicing their vehicle for minor repairs or calling a towing service is being provided free of charge as a courtesy by the Department. The Road Ranger Vehicle Operator may attempt minor repairs where feasible if they can be remedied quickly, once the vehicle is cleared from the travel lanes. Should repairs not prove feasible or solve the problem, the motorist shall be allowed up to three (3) telephone calls of three (3) minutes each, using the Road Ranger Vehicle's cellular telephone to make arrangements for further service, towing, or transportation. The motorist must pay all costs for further service, towing or transportation. IN NO EVENT SHALL THE VENDOR OR THE ROAD RANGER VEHICLE OPERATOR PROVIDE OR RECOMMEND ANY TOWING, REPAIR SERVICE OR FACILITY TO THE DISABLED MOTORIST. IF THE MOTORIST REQUESTS THE ASSISTANCE OF A MOTOR CLUB, THE OPERATOR WILL ASSIST THE MOTORIST WITH THE CELLULAR PHONE CALL.

5. Disabled Vehicles

a. Disabled Vehicles shall be removed from the travel lanes, with the least delay practicable, by moving them to the shoulder area. Vehicles that are disabled shall be provided with a minimum amount of minor repairs or other services. If the Vehicle is not then able to

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continue under its own power, the Road Ranger Vehicle Operator shall contact the F.H.P. for rotation towing service, or towing service as requested by the motorist. Rotation towing service or other towing service requested by the motorist shall be at the disabled motorist's expense.

b. Should a motorist refuse to allow a disabled or damaged vehicle to be cleared of the travel lanes, the Road Ranger Vehicle Operator shall provide the motorist with a copy of the Florida Statute that states that, "the vehicle should be moved out of the travel lane if the vehicle can be moved", contact the F.H.P. for assistance and remain on the scene until F.H.P. personnel arrive. The Road Ranger Vehicle Operator shall not attempt to move such disabled vehicles until directed to do so by the F.H.P.

c. All disabled or damaged vehicles that are relocated shall be parked with the wheels turned away from the roadway and the parking brake set if possible.

6. Abandoned Vehicles

a. When an abandoned vehicle is observed over an eight (8) hour shift, the Road Ranger Vehicle Operator shall contact the F.H.P. to advise them of the vehicle's location, make, color, body type, license plate number and whether or not it is impeding traffic.
b. If the abandoned vehicle is impeding traffic, or is considered to be a potential safety hazard, the Road Ranger Vehicle Operator shall request the F.H.P. for assistance to move the abandoned vehicle to the shoulder.

7. Crashes

a. The Road Ranger Vehicle Operator shall call for Law Enforcement, Fire and ambulance assistance as necessary at crash/incident scenes and remain at such scenes until the appropriate assistance arrives. The Road Ranger Vehicle Operator shall follow all directions of Law Enforcement personnel.

b. The Road Ranger Vehicle Operator shall protect crash/incident scenes by setting highway flares, cones, flagging, and/or flashing amber/white lights, arrow board, and assisting in traffic control.

c. The Road Ranger Operator will have current certification for having completed the Basic Road Ranger Training, Intermediate Maintenance of Traffic training, Traffic Incident Management, CPR, First Aid (CPR and First Aid Certification Cards shall to be carried with the Road Ranger Vehicle Operator), Fire Extinguisher Training, and any other training deemed necessary by the VENDOR and the Department. The VENDOR shall provide 6 weeks, at a minimum, of Ride-A-Long Training. The training requirement may be reduced to 4 weeks based on a demonstrated proficiency and upon mutual agreement between the Department Manager and LYNX.

8. Assistance to Law Enforcement and Fire Rescue Personnel

The Road Ranger Vehicle Operator shall render assistance to Law Enforcement and Fire Rescue Personnel when requested. Road Ranger Operators shall follow the instruction of, and obey the orders of, Law Enforcement and Fire Rescue Personnel. If these orders are against any Road Ranger Safety Rules and Training, the Road Ranger Operators shall contact the Lead Road Ranger, Road Ranger Supervisor and/or the FDOT Program Manager to report this safety issue prior to refusing assistance. The Road Ranger Operators are responsible for informing

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the Law Enforcement and/or Fire Personnel on the appropriate safety procedures and to provide recommendations to accommodate all personnel at the scene.

9. Moving Disabled Vehicles from Traffic Lanes

The Road Ranger Operators shall use an appropriate method of moving disabled or damaged vehicles from the traffic lanes. The Operator shall use all safety precautions and procedures considered appropriate.

10. Transporting People

The Road Ranger Operator should make every effort so that the disabled motorist and passengers are not left stranded. If vehicle assistance or towing services cannot be obtained, rather than leave people stranded, the Road Ranger Operator should transport them to nearest facility with available communications within the physical limits of this contract. It is the intent of this contract to make every effort not to leave disabled vehicle operators and passengers stranded.

11. Animals

Large dead animals that pose a safety hazard to motorists shall be removed from the roadway and paved shoulder and placed on the grass or behind guardrail. The FDOT Maintenance facility shall be notified. If such animals are protected by law, such as black bear or alligators, the Road Ranger Operators shall contact the Florida Fish and Wildlife Conservation Commission by contacting the RTMC.

12. Florida Department of Transportation Notice/Questionnaire/Response Form

The VENDOR shall provide a postage paid Questionnaire Response Card for the Road Ranger Operators to provide to every individual receiving assistance from the Road Ranger Service Patrol.

VII. Road Ranger Service Patrol Vehicle Operator Requirements:

Road Ranger Operators shall be licensed in accordance with the Florida Motor Vehicle Code, be 18 years of age, have a safe driving record and no criminal record. The VENDOR must submit all paperwork for Joint Task Force (JTF) Security Clearance Approval. All JTF Security Clearance paperwork shall be provided by the FDOT Program Manager. This paper work shall be submitted by the VENDOR to the FDOT Road Ranger Program Manager to be submitted to the Florida Highway Patrol. Included in this JTF Security Clearance package are JTF Security Denial Reasons. They are as follows:

JOINT TASK FORCE FOR LAW ENFORCEMENT COMMUNICATIONS
STATE LAW ENFORCEMENT RADIO SYSTEM
(SLERS)

Security Clearance Denial Reasons

1. The applicant has been convicted of a felony offense.
2. The applicant is currently on probation for any offense or has charges pending (felony or misdemeanor).
3. The applicant has been convicted of a misdemeanor offense involving any type of theft, violence or drug offenses within the past three years.
4. The applicant's driver license is currently suspended or revoked for any reason.
5. The applicant has been convicted of a crime involving domestic violence or currently has a restraining order involving domestic violence or threats.

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6. The applicant has bee arrested for any charge involving resisting arrest, battery or assault on a law enforcement officer.
7. The applicant is wanted for any criminal offense.
8. The applicant is illegally residing in or is not approved to work in the United States.
9. The identification of adverse intelligence information the applicant.
10. At the discretion of the Security Manager based on any other adverse information regarding the applicant.

JTF State Law Enforcement Communications
Security Procedures – Clearance Denied

If any applicant's security clearance is denied based on any of the above denial reasons, they will be disqualified as an applicant for the Road Ranger Program.

All Road Ranger Operators shall have Joint Task Force (JTF) Security Clearance checks processed yearly by the Florida Highway Patrol and the FDOT Program Manager. If this yearly check results any of the above JTF Security Clearance Denial Reasons, the VENDOR shall remove the Road Ranger Operator from the Road Ranger Program, immediately. If further investigation has determined a mistake in the JTF Security Clearance check, the Road Ranger Operator shall be eligible to re-apply to the Road Ranger Program.

Each VENDOR shall provide the Department with employee (operator) Drivers License checks every six (6) months.

The VENDOR shall provide proof, by a licensed medical practitioner or technician that all operators are drug free (in accordance with Section 112.0455, Florida Statutes) prior to beginning operations, and random thereafter.

Road Ranger Operators shall be competent in the tasks of operating the service patrol vehicle and providing safe and proper discharge of the service responsibilities outlined herein. The VENDOR shall provide resumes of the proposed Operators for approval by the Department prior to assigning Operators to Service Patrol Vehicles. The resume must show adequate mechanical background to perform the required vehicle minor repairs. The Department and/or the VENDOR reserve the right to reject Road Ranger Operators prior to being assigned duties.

The Department and/or the VENDOR also reserve the right to require removal of any employee from this contract who cannot perform the duties or becomes a discredit to the Department and/or the VENOR.

The Road Ranger Operators shall exercise good sound judgment in carrying out their duties and conduct themselves in such a manner that will reflect favorably upon the Department. Operators shall:

1. Wear clean uniforms at the start of each shift. Shirts with collars and dark blue trousers (can be with or without jacket, no jeans or cutoffs). Shirt color shall be approved by the Department. Any other type of uniforms must be approved by the Department. All new hire Road Ranger Operators are exempt from this, until a uniform is issued. Shorts are never acceptable.

2. Be well groomed. (Appearance will be determined by the Department.)

3. Wear clearly visible embroidered names reflecting their first name. The Department will determine all additional emblems, patches and logos.

4. Be courteous at all times.

5. All Road Ranger Operators shall have picture ID from the Florida Department of Transportation.

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Road Ranger Operators shall follow the following safety rules and general regulations. The Operators shall:

1. Conform to the latest Department Conduct Standards Rules and the Ethical Conduct Rules. **A copy will be furnished to the VENDOR and if required, to each Road Ranger Vehicle Operator**.

2. Inspect assigned Road Ranger Vehicles at the beginning of each shift, and take action as necessary to ensure that they are in compliance with all specifications and requirements of this contract.

3. Keep all communications radios and monitors 'on' and the volume 'up.'

4. Remain on their assigned Patrol Sector and depart from the Patrol Sector only as described in this contract.

5. Obey all traffic laws.

6. Exercise caution and safety at all times.

7. Use extreme caution in moving all disabled vehicles.

8. Not carry firearms or other weapons either on their persons or in the Road Ranger Vehicles.

9. Use flashing light bars in conformance with the Florida Motor Vehicle Code and only in the following circumstances:

   a. When merging or exiting from traffic lanes to an incident site.

   b. To warn traffic when performing services specified herein.

10. Wear appropriate safety vest with reflective striping at all times while outside the Road Ranger Vehicle.

11. Cross medians for the following reasons only: to assist motorists, disabled vehicles, vehicle crashes, or assist law enforcement and incident responders.

VIII. <u>Road Ranger Service Patrol Vehicle Operation Logs:</u>

Road Ranger Operators shall maintain "Service Patrol Logs" which shall be completed daily and made available to the Department at all times. This information will be entered electronically into the Sunguide System through the use of the RRMA software in the laptops located in each Road Ranger truck.

Road Ranger Service Patrol Logs shall reflect:

1. The date of the log entry.

2. The following times (using military time):

   a. The time when the Road Ranger Operator was advised of a given incident.

   b. The time of arrival of the Road Ranger Vehicle at a given incident.

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c. The time of departure of the Road Ranger Vehicle from the scene of a given incident.

3. The nature of each incident, such as debris removal, injured or dead animal, stalled Vehicle, crashes, etc.

4. Whether the incident was detected by normal patrol activity or in response to a dispatcher's call.

5. The incident location and approximate distance to a mile marker number, the lane(s) in which the incident was located, and the direction of travel of the lanes.

6. Where applicable, the following information shall be recorded.

a. The vehicle's make, model, body type, and license plate number.
b. The nature of the problem.
c. The type of assistance provided by the Road Ranger Operator.
d. Any damage evident before, and after, pulling or pushing the vehicle.
e. A questionnaire concerning the Road Ranger service shall be given to the disabled vehicle's driver.

7. If additional assistance was required.

8. Weather conditions.

9. The Road Ranger Operator's name and vehicle number.

10. Road Ranger Vehicle odometer reading at beginning and ending of each shift.

11. Other Pertinent Information or comments.

X. <u>VENDOR Requirements:</u>

The VENDOR/Representative shall attend all meetings required by the Department.

XI. Road Ranger Service Patrol Hours of Operation

The VENDOR shall provide Road Rangers for Interstate 4. A minimum number of hours of patrol services per month shall be provided as set forth in EXHIBIT "B" METHOD OF COMPENSATION, shall be provided. Additional services may be provided based on available funding. A schedule detailing the proposed hours of operation shall be submitted in advance to the Department on a monthly basis and be in accordance with the level of service required by the Department. The schedule must be approved by the Department prior to any services being rendered. The schedule will take into consideration Special events throughout the District.

XII. Road Ranger Service Patrol Limits of Operation

The VENDOR shall operate the Road Ranger Service Patrol on Interstate 4 from CR 532 in Osceola County to I-95 in Volusia County. The Patrol area will exclude the I-4 Ultimate construction area from just east of SR 528 (MM 72.6) to just west of Lake Mary Blvd. (MM 96.3). The VENDOR shall submit quarterly staffing and vehicle assignments to the Department for approval. The Road Ranger Supervisor's vehicle shall be equipped with minimum equipment.

The Department reserves the right to change this operating schedule and limits based on traffic flow, traffic patterns, evacuations, construction, funding availability, special events and/or changes to environmental conditions.

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XIII. Regional Traffic Management Center (RTMC)

All Road Ranger personnel shall HAVE access to the RTMC. If the Road Ranger Supervisor needs use of a workstation at the RTMC for communication/dispatch, administrative duties and supervision of the Road Ranger Service Patrols, the Department shall make provisions for the Road Ranger Supervisor. The Road Ranger Supervisor will have use of the RTMC CCTV cameras for verification of incidents and verification of the Road Ranger operations. The Road Ranger Supervisor shall have 24 hours, 7 days a week access to the RTMC.

XIV. Financial Consequences

To ensure that all the preceding requirements of the Scope are satisfactorily being accomplished, periodic inspections will be conducted by the Department. If the inspection is not satisfactorily passed with a 95% rating of the criteria listed in Sections V and VI, the invoice will be reduced by $500.00 for each failed inspection.

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EXHIBIT "B"

ROAD RANGER SERVICE PATROL FOR HIGHWAY ASSISTANCE SERVICES

METHOD OF COMPENSATION

1.0 PURPOSE

This exhibit defines the limits of compensation to be made to the contractor for the services set forth in Exhibit "A" and the method by which payments shall be made.

2.0 COMPENSATION

For the satisfactory performance of services detailed in Exhibit "A", the Vendor shall be paid up to a Maximum Amount of $7,526,014.00. Funding for these services will be authorized annually in the amounts shown in Table 1 below. At such time as the funding for future years becomes available a "Letter of Authorization" will be issued authorizing those funds.

Table 1, Fiscal Year Funding				
Fiscal Year	Months	Annual Amounts	Monthly Lump Sum Progress Payment Amount	Minimum Service Hours Per Month
FY 2017 - 2018	12	$1,419,201.00	$118,266.75	2284
FY 2018 - 2019	12	$1,435,661.00	$119,638.41	2311
FY 2019 - 2020	12	$1,517,754.00	$126,479.50	2443
FY 2020 - 2021	12	$1,555,697.00	$129,641.41	2504
FY 2021 - 2022	12	$1,597,701.00	$133,141.75	2572
Contract Total Funding		$7,526,014.00		

At the Department's sole discretion additional funding may be added to the contract for increases in the minimum number of Service Hours through one or more Supplemental Agreements, contingent upon legislative appropriation and budget approval. The Vendor shall not provide services that exceed the authorized amount(s) without approval from the Department.

2.1 Sponsorship Funding:

The Department has secured additional Sponsorship funding for additional equipment and services under this agreement. At such time as funding is made available a Letter of Authorization (LOA) will be issued authorizing the additional funds. Each LOA shall include the amount authorized under that LOA and the revised amount of contract total funding.

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2.2 Actual Expenditures

Actual Cost Expenses, Limiting Amount only

At the Departments sole discretion, in addition to the Monthly Lump Sum Amount the Vendor may be reimbursed at actual cost for the expenses necessary to successfully complete the services required under this agreement. These expenses are beyond the services detailed in Exhibit "A", Scope of Services and will be reimbursed when invoiced and approved by the department. These expenses, if any shall be agreed to in advance by the Department.

2.2.1 Labor Costs

The actual expense may include the maintenance of items acquired as part of the LOA. The Department, at its sole discretion, may authorize maintenance services, via a separate LOA, to insure the continued availability and functionality of items acquired as part of previous LOA. Labor rates shall be actual rates as determined by certified payroll, not to exceed $30/hr. These costs, if any shall be agreed to in advance by the Department.

3.0 PROGRESS PAYMENTS

Subject to the Maximum Amount the Vendor shall receive for the satisfactory performance of services described in Exhibit "A" Scope of Services, the monthly Lump Sum progress payment amount as shown in Table 1, above for the corresponding fiscal year to be eligible for the Monthly Progress payment. This rate is inclusive of all costs associated to the services provided.

If additional funding is provided, the additional progress payment amount will be based on the amount of funding available divided by the number of additional months services required, and the minimum number of additional service hours will be the additional

Progress payment amount divided by %51.77. The vendor will become eligible for the full progress payment only after provided the total minimum amount of service hours for each month. The full progress payment shall be the sum of the progress payment from the original contract for that period plus the additional progress payment amount for that period.

4.0 INVOICING PROCEDURE

The Vendor will be eligible for progress payments under this agreement at intervals not less than the monthly as approved by the Department.

Invoices will be prepared by the Vendor and submitted in a format prescribed by the Department. The invoices will be supported by such information as may be required by Department procedures to substantiate the charges being invoiced. The Vendor will maintain for this purpose a job cost accounting system that is acceptable to the Department.

If requested by the Department, the final invoice for this agreement will be accompanied by a certified job cost summary report generate by the accounting system. The report will include at a minimum the total number of hours and salary cost actually charged to the project.

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The Department will render a decision on the acceptability of services within 5 working days of receipt of either the services or invoice, whichever is later. The Department reserves the right to withhold payments for work not completed, or work completed unsatisfactorily, or work that is deemed inadequate or untimely by the Department. Any payment withheld will be paid to the Vendor on the next invoice submitted for that work after the work is subsequently completed satisfactorily and adequately.

Invoices shall be submitted to: Florida Department of Transportation
Project Manager, Traffic Operations
Mail Station 3-562
719 South Woodland Boulevard
DeLand, FL 32720

5.0 PROJECT CLOSEOUT

If requested, the Vendor will permit the Department to perform or have performed an audit of the records of the Vendor and any or all sub-vendors to support the compensation paid the Vendor. The audit will be performed as soon as practical after completion and acceptance of the contracted services. In the event funds paid to the Vendor under this Agreement are subsequently properly disallowed by the Department because of accounting errors or charges not in conformity with this agreement, the Vendor agrees that such disallowed costs are due to the Department upon demand. Further, the Department will have the right to deduct from any payment due the Vendor under any other contract any amount due the Department.

6.0 TANGIBLE PERSONAL PROPERTY

This contract does not involve the purchase of Tangible Personal Property, as defined in Chapter 273, F.S.

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ATTACHMENT "1"
Contract BE350
ROAD RANGER SPONSORSHIP/ADVERTISEMENT AGREEMENT

RECITALS

1. Department and Vendor intend to modify that Contractual Services Agreement, State of Florida Governmental Agencies (hereinafter "Agreement") entered into by and between the parties; and

2. Department's Road Ranger Program provides assistance to motorists with disabled vehicles or other problems, maintenance of traffic for motorist safety, support for incident management and assists with congestion mitigation efforts; and

3. The Florida Legislature reduced funding for the Road Ranger Program below the previously anticipated amounts; and

4. Department has determined that the placement of commercial sponsorships or advertisements on vehicles and/or uniforms of the Road Ranger Program, which involves only the commercial interests of potential sponsors, advertisers, and their audiences, is a commercial venture that it wishes to permit Vendor to pursue in order to supplement Road Ranger Program funding; and

5. Vendor recognizes that Road Ranger Program vehicles and driver uniforms upon which advertisements or a sponsor's name and logo will be placed are not public places with unrestricted access, but are restricted areas which require specific prior permission to alter; and

6. Subject to the terms and provisions of the Agreement and this Attachment, Department is willing to allow Vendor permission to enter agreements, subject to prior Department approval, to place advertisements or a sponsor's name and logo on Road Ranger Program vehicles and uniforms, for the sole purpose of supplementing Department funding of the Road Ranger Program.

NOW, THEREFORE, in consideration of the mutual consideration, covenants and conditions set forth herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties, intending to be legally bound hereby, agree as follows:

1. The recitals set forth herein above are specifically incorporated herein by reference and made a part of this Attachment.

2. Except as expressly modified herein, the provisions of the Agreement and any attachments thereto, including, without limitation, the exhibits and appendices, shall remain in full force and effect.

3. Department grants Vendor a non-exclusive right to secure sponsors/advertisers for Road Ranger Program vehicles and/or uniforms within Vendor's contract responsible coverage areas. Vendor may use space on Road Ranger Program

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vehicles and/or uniforms to identify the sponsor/advertiser in the form and manner prescribed in the Agreement and this Attachment. Exclusive rights may be assigned upon approval of the Department.

4. At its sole cost, expense and effort, Vendor shall be responsible for negotiating and securing the sponsorship/advertising, subject to Department's prior approval as specified herein, as well as, incurring any cost associated with the procurement, development, design, and application of the sponsor's/advertiser's name and/or logo on the vehicles or uniforms.

5. Revenues generated from advertisements or sponsorships shall be utilized only for providing Road Ranger service except as provided in paragraph 19. In the event that sponsorship revenues exceed the amount in the FY 2008-2009 budget, those revenues will be utilized for Road Ranger Program Patrol enhancements as provided by the Districts.

6. Any payments from sponsors/advertisers to Vendor for sponsorships/advertisements shall be in monetary form; in-kind services (barter agreements) shall not be permitted.

7. A company or organization may be a sponsor or advertise in multiple Department Districts; however, each sponsorship/advertisement agreement must be negotiated separately within each District pursuant to the terms of the Agreement and this Attachment.

8. Providing a sponsorship or placing an advertisement on a Road Ranger Program vehicle or uniform shall not entitle the sponsor or advertiser with the ability to determine or affect changes in Road Ranger Patrol areas, beats or zones.

   a. Road Ranger Program Vehicles may include incorporating sponsor's/advertiser's logo/theme; may only be placed upon Road Ranger Program vehicles upon prior written consent and approval of Department which may be granted or withheld by Department within its sole discretion: Must have standard sized FDOT logo with the words "A free service provided by FDOT and Sponsors" will be displayed on the driver and passenger side doors. "A free service provided by FDOT and Sponsors" must also be displayed on the rear of the truck.

   b. Sponsor's/advertiser's logos may be placed on the rear quarter panel of both sides of the vehicle, on the rear of the vehicle, such that the placement of the advertisement does not obscure safety lighting or markings and on the hood of the vehicle. Sponsors/Advertisers will supply logos/materials for the vehicles. Vendor shall be solely and exclusively responsible for the maintenance of the sponsorship/advertisements media, and Vendor shall at all times keep the advertisements in first class, like-new condition. In the event of an accident where the logo/material is damaged, vehicle repair will be undertaken by Vendor and logos/materials will be provided by the sponsor/advertiser.

   c. If a sponsor/advertiser change logos or slogans during the contract term, the sponsor/advertiser will be responsible for cost associated with the change on

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the vehicle and promotional materials and shall allow Vendor to schedule those changes or modifications so that service is not interrupted.

d. When a sponsorship or advertising period concludes, Vendor shall promptly cause the advertisements to be removed from all Road Ranger program vehicles or uniforms.

e. The application, removal, replacement and repair of advertisements shall be conducted in such a manner so as not to interfere with the level of service required in the Agreement.

9. Road Ranger Program uniforms may include incorporating sponsor's/advertiser's logo/theme; may only be placed upon Road Ranger Program uniforms upon prior written consent and approval of Department which may be granted or withheld by Department within its sole discretion.

10. Sponsors/advertisers are permitted to use photographs of vehicles in advertising promotions or campaigns. Sponsors/advertisers may also use the driver's image upon written consent of the driver. Sponsor/advertiser shall arrange for promotional use of Road Ranger Program vehicle a minimum of three weeks in advance of date required. Promotional use of the Road Ranger vehicle and driver may not be granted if normal operations are impacted by this use. Promotional use requests may also be denied if Road Rangers are supporting or projected to be needed for Emergency Response operations. . Any promotional use of a Road Ranger Program vehicle shall be conducted in such a manner so as not to interfere with the level of service required in the Agreement.

11. Vendor may consider the use of coupons, an advertising booklet, or other promotional materials that can be provided to motorists from their sponsors/advertisers, as long as all sponsors/advertisers have been given the opportunity to provide such coupons, advertising, or other promotional materials; and all materials are provided at the same time. The coupons, advertisements, or other promotional materials must represent the sponsors/advertisers on the Road Ranger Program vehicles or uniforms. If any such materials are provided to the public they must be provided at the time of assistance. Any such coupons, advertising, or other promotional materials are subject to Department's prior written consent and approval which may be granted or withheld by Department within its sole discretion, reasonably or unreasonably.

12. Vendor shall make a good faith effort to ensure that companies seeking sponsorship or advertising on Road Ranger vehicles are in good standing within the local business community and the Better Business Bureau.

13. Department will review all prospective sponsorships/advertisements and contracts or agreements. Vendor shall not enter any contracts or agreements with potential sponsors/advertisers regarding Road Ranger Program sponsorship/advertising without Department's prior written consent and approval of the proposed contract or agreement, which may be granted or withheld by Department within its sole discretion, reasonably or unreasonably.

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14. Department shall have the sole discretion to approve or disapprove content and reject any sponsorships/advertisements that it believes is not in its best interests or the best interests of its customers or the State of Florida. Vendor shall at all times keep in mind that Florida is traveled by families with small children and that all advertisements should be appropriate for viewing by audiences of all ages, including small children.

15. Any contracts secured by Vendor for the placement of sponsorships and/or advertising involves only the commercial interests of the sponsor/advertiser and its audience and thus shall maintain the dignity and integrity of Department and the State. While all proposed sponsorships/advertisements are subject to Department's review and approval, the following is a non-exclusive list of products and content that is strictly disallowed as part of any sponsorships/advertising :

    a. Tobacco products;
    b. Alcohol products (beer, wine, liquor);
    c. Illegal drug use or drug paraphernalia;
    d. Words or images of weapons;
    e. Any images of illegal materials;
    f. Political sponsorships/advertisements;
    g. Religious sponsorships/advertisements;
    h. Advocacy sponsorships/advertisements;
    i. Adult-oriented sponsorships/advertisements; and,
    j. Sponsorships/advertisements containing words or images that are obscene, vulgar or otherwise inappropriate for viewing by audiences of all ages.

16. Department shall be entitled at all times to be advised, at its request, of a summary of current sponsorships/advertisements contained on each Road Ranger Program vehicle or uniform, as well as each sponsorship/advertisement start and completion dates.

17. Vendor shall provide the Department with complete legible copies of all written agreements entered into by Vendor and any sponsors/advertisers for Road Ranger Program vehicles or uniforms within seven (7) calendar days of the full execution of any such signed agreement(s).

18. All funds generated from sponsorships or advertisements that are the subject of this Attachment shall be used and employed for the sole purpose of supplementing Department funding for the Road Ranger Program. Said funds may not be used for any other purpose. .

19. It is specifically agreed and understood by the parties hereto, that execution of the Agreement and this Attachment is not intended to, and shall not, create any rights, suits, obligations, or expectations in the public or any third parties, and shall not authorize anyone not a party to this Agreement or Attachment to initiate a suit or claim against Department for damages or any other form of relief (legal or equitable)

20. Vendor shall <u>not</u> assign any right, term, privilege or obligation provided for in the Agreement or this Attachment absent the express <u>prior</u> written consent of

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Department. Department shall have the sole discretion and authority (reasonably or unreasonably) to grant or deny proposed assignments.

21. The parties agree that they shall promptly execute and deliver to the other all documents necessary to accomplish the intent and purpose of the Agreement and this Attachment and shall do all other acts to effectuate the Agreement and this Attachment, time being of the essence.

22. Each party warrants and represents to the other: (i) that each understands all of the rights and obligations set forth in the Agreement and this Attachment and that both documents accurately reflect the desires and intentions of the parties; (ii) each provision of the Agreement and this Attachment has been negotiated fairly at arm's length; (iii) each fully understands the advantages and disadvantages of this Attachment and executes the Attachment freely and voluntarily of their own accord and not as a result of any duress, coercion, or undue influence; and (iv) each has had, or had the opportunity to have, independent legal advice by counsel of its own choosing in the negotiation and execution of this Attachment.

23. The failure of either party to insist on one or more occasions the strict performance or compliance with a term, provision or otherwise of the Agreement or this Attachment shall not be deemed a waiver or relinquished in the future of the enforcement thereof, and it shall continue in full force and effect unless waived or relinquished in writing by the party to be charged.

24. No provision in the Agreement or this Attachment shall be interpreted for or against any party because that party or that party's legal representative drafted the provision.

25. Paragraph title or captions contained in the Agreement and this Attachment are inserted as a matter of convenience and reference and in no way define, limit, extend, or describe the scope of the Agreement or this Attachment.

26. If any section, paragraph, clause or provision of the Agreement or this Attachment is adjudged by a court of competent jurisdiction to be invalid and unenforceable, all remaining parts of the Agreement and this Attachment shall remain in full force and effect and the parties shall be bound thereby so long as the principle purposes of the Agreement and this Attachment remain enforceable.

27. Any modification or waiver of any of the provisions of the Agreement or this Attachment shall be effective only if made in writing and executed with the same formality as the Agreement.

28. BY their signature on the Agreement, the parties hereby acknowledge the adequacy and sufficiency of the consideration provided in the Agreement and this Attachment and forever waive the right to object to, or otherwise challenge, the same.

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TERMS FOR FEDERAL AID CONTRACTS (APPENDIX I):

CONTRACT (Purchase Order) # BE350

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor") agrees as follows:

A. It is understood and agreed that all rights of the Department relating to inspection, review, approval, patents, copyrights, and audit of the work, tracing, plans, specifications, maps, data, and cost records relating to this Agreement shall also be reserved and held by authorized representatives of the United States of America.

B. It is understood and agreed that, in order to permit federal participation, no supplemental agreement of any nature may be entered into by the parties hereto with regard to the work to be performed hereunder without the approval of U.S.D.O.T., anything to the contrary in this Agreement not withstanding.

C. Compliance with Regulations: The Contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation (hereinafter, "USDOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this Agreement.

D. Nondiscrimination: The Contractor, with regard to the work performed during the contract, shall not discriminate on the basis of race, color, national origin, sex, age, disability, religion or family status in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

E. Solicitations for Subcontractors, including Procurements of Materials and Equipment: In all solicitations made by the Contractor, either by competitive bidding or negotiation for work to be performed under a subcontract, including procurements of materials or leases of equipment; each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the basis of race, color, national origin, sex, age, disability, religion or family status.

F. Information and Reports: The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Florida Department of Transportation, the Federal Highway Administration, Federal Transit Administration, Federal Aviation Administration, and/or the Federal Motor Carrier Safety Administration to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information the Contractor shall so certify to the Florida Department of Transportation, the Federal Highway Administration, Federal Transit Administration, Federal Aviation Administration, and/or the Federal Motor Carrier Safety Administration as appropriate, and shall set forth what efforts it has made to obtain the information.

G. Sanctions for Noncompliance: In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, the Florida Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration, Federal Transit Administration, Federal Aviation Administration, and/or the Federal Motor Carrier Safety Administration may determine to be appropriate, including, but not limited to:

a. withholding of payments to the Contractor under the contract until the Contractor complies, and/or
b. cancellation, termination or suspension of the contract, in whole or in part.

H. Incorporation of Provisions: The Contractor shall include the provisions of paragraphs (C) through (I) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the Florida Department of Transportation, the Federal Highway Administration, Federal Transit Administration, Federal Aviation Administration, and/or the Federal Motor Carrier Safety Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. In the event a Contractor becomes involved in, or is threatened with, litigation with a sub-contractor or supplier as a result of such direction, the Contractor may request the Florida Department of Transportation to enter into such litigation to protect the interests of the Florida Department of Transportation, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

I. **Compliance with Nondiscrimination Statutes and Authorities**: Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21; The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects); Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex); Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27; The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age); Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);

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The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not); Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 -- 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38; The Federal Aviation Administration’s Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex); Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations; Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100); Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

J. Interest of Members of Congress: No member of or delegate to the Congress of the United States shall be admitted to any share or part of this contract or to any benefit arising there from.

K. Interest of Public Officials: No member, officer, or employee of the public body or of a local public body during his tenure or for one year thereafter shall have any interest, direct or indirect, in this contract or the proceeds thereof. For purposes of this provision, public body shall include municipalities and other political subdivisions of States; and public corporations, boards, and commissions established under the laws of any State.

L. Participation by Disadvantaged Business Enterprises: The Contractor shall agree to abide by the following statement from 49 CFR 26.13(b). This statement shall be included in all subsequent agreements between the Contractor and any sub-Contractor or contractor.

The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

M. It is mutually understood and agreed that the willful falsification, distortion or misrepresentation with respect to any facts related to the project(s) described in this Agreement is a violation of the Federal Law. Accordingly, United States Code, Title 18, Section 1020, is hereby incorporated by reference and made a part of this Agreement.

N. It is understood and agreed that if the Contractor at any time learns that the certification it provided the Department in compliance with 49 CFR, Section 26.51, was erroneous when submitted or has become erroneous by reason of changed circumstances, the Contractor shall provide immediate written notice to the Department. It is further agreed that the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction" as set forth in 49 CFR, Section 29.510, shall be included by the Contractor in all lower tier covered transactions and in all aforementioned federal regulation.

O. The Department hereby certifies that neither the Contractor nor the Contractor's representative has been required by the Department, directly or indirectly as an express or implied condition in connection with obtaining or carrying out this contract, to

1. employ or retain, or agree to employ or retain, any firm or person, or
2. pay, or agree to pay, to any firm, person, or organization, any fee, contribution, donation, or consideration of any kind;

The Department further acknowledges that this agreement will be furnished to a federal agency, in connection with this contract involving participation of Federal-Aid funds, and is subject to applicable State and Federal Laws, both criminal and civil.

P. The Contractor hereby certifies that it has not:

1. employed or retained for a commission, percentage, brokerage, contingent fee, or other consideration, any firm or person (other than a bona fide employee working solely for me or the above contractor) to solicit or secure this contract;
2. agreed, as an express or implied condition for obtaining this contract, to employ or retain the services of any firm or person in connection with carrying out this contract; or
3. paid, or agreed to pay, to any firm, organization or person (other than a bona fide employee working solely for me or the above contractor) any fee contribution, donation, or consideration of any kind for, or in

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connection with, procuring or carrying out the contract.

The Contractor further acknowledges that this agreement will be furnished to the State of Florida Department of Transportation and a federal agency in connection with this contract involving participation of Federal-Aid funds, and is subject to applicable State and Federal Laws, both criminal and civil.

Q. Federal-aid projects for highway construction shall comply with the Buy America provisions of 23 CFR 635.410, as amended.

R. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of federally assisted construction contract" in 41 CFR Part 60-1.3 shall comply with the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

To: Ashley.Henning@dot.state.fl.us

FLORIDA DEPARTMENT OF TRANSPORTATION
FUNDS APPROVAL

BE350

4/12/2017

CONTRACT INFORMATION

Contract:	BE350
Contract Type:	B1 - OTHER CONTRACTUAL SERVICE (OTHER CS)
Method of Procurement:	G - GOVERMENTAL AGENCY (287.057,F.S.)
Vendor Name:	CENTRAL FLORIDA REGIONAL TRANSP
Vendor ID:	F592982959005
Beginning Date of This Agreement:	04/12/2017
Ending Date of This Agreement:	06/30/2022
Contract Total/Budgetary Ceiling:	ct = $1,419,201.00
Description:	Road Ranger Patrol for Highway Assistance Services

FUNDS APPROVAL INFORMATION

FUNDS APPROVED/REVIEWED FOR ROBIN M. NAITOVE, CPA, COMPTROLLER ON 4/12/2017

Action:	Future Year
Reviewed or Approved:	*REVIEWED
Organization Code:	55054030511
Expansion Option:	AF
Object Code:	139900
Amount:	$1,419,201.00
Financial Project:	41095717207
Work Activity (FCT):	994
CFDA:	
Fiscal Year:	2018
Budget Entity:	55150200
Category/Category Year:	088712/18
Amendment ID:	A001
Sequence:	00
User Assigned ID:	
Enc Line (6s)/Status:	/04

DS

Total Amount: $1,419,201.00

***Reviewed Funds Approval and encumbrance processing is contingent upon Annual Legislative appropriation.**

Appendix G

District 5
I-75 and I-95 Road Ranger Contract

ATTESTATION CHECKLIST

Authority: Department of Management Services State Purchasing Memorandum No. 01 (2013-2014)

Form Instructions:
The "Attestation Checklist" shall be completed for all contracts or purchase orders that meet all of the following criteria:

- Funded by the state or federal government.
- Results in anticipated expenditures of $1 million dollars or more during the term of the contract.
- Procured in accordance with Chapter 287, Florida Statutes.

Process for all Contracts/Purchase Orders with anticipated expenditures of $1 million and more:

1. Contract/Project Managers must ensure that the agreement includes provisions for statement of work, deliverables, performance measures, and financial consequences before project advertisement, since these provisions must be in the executed agreement. Immediately after the project is awarded/selected, at the time of obtaining the encumbrance, the Contract/Project Manager shall complete the Attestation Checklist Form No. 375-040-34 and forward to their Central or District Procurement Office, as applicable.
2. Procurement shall separately send the agreement to the vendor for signature, using the Department's approved electronic signature application. Procurement will separately submit to their respective Legal Office the following documents for their review: a) an unexecuted copy of the agreement, b) the Attestation Checklist, and c) the Contract Attestation Form.
3. Once Legal concurrence is obtained (review signature), an unexecuted copy of the agreement, the Attestation Checklist, and the Contract Attestation Form will be submitted to the District Secretary. The District Secretary's signature is required on the Contract Attestation Form. Execution of the attestation cannot be delegated to Director level. In the absence of the District Secretary, the Attestation Form will need to be routed to Central Office Procurement for signature by the Secretary, Chief of Staff, or an Assistant Secretary.
4. The Legal office and the District Secretary shall sign the Contract Attestation Form. The District Secretary's signature on the contract is not required. The process for contract signature routing should follow standard signature routing practices.
5. The District Secretary's Office shall return the signed Contract Attestation Form and the Attestation Checklist to the Procurement Office.

Final step if Contract/Purchase Order has anticipated expenditures of $1 million and more but less than $5 million:

1. Procurement shall distribute a copy of the Contract Attestation Form to the Contract/Project Manager. Procurement will also retain a copy of the Attestation Checklist Form and the signed Contract Attestation Form for the Procurement contract file.

Final steps if Contract/Purchase Order has anticipated expenditures of $5 million or More:

1. Once Legal concurrence and District Secretary concurrence is obtained (review signature), an unexecuted copy of the contract, the Attestation Checklist, and the Contract Attestation Form should be routed to Central Office Procurement, using the Department's approved electronic signature application. After Central Office Procurement Manager review, the Secretary of Transportation's signature will be required for the Contract Attestation Form.
2. Execution of the attestation may not be delegated or transferred for contracts or purchase orders of $5 million or more, except for instances of delegation of authority to executive agency staff in the absence of the agency head.
3. District Procurement will retain a copy of the Attestation Checklist Form and the signed Contract Attestation Form for the Procurement contract file.

ATTESTATION CHECKLIST REQUIREMENTS
CONTRACT #: BE690

I confirm to the best of my knowledge that this contract or purchase order contains or complies with all of the following requirements:

Check off to indicate compliance:

- ☒ A statement of work;
- ☒ Quantifiable and measurable deliverables;
- ☒ Performance measures;
- ☒ Financial consequences for non performance;
- ☒ Terms and conditions that protect the interests of the state;
- ☒ All requirements of law have been met regarding the contract;
- ☒ Documentation in the contract file that is sufficient to support the contract and the attestation;
- ☒ If the contract is established by way of a competitive solicitation as identified in s. 287.057(1), the cost of the contract is the most advantageous to the state or offers the best value, or if established by way of competitive solicitation as identified in s. 287.055 for acquisition of professional services contracts, the cost of the contract is fair, competitive, and reasonable.

SCOPE OF SERVICES:

The contract Scope of Services requirements are found on Page(s) 1-57 of Exhibit A.

CONTRACT DELIVERABLES:

A deliverable is a quantifiable, measurable, and verifiable unit of service that the vendor is required to satisfactorily perform in order for payment to be approved.

Deliverables should:

- Be used to measure the provider's progress;
- Be directly related to the scope of work;
- Be specific, quantifiable, measurable and verifiable;
- Be a necessary part of the provider's performance;
- Be identified in the agreement along with a description of what constitutes successful performance of the services;
- Include minimum performance standards.

Contract Deliverables Provide summary/rolled up contract deliverables (2- 3 sentences) explaining in plain language what the deliverables are for the contract. Also reference the section and page number where deliverables are detailed within the contract document. If you need assistance, please click here for deliverable guidance.

Motorist assistance and incident management support, within select segments along I-75, I-95, and connecting roadways, in the counties of Brevard, Flagler, Marion, Sumter, and Volusia. Service Patrol operation for a minimum 28,800 service patrol hours, per year (2,400 hours/mth).

PERFORMANCE MEASURES:

Describe the required level of services with a description of what constitutes successful performance of the services;

List Contract Performance Measures on lines below or reference the section and page number where the information is found in the contract document: (If you need assistance, please click here for example performance measures.)

Provide Vehicles equipped as required by paragraphs 14-20 of Exhibit A, Scope of Services. Operators will perform all duties required by paragraphs 23-27 and pages 40-48 Exhibit A, Scope of Services.

FINANCIAL CONSEQUENCES:

Financial Consequences that must be applied in the event that the provider (vendor) fails to perform in accordance with the agreement (Section 287.058 (1)(h), F.S.).

Reference the section and page number where the financial consequences information is found in the contract document: (If you need assistance, please click here for example financial consequences).

Withholding of payment for work not completed, work completed unsatisfactorily, or work deemed inadequate or untimely by the Department as outlines in Paragraphs 33 and 34 of Exhibit A, Scope of Services.

Contract, Purchase Order, or Solicitation Number: BE690

☐ Contract is $1M and more but less than $5M

☒ Contract is $5M or more

Contract Manager/
Project Manager Name: Ronald J. Miller

Signature of Contract Manager/
Project Manager: /For RM

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONTRACT ATTESTATION

375-040-35
PROCUREMENT
04/18

I confirm that this contract or purchase order contains or complies with all of the following requirements:

- A statement of work;
- Quantifiable and measurable deliverables;
- Performance measures;
- Financial consequences for non-performance;
- Terms and conditions which protect the interest of the state;
- All requirements of law have been met regarding the contract;
- Documentation in the contract file that is sufficient to support the contract and the attestation (examples: business case; directive to establish contract; subject research and analysis, etc.);
- If the contract is established by way of a competitive solicitation as identified in section 287.057(1), Florida Statutes, the costs of the contract are the most advantageous to the state or offer the best value.

Required for any contract or purchase order which meets all of the following criteria:

- Funded by the state or federal government.
- Results in anticipated expenditures of $1 million dollars or more during the term of the contract.
- Procured in accordance with Chapter 287, Florida Statutes.

Execution of the contract attestation is required for Governor's agencies. Once executed, the signed attestation shall become part of the contract/procurement file.

Contract, Purchase Order, or Solicitation Number: BE690

Legal Review: DocuSigned by: Ryan Mapler A5148259631D422...

Date: 12/28/2018 | 2:56 PM EST

All contracts $1M and above require District Secretary or Assistant Secretary's signature.

District Secretary or Assistant Secretary: Mike Shannon

Signature of District Secretary or Assistant Secretary: DocuSigned by: Mike Shannon EBB16D0D66AD410...

Date: 12/29/2018 | 11:33 AM EST

Approval from the Secretary of the Department of Transportation must be obtained for contracts $5 million and above:

CO Procurement Manager Review Signature: DocuSigned by: Carla M Perry 9AEEAE1C615D495...

Date: 12/29/2018 | 5:56 PM EST

Agency Head Signature: DocuSigned by: 0253CA68D3D84A8...

Date: 1/24/2019 | 9:27 AM EST

Reference Document State Purchasing Memorandum No. 01 (2013-2014)

DocuSigned by: 52B9EE5B3ABE421...

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STANDARD WRITTEN AGREEMENT

Agreement No.	BE690
Financial Project I.D.	41095718202, 41095717208
F.E.I.D. No.:	11-3538017
Appropriation Bill Number(s)/Line Item Number(s) for 1st year of contract, pursuant to s. 216.313, F.S.:	***(required for contracts in excess of $5 million)***
Procurement No.:	RFP-DOT-18-19-5005-RDRG
DMS Catalog Class No.:	77102003, 92101501, 90111900, 78141505

BY THIS AGREEMENT, made and entered into 1/29/2019 | 4:42 PM EST by and between the STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION, hereinafter called the "Department" and AutoBase Inc. , of 326 Bayview Ave. Amityville, NY 11701 duly authorized to conduct business in the State of Florida, hereinafter called "Vendor," hereby agree as follows:

1. SERVICES AND PERFORMANCE

A. In connection with District Five Road Ranger Patrol Services for Interstates 75 (I-75) and 95 (I-95) , the Department does hereby retain the Vendor to furnish certain services, information, and items as described in Exhibit "A," attached hereto and made a part hereof.

B. Before making any additions or deletions to the work described in this Agreement, and before undertaking any changes or revisions to such work, the parties shall negotiate any necessary cost changes and shall enter into an Amendment covering such work and compensation. Reference herein to this Agreement shall include any amendment(s).

C. All tracings, plans, specifications, maps, computer files, and reports prepared or obtained under this Agreement, as well as all data collected, together with summaries and charts derived therefrom, shall be the exclusive property of the Department without restriction or limitation on their use and shall be made available, upon request, to the Department at any time during the performance of such services and/or upon completion or termination of this Agreement. Upon delivery to the Department of said document (s), the Department shall become the custodian thereof in accordance with Chapter 119, Florida Statutes. The Vendor shall not copyright any material and products or patent any invention developed under this Agreement. The Department shall have the right to visit the site for inspection of the work and the products of the Vendor at any time.

D. All final plans, documents, reports, studies, and other data prepared by the Vendor shall bear the professional's seal/signature, in accordance with the applicable Florida Statutes, Administrative Rules promulgated by the Department of Business and Professional Regulation, and guidelines published by the Department, in effect at the time of execution of this Agreement. In the event that changes in the statutes or rules create a conflict with the requirements of published guidelines, requirements of the statutes and rules shall take precedence.

E. The Vendor agrees to provide project schedule progress reports in a format acceptable to the Department and at intervals established by the Department. The Department shall be entitled at all times to be advised, at its request, as to the status of work being done by the Vendor and of the details thereof. Coordination shall be maintained by the Vendor with representatives of the Department, or of other agencies interested in the project on behalf of the Department. Either party to this Agreement may request and be granted a conference.

F. All services shall be performed by the Vendor to the satisfaction of the Director who shall decide all questions, difficulties, and disputes of any nature whatsoever that may arise under or by reason of this Agreement, the prosecution and fulfillment of the services hereunder and the character, quality, amount of value thereof; and the decision upon all claims, questions, and disputes shall be final and binding upon the parties hereto. Adjustments of compensation and contract time because of any major changes in the work that may become necessary or desirable as the work progresses shall be subject to mutual agreement of the parties, and amendment(s) shall be entered into by the parties in accordance herewith.

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Reference herein to the Director shall mean the
Director of Transportation Operations

2. TERM

A. Initial Term. This Agreement shall begin on date of execution and shall remain in full force and effect through completion of all services required or 5 years from date of execution, whichever occurs first. Subsequent to the execution of this Agreement by both parties, the services to be rendered by the Vendor shall commence and be completed in accordance with the option selected below. (Select box and indicate date(s) as appropriate):

☐ Services shall commence _____and shall be completed by _____or date of termination, whichever occurs first.

☑ Services shall commence upon written notice from the Department's Contract Manager and shall be completed by 2/1/2024 or date of termination, whichever occurs first.

☐ Other: See Exhibit "A"

B. RENEWALS (Select appropriate box):

☐ This Agreement may not be renewed.

☑ This Agreement may be renewed for a period that may not exceed three (3) years or the term of the original contract, whichever is longer. Renewals are contingent upon satisfactory performance evaluations by the Department and subject to the availability of funds. Costs for renewal may not be charged. Any renewal or extension must be in writing and is subject to the same terms and conditions set forth in this Agreement and any written amendments signed by the parties.

C. EXTENSIONS. In the event that circumstances arise which make performance by the Vendor impracticable or impossible within the time allowed or which prevent a new contract from being executed, the Department, in its discretion, may grant an extension of this Agreement. Extension of this Agreement must be in writing for a period not to exceed six (6) months and is subject to the same terms and conditions set forth in this Agreement and any written amendments signed by the parties; provided the Department may, in its discretion, grant a proportional increase in the total dollar amount based on the method and rate established herein. There may be only one extension of this Agreement unless the failure to meet the criteria set forth in this Agreement for completion of this Agreement is due to events beyond the control of the Vendor.

It shall be the responsibility of the Vendor to ensure at all times that sufficient time remains in the Project Schedule within which to complete services on the project. In the event there have been delays which would affect the project completion date, the Vendor shall submit a written request to the Department which identifies the reason(s) for the delay and the amount of time related to each reason. The Department shall review the request and make a determination as to granting all or part of the requested extension.

3. COMPENSATION AND PAYMENT

A. Payment shall be made only after receipt and approval of goods and services unless advance payments are authorized by the Chief Financial Officer of the State of Florida under Chapters 215 and 216, Florida Statutes. Deliverable(s) must be received and accepted in writing by the Contract Manager on the Department's invoice transmittal forms prior to payment. If the Department determines that the performance of the Vendor is unsatisfactory, the Department shall notify the Vendor of the deficiency to be corrected, which correction shall be made within a time-frame to be specified by the Department. The Vendor shall, within five days after notice from the Department, provide the Department with a corrective action plan describing how the Vendor will address all issues of contract non-performance, unacceptable performance, failure to meet the minimum performance levels, deliverable deficiencies, or contract non-compliance. If the corrective action plan is unacceptable to the Department, the Vendor shall be assessed a non-performance retainage equivalent to 10% of the total invoice amount. The retainage shall be applied to the invoice for the then-current billing period. The retainage shall be

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withheld until the vendor resolves the deficiency. If the deficiency is subsequently resolved, the Vendor will bill the Department for the retained amount during the next billing period. If the Vendor is unable to resolve the deficiency, the funds retained will be forfeited at the end of the agreement period.

B. If this Agreement involves units of deliverables, then such units must be received and accepted in writing by the Contract Manager prior to payments.

C. Bills for fees or other compensation for services or expenses shall be submitted in detail sufficient for a proper preaudit and postaudit thereof.

D. The bills for any travel expenses, when authorized by terms of this Agreement and by the Department's Project Manager, shall be submitted in accordance with Section 112.061, Florida Statutes. In addition, if compensation for travel is authorized under this Agreement and by the Department's Project Manager, then the Department shall not compensate the Vendor for lodging/hotel expenses in excess of $150.00 per day (excluding taxes and fees). The Vendor may expend their own funds to the extent the lodging/ hotel expense exceeds $150.00 per day. The Department, in its sole discretion and pursuant to its internal policies and procedures, may approve compensation to the Vendor for lodging/hotel expenses in excess of $150.00 per day.

E. Vendors providing goods and services to the Department should be aware of the following time frames. Upon receipt, the Department has five (5) working days to inspect and approve the goods and services, unless otherwise specified herein. The Department has twenty (20) days to deliver a request for payment (voucher) to the Department of Financial Services. The twenty (20) days are measured from the latter of the date the invoice is received or the goods or services are received, inspected and approved.

F. If a payment is not available within forty (40) days, a separate interest penalty as established pursuant to Section 215.422, Florida Statutes, shall be due and payable, in addition to the invoice amount, to the Vendor. Interest penalties of less than one (1) dollar shall not be enforced unless the Vendor requests payment. Invoices which have to be returned to a Vendor because of Vendor preparation errors shall result in a delay in the payment. The invoice payment requirements do not start until a properly completed invoice is provided to the Department.

G. The State of Florida, through the Department of Management Services, has instituted MyFloridaMarketPlace, a statewide eProcurement system. Pursuant to Section 287.057(22), Florida Statutes, all payments shall be assessed a transaction fee of one percent (1%), which the Vendor shall pay to the State. For payments within the State accounting system (FLAIR or its successor), the transaction fee shall, when possible, be automatically deducted from payments to the Vendor. If automatic deduction is not possible, the Vendor shall pay the transaction fee pursuant to Rule 60A-1.031 (2), Florida Administrative Code. By submission of these reports and corresponding payments, Vendor certifies their correctness. All such reports and payments shall be subject to audit by the State or its designee. The Vendor shall receive a credit for any transaction fee paid by the Vendor for the purchase of any item(s) if such item(s) are returned to the Vendor through no fault, act, or omission of the Vendor. Notwithstanding the foregoing, a transaction fee is non-refundable when an item is rejected or returned, or declined, due to the Vendor's failure to perform or comply with specifications or requirements of the Agreement. Failure to comply with these requirements shall constitute grounds for declaring the Vendor in default and recovering reprocurement costs from the Vendor in addition to all outstanding fees. VENDORS DELINQUENT IN PAYING TRANSACTION FEES MAY BE EXCLUDED FROM CONDUCTING FUTURE BUSINESS WITH THE STATE.

H. A vendor ombudsman has been established within the Department of Financial Services. The duties of this individual include acting as an advocate for vendors who may be experiencing problems in obtaining timely payment(s) from a state agency. The Vendor Ombudsman may be contacted at (850) 413-5516.

I. Records of costs incurred under terms of this Agreement shall be maintained and made available upon request to the Department at all times during the period of this Agreement and for three (3) years after final payment for the work pursuant to this Agreement is made. Copies of these documents and records shall be furnished to the Department upon request. Records of costs incurred shall include the Vendor's general accounting records and the project records, together with supporting documents and records of the Vendor and all subcontractors performing work on the project, and all other records of the Vendor and subcontractors considered necessary by the Department for a proper audit of project costs.

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J. The Department, during any fiscal year, shall not expend money, incur any liability, or enter into any contract which, by its terms, involves the expenditure of money in excess of the amounts budgeted as available for expenditure during such fiscal year. Any contract, verbal or written, made in violation of this subsection is null and void, and no money may be paid on such contract. The Department shall require a statement from the comptroller of the Department that funds are available prior to entering into any such contract or other binding commitment of funds. Nothing herein contained shall prevent the making of contracts for periods exceeding one (1) year, but any contract so made shall be executory only for the value of the services to be rendered or agreed to be paid for in succeeding fiscal years. Accordingly, the Department's performance and obligation to pay under this Agreement is contingent upon an annual appropriation by the Legislature.

4. INDEMNITY AND PAYMENT FOR CLAIMS

A. INDEMNITY: To the extent permitted by Florida Law, the Vendor shall indemnify and hold harmless the Department, its officers and employees from liabilities, damages, losses, and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by negligence, recklessness, or intentional wrongful misconduct of the Vendor and persons employed or utilized by the Vendor in the performance of this Agreement.

It is specifically agreed between the parties executing this Agreement that it is not intended by any of the provisions of any part of the Agreement to create in the public or any member thereof, a third party beneficiary hereunder, or to authorize anyone not a party to this Agreement to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of this Agreement.

PAYMENT FOR CLAIMS: The Vendor guaranties the payment of all just claims for materials, supplies, tools, or labor and other just claims against the Vendor or any subcontractor, in connection with the Agreement. The Department's final acceptance and payment does not release the Vendor's bond until all such claims are paid or released.

B. LIABILITY INSURANCE. (Select and complete as appropriate):

☐ No general liability insurance is required.

☑ The Vendor shall carry and keep in force during the term of this Agreement, a general liability insurance policy or policies with a company or companies authorized to do business in Florida, affording public liability insurance with a combined bodily injury limits of at least $300,000.00 per person and $300,000.00 each occurrence, and property damage insurance of at least $300,000.00 each occurrence, for the services to be rendered in accordance with this Agreement

☐ The Vendor shall have and maintain during the term of this Agreement, a professional liability insurance policy or policies or an irrevocable letter of credit established pursuant to Chapter 675 and Section 337.106, Florida Statutes, with a company or companies authorized to do business in the State of Florida, affording liability coverage for the professional services to be rendered in accordance with this Agreement in the amount of $_____.

C. WORKERS' COMPENSATION. The Vendor shall also carry and keep in force Workers' Compensation insurance as required for the State of Florida under the Workers' Compensation Law.

D. PERFORMANCE AND PAYMENT BOND. (Select as appropriate):

☑ No Bond is required.

☐ Prior to commencement of any services pursuant to this Agreement and at all times during the term hereof, including renewals and extensions, the Vendor will supply to the Department and keep in force a bond provided by a surety authorized to do business in the State of Florida, payable to the Department and conditioned for the prompt, faithful, and efficient performance of this Agreement according to the terms and conditions hereof and within the time periods specified herein, and for the prompt payment of all persons furnishing labor, materials, equipment, and supplies therefor.

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E. CERTIFICATION.

With respect to any general liability insurance policy required pursuant to this Agreement, all such policies shall be issued by companies licensed to do business in the State of Florida. The Vendor shall provide to the Department certificates showing the required coverage to be in effect with endorsements showing the Department to be an additional insured prior to commencing any work under this Contract. Policies that include Self Insured Retention (SIR) will not be accepted. The certificates and policies shall provide that in the event of any material change in or cancellation of the policies reflecting the required coverage, thirty days advance notice shall be given to the Department or as provided in accordance with Florida law.

5. COMPLIANCE WITH LAWS

A. The Vendor shall comply with Chapter 119, Florida Statutes. Specifically, the Vendor shall:

(1) Keep and maintain public records required by the Department to perform the service.

(2) Upon request from the Department's custodian of public records, provide the Department with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law.

(3) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the Agreement term and following completion of the Agreement if the Vendor does not transfer the records to the Department.

(4) Upon completion of the Agreement, transfer, at no cost, to the Department, all public records in possession of the Vendor or keep and maintain public records required by the Department to perform the service. If the Vendor transfers all public records to the Department upon completion of the Agreement, the Vendor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Vendor keeps and maintains public records upon completion of the Agreement, the Vendor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Department, upon request from the Department's custodian of public records, in a format that is compatible with the information technology systems of the Department.

Failure by the Vendor to comply with Chapter 119, Florida Statutes, shall be grounds for immediate unilateral cancellation of this Agreement by the Department.

IF THE VENDOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE VENDOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:

District 5

386-943-5000
D5prcustodian@dot.state.fl.us
Florida Department of Transportation
District 5 - Office of General Counsel
719 South Woodland Boulevard
Deland, FL 32720

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B. The Vendor agrees that it shall make no statements, press releases or publicity releases concerning this Agreement or its subject matter or otherwise discuss or permit to be disclosed or discussed any of the data or other information obtained or furnished in compliance with this Agreement, or any particulars thereof, during the period of the Agreement, without first notifying the Department's Contract Manager and securing prior written consent. The Vendor also agrees that it shall not publish, copyright, or patent any of the data developed under this Agreement, it being understood that such data or information are works made for hire and the property of the Department.

C. The Vendor shall comply with all federal, state, and local laws and ordinances applicable to the work or payment for work thereof, and will not discriminate on the grounds of race, color, religion, sex, national origin, age, or disability in the performance of work under this Agreement.

D. If the Vendor is licensed by the Department of Business and Professional Regulation to perform the services herein contracted, then Section 337.162, Florida Statutes, applies as follows:

(1) If the Department has knowledge or reason to believe that any person has violated the provisions of state professional licensing laws or rules, it shall submit a complaint regarding the violations to the Department of Business and Professional Regulation. The complaint shall be confidential.

(2) Any person who is employed by the Department and who is licensed by the Department of Business and Professional Regulation and who, through the course of the person's employment, has knowledge to believe that any person has violated the provisions of state professional licensing laws or rules shall submit a complaint regarding the violations to the Department of Business and Professional Regulation. Failure to submit a complaint about the violations may be grounds for disciplinary action pursuant to Chapter 455, Florida Statutes, and the state licensing law applicable to that licensee. The complaint shall be confidential.

(3) Any complaints submitted to the Department of Business and Professional Regulation are confidential and exempt from Section 119.07(1), Florida Statutes, pursuant to Chapter 455, Florida Statutes, and applicable state law.

E. The Vendor covenants and agrees that it and its employees and agents shall be bound by the standards of conduct provided in applicable law and applicable rules of the Board of Business and Professional Regulation as they relate to work performed under this Agreement. The Vendor further covenants and agrees that when a former state employee is employed by the Vendor, the Vendor shall require that strict adherence by the former state employee to Sections 112.313 and 112.3185, Florida Statutes, is a condition of employment for said former state employee. These statutes will by reference be made a part of this Agreement as though set forth in full. The Vendor agrees to incorporate the provisions of this paragraph in any subcontract into which it might enter with reference to the work performed pursuant to this Agreement.

F. A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity, may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids, proposals, or replies on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO for a period of thirty-six (36) months following the date of being placed on the convicted vendor list.

G. An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity, may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids, proposals, or replies on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with a public entity, and may not transact business with any public entity.

H. The Department shall consider the employment by any vendor of unauthorized aliens a violation of Section 274A(e) of the Immigration and Nationality Act. If the Vendor knowingly employs unauthorized aliens, such violation shall be cause for unilateral cancellation of this agreement.

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I. The Vendor agrees to comply with the Title VI Nondiscrimination Contract Provisions, Appendices A and E, available at http://www.dot.state.fl.us/procurement/index.shtm, incorporated herein by reference and made a part of this Agreement.

J. Pursuant to Section 216.347, Florida Statutes, the vendor may not expend any State funds for the purpose of lobbying the Legislature, the judicial branch, or a state agency.

K. Any intellectual property developed as a result of this Agreement will belong to and be the sole property of the State. This provision will survive the termination or expiration of the Agreement.

L. The Vendor agrees to comply with s.20.055(5), Florida Statutes, and to incorporate in all subcontracts the obligation to comply with s.20.055(5), Florida Statutes.

6. TERMINATION AND DEFAULT

A. This Agreement may be canceled by the Department in whole or in part at any time the interest of the Department requires such termination. The Department reserves the right to terminate or cancel this Agreement in the event an assignment be made for the benefit of creditors.

B. If the Department determines that the performance of the Vendor is not satisfactory, the Department shall have the option of (a) immediately terminating the Agreement, or (b) notifying the Vendor of the deficiency with a requirement that the deficiency be corrected within a specified time, otherwise the Agreement will be terminated at the end of such time, or (c) taking whatever action is deemed appropriate by the Department.

C. If the Department requires termination of the Agreement for reasons other than unsatisfactory performance of the Vendor, the Department shall notify the Vendor of such termination, with instructions as to the effective date of termination or specify the stage of work at which the Agreement is to be terminated.

D. If the Agreement is terminated before performance is completed, the Vendor shall be paid only for that work satisfactorily performed for which costs can be substantiated. Such payment, however, may not exceed an amount which is the same percentage of the agreement price as the amount of work satisfactorily completed is a percentage of the total work called for by this Agreement. All work in progress shall become the property of the Department and shall be turned over promptly by the Vendor.

E. For Contracts $1,000,000 and greater, if the Department determines the Contractor submitted a false certification under Section 287.135(5) of the Florida Statutes, or if the Contractor has been placed on the Scrutinized Companies with Activities in the Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List, the Department shall either terminate the Contract after it has given the Contractor notice and an opportunity to demonstrate the Department's determination of false certification was in error pursuant to Section 287.135(5)(a) of the Florida Statutes, or maintain the Contract if the conditions of Section 287.135(4) of the Florida Statutes are met.

7. ASSIGNMENT AND SUBCONTRACTS

A. The Vendor shall maintain an adequate and competent staff so as to enable the Vendor to timely perform under this Agreement and may associate with it such subcontractors, for the purpose of its services hereunder, without additional cost to the Department, other than those costs within the limits and terms of this Agreement. The Vendor is fully responsible for satisfactory completion of all subcontracted work. The Vendor, however, shall not sublet, assign, or transfer any work under this Agreement to other than subcontractors specified in the proposal, bid, and/or Agreement without the written consent of the Department.

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B. Select the appropriate box:

☑ The following provision is not applicable to this Agreement:

☐ The following provision is hereby incorporated in and made a part of this Agreement:

☐ It is expressly understood and agreed that any articles that are the subject of, or required to carry out this Agreement shall be purchased from a nonprofit agency for the blind or for the severely handicapped that is qualified pursuant to Chapter 413, Florida Statutes, in the same manner and under the same procedures set forth in Section 413.036(1) and (2), Florida Statutes; and for purposes of this Agreement the person, firm, or other business entity (Vendor) carrying out the provisions of this Agreement shall be deemed to be substituted for the state agency (Department) insofar as dealings with such qualified nonprofit agency are concerned. RESPECT of Florida provides governmental agencies within the State of Florida with quality products and services produced by persons with disabilities. Available pricing, products, and delivery schedules may be obtained by contacting:

RESPECT
2475 Apalachee Pkwy
Tallahassee, Florida 32301-4946
Phone: (850)487-1471

☐ The following provision is hereby incorporated in and made a part of this Agreement:
It is expressly understood and agreed that any articles which are the subject of, or required to carry out this Agreement shall be purchased from the corporation identified under Chapter 946, Florida Statutes, in the same manner and under the procedures set forth in Sections 946.515(2) and (4), Florida Statutes; and for purposes of this Agreement the person, firm, or other business entity (Vendor) carrying out the provisions of this Agreement shall be deemed to be substituted for this agency (Department) insofar as dealings with such corporation are concerned. The "corporation identified" is Prison Rehabilitative Industries and Diversified Enterprises, Inc. (PRIDE). Available pricing, products, and delivery schedules may be obtained by contacting:

PRIDE Enterprises
12425 - 28th Street, North
St. Petersburg, FL 33716-1826 (800)643-8459

☐ This Agreement involves the expenditure of federal funds and Section 946.515, Florida Statutes, as noted above, does not apply. However, Appendix I is applicable to all parties and is hereof made a part of this Agreement.

8. MISCELLANEOUS

A. The Vendor and its employees, agents, representatives, or subcontractors are not employees of the Department and are not entitled to the benefits of State of Florida employees. Except to the extent expressly authorized herein, Vendor and its employees, agents, representatives, or subcontractors are not agents of the Department or the State for any purpose or authority such as to bind or represent the interests thereof, and shall not represent that it is an agent or that it is acting on the behalf of the Department or the State. The Department shall not be bound by any unauthorized acts or conduct of the Vendor or its employees, agents, representatives, or subcontractors. Vendor agrees to include this provision in all its subcontracts under this Agreement.

B. All words used herein in the singular form shall extend to and include the plural. All words used in the plural form shall extend to and include the singular. All words used in any gender shall extend to and include all genders.

C. This Agreement embodies the whole agreement of the parties. There are no promises, terms, conditions, or obligations other than those contained herein, and this Agreement shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties hereto. The State of Florida terms and conditions, whether general or specific, shall take precedence

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over and supersede any inconsistent or conflicting provision in any attached terms and conditions of the Vendor.

D. It is understood and agreed by the parties hereto that if any part, term or provision of this Agreement is by the courts held to be illegal or in conflict with any law of the State of Florida, the validity of the remaining portions or provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular part, term, or provision held to be invalid.

E. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida.

F. In any legal action related to this Agreement, instituted by either party, the Vendor hereby waives any and all privileges and rights it may have under Chapter 47 and Section 337.19, Florida Statutes, relating to venue, as it now exists or may hereafter be amended, and any and all such privileges and rights it may have under any other statute, rule, or case law, including, but not limited to those grounded on convenience. Any such legal action may be brought in the appropriate Court in the county chosen by the Department and in the event that any such legal action is filed by the Vendor, the Vendor hereby consents to the transfer of venue to the county chosen by the Department upon the Department filing a motion requesting the same.

G. If this Agreement involves the purchase or maintenance of information technology as defined in Section 282.0041, Florida Statutes, the selected provisions of the attached Appendix II are made a part of this Agreement.

H. If this Agreement is the result of a formal solicitation (Invitation to Bid, Request for Proposal or Invitation to Negotiate), the Department of Management Services Forms PUR1000 and PUR1001, included in the solicitation, are incorporated herein by reference and made a part of this Agreement.

I. The Department may grant the Vendor's employees or subconsultants access to the Department's secure networks as part of the project. In the event such employees' or subconsultants' participation in the project is terminated or will be terminated, the Vendor shall notify the Department's project manager no later than the employees' or subconsultants' separation date from participation in the project or immediately upon the Vendor acquiring knowledge of such termination of employees' or subconsultants' participation in the project, whichever occurs later.

J. Vendor/Contractor:

1. shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Vendor/Contractor during the term of the contract; and

2. shall expressly require any subcontractors performing work or providing services pursuant to the state contract to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term.

K. Time is of the essence as to each and every obligation under this Agreement.

L. The following attachments are incorporated and made a part of this agreement:
PUR1000, Exhibit A, Scope of Services, Appendix A, Appendix B, Appendix C, and Exhibit B, Method of Compensation, and Attachment 1, Davis-Bacon Wage Rates

M. Other Provisions:
Sections 8G and 8H have been deleted from this document

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IN WITNESS WHEREOF, the parties have executed this Agreement by their duly authorized officers on the day, month and year set forth above.

AutoBase, inc.
Name of Vendor

DocuSigned by:
BY: Donna LaBella
D9D3B8009B06443...
Authorized Signature

Donna LaBella
(Print/Type)

Title: President

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

DocuSigned by:
BY
BC91A4E30A15477...
Authorized Signature

Alan E. Hyman, P.E..
(Print/Type)

Title: Director of Transportation Operations

DS
JF

FOR DEPARTMENT USE ONLY

APPROVED:

DocuSigned by:
Michelle Sloan
BBF10369F486452...
Procurement Office

LEGAL REVIEW

DocuSigned by:
Ryan Mahler
A5148259631D422...

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Brevard, Flagler, Marion, Sumter, and Volusia Counties

District Five Road Ranger Patrol Services for Interstate 75 (I-75) and 95 (I-95) BE690

Exhibit "A" Scope of Services

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EXHIBIT A: SCOPE OF SERVICES

1. OBJECTIVE

The Florida Department of Transportation District 5, hereafter known as the Department, requires services by a Road Ranger Service Patrol provider, hereafter known as the Contractor, for motorist assistance and incident management support, within select segments along I-75, I-95, and connecting roadways, in the counties of Brevard, Flagler, Marion, Sumter, and Volusia.

Road Ranger Service Patrols are an integral part of the Department's Traffic Incident Management (TIM) Program and shall proactively assist with the management of incidents in an effort to minimize the risk of secondary crashes and reduce traffic congestion, and the resultant travel time delay, caused by vehicle crashes, disablements, and non-hazardous spills.

The services described in this Scope of Services (SOS) shall cover all existing and future Road Ranger Service Patrol deployments within the geographic coverage area and term defined in this agreement, hereafter known as the Contract.

2. DEFINITION OF TERMS

Approved Container: A closed container of not more than 5-gallon capacity, having a flash arresting screen, spring closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to heat or exposed to fire. These containers shall meet Occupational Safety and Health Administration (OSHA) requirements. Approval must be given by a nationally recognized testing laboratory and the container marked as "UL Listed".

Automated Vehicle Locator (AVL): Uses global positioning system to pinpoint the longitude, latitude, ground speed, and course direction of a given vehicle.

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Contractor: The individual company contracted with the Department to deliver roadside emergency assistance/services for contracts issued to implement the Road Ranger Program.

DMS: Dynamic message sign

Expendables: Items given at no cost to motorists or emergency responders including, but not limited to, supplies, drinking water, flares, etc.

FDOT: Florida Department of Transportation

FHP: Florida Highway Patrol

LEO: Law Enforcement Officer

LOA: Letter of Authorization

MOT: Maintenance of Traffic

Marketing Firm: Firm that has negotiated the agreement between the Sponsor and the DEPARTMENT. It also manages the interaction between the Department and the Sponsor.

Motorist Aid Service Logs: Activity and performance records typically aggregated from RTMC, Road Ranger Service Operator, and AVL input. In the event the Department's software is down and data cannot be collected automatically, Road Ranger Service Operators must maintain a manual Motorist Aid Service Log, or comply with the Department's current method of manual back-up (coordinated by the RTMC, TIM Program Manager, or their designee), until such time as the software or equipment issue is resolved. After the software/equipment issues have been resolved the contractor shall work with the department to input incidents into the system.

Patrol Sector or "beat": The specific section of roadway on which a Road Ranger Service Patrol Operator is to patrol during his/her shift. Beats will vary dependent on the design of the program, location, and time of day.

RISC: Rapid Incident Scene Clearance towing program implemented by the department to expedite clearance of large-scale and/or commercial vehicle incidents that have the potential for long-term closures.

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Regional Transportation Management Center (RTMC): A dispatch and communications facility housing both FDOT and State Law Enforcement Agency (FHP Communications) personnel. The RTMC is used for dispatch, communications and management of traffic and traffic incidents on the freeways as well as law enforcement activities.

Road Ranger: Individual or unit that patrols specifically defined locations on Florida's State Highway System to aid in incident response, quick clearance, motorist safety and providing assistance to motorist(s) who are in need of assistance/services. Also referred to as "Operator".

RRSP: Road Ranger Service Patrol

Service Patrol: A roving patrol used by many states to provide incident management assistance, known in Florida as the Road Rangers.

Service Patrol Hour: Actively patrolling coverage area, while performing duties outlined herein

Service Patrol Vehicle: A vehicle used by Road Rangers to provide incident response and motorist assistance.

Sponsor: An organization that provides financial support to the Road Ranger Service Patrol in exchange for the display of its logos and likenesses on vehicles, uniforms and roadway signs.

State Law Enforcement Radio System (SLERS): SLERS is a secured, unified digital radio network used by state law enforcement officers and other participating agencies throughout the state to communicate.

Strategic Highway Safety Research Program, Part 2 (SHRP2): The second Strategic Highway Research Program (SHRP 2) authorized by Congress to address some of the most pressing concerns related to saving lives and reducing congestion in the transportation infrastructure.

Temporary Traffic Control (TTC): The use of temporary traffic control devices and personnel to guide traffic through an area where road user conditions are changed by road work or an incident.

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Traffic Incident Management (TIM): The process of coordinating the resources of a number of different agencies to detect, respond to, and clear traffic incidents as quickly as possible to reduce the impacts of incidents on safety and congestion, while protecting the safety of on-scene responders.

3. SERVICES TO BE PROVIDED BY CONTRACTOR

The Contractor shall provide all personnel, supervision, expertise, vehicles, equipment, materials, parts, licenses, supplies, and incidentals necessary to provide a fully functional Service Patrol operation for a minimum 28,800 service patrol hours, per year (2,400 hours/mth). Full implementation of Road Ranger Service Patrols, as outlined in this Scope, shall occur within a maximum of 4-months from the award date on I-95, and within a maximum of 6-months from the award date on I-75.

The Contractor shall develop a set of Standard Operating Guidelines (SOG) for the Road ranger service and submit to the Department's TIM Program Manager for approval within 90-days of the Notice to Proceed. The Department has authority for final approval. Any updates to the SOG should be submitted to the Department's TIM Program Manager, or their designee, for approval.

Vehicles and personnel shall meet the requirements as directed in ***Road Ranger Operations*** (FDOT Procedure 750-030-015-d, or the most recent version). At a minimum, the Contractor shall perform the following duties:

- Actively patrol coverage area,
- Actively communicate with the Regional Traffic Management Center to provide immediate, first-hand information on all incidents
- Deploy as directed by the Regional Traffic Management Center or Traffic Incident Management Program team
- Cooperate with first responders (law enforcement, fire/rescue, etc.) and the Department's Traffic Incident Management program,

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- Provide assistance to stranded motorists
- Remove debris from roadway
- Reposition or relocate disabled or crashed vehicles from travel lanes per FDOT/FHP guidelines by pushing, pulling, dragging, or towing vehicle,
- Tagging of abandoned vehicles for LEO removal,
- Assist incident responders with temporary traffic control (TTC),
- Attend and participate in Traffic Incident Management meetings,
- Act in a manner that properly represents the Department

Services are further defined in Appendix A.

During natural or manmade disasters or emergencies, the Contractor may be required to provide additional vehicles, equipment, and personnel to assist with evacuations or response/recovery operations. The Contractor may also be required to expand hours of operation to accommodate the operational needs during that timeframe.

4. GENERAL CONTRACT REQUIREMENTS, ADDITIONS, DELETIONS

This is a performance based contract in which the Contractor will be evaluated periodically to ensure services are being provided and related activities are accomplished compliance with established policies, procedures, and standard operating guidelines during patrol. The Contractor will be required to maintain supporting documentation for all operations and activities. Upon request from the Department's Project Manager or their designee, the Contractor shall provide supporting documentation in the format requested.

Throughout the term of this Contract, the Department's Project Manager or their designee will conduct reviews of the Contractor's work and daily operations. (See Section 36: Contract Monitoring/Progress Reporting/Coordination.)

The Contractor shall provide a representative to attend all meetings required by the Department.

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Instances where the Department finds the Service Patrol Contractor fails to comply with a specific provision(s) of their contract (i.e., not performing the responsibilities and services described herein) the Department shall reduce the monthly invoice (See Section 36, "Provision for Penalty or Default due to Non-Performance") or, at the Department's discretion, terminate the contract.

Item Additions and Deletions

During the Contract period and any renewal periods, the Department shall have the right to add or delete the Services to or from this agreement by adding them to, or removing them from, the Price Proposal Form. Any new Services added shall be at the requirements, specifications, terms, and conditions stated herein or as later stipulated by the Department, and at mutually agreed pricing accepted, in writing, by both the Contractor and the Department. Items may be removed at the sole discretion of the Department, per the requirements, terms, and conditions herein and/or as permitted by Florida Statutes, Florida Administrative Code, or FDOT policy.

Due to the changing dynamics within any deployment of Services, the Contractor will be able, upon written authorization by the Department's Project Manager, and upon supplemental agreement to the Contract as to compensation and time, to perform additional services pertaining to motorist assistance and incident management not otherwise identified in this Contract as may be required by the Department.

5. APPLICABLE STANDARDS

All work shall be conducted in accordance with the latest editions of standards and requirements utilized by the DEPARTMENT, which include, but are not limited to:

- Topic No. 250-000-010 Driver's Record Requirements
- Topic No. 001-010-015 Tobacco Use Policy
- Topic No. 001-250-013 Drug-Free Workplace and Drug Testing Policy
- Topic No. 001-010-020 Ethics Policy

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- FDOT Standard Plan for Road Construction
- Sections 112.0455, 316.003(1), 316.072(5)(b)(1), 316.072(5)(b)(4), and 316.126(1)(b) F.S., 316.1945(1)(a)11
- Joint Task Force for Law Enforcement Radio System Security Procedure
    - See Rejection of Drivers, Operators, Supervisors/Leads, and Managers (Section 24)
- FDOT Road Ranger Operations Procedure – Appendix C
    - Open Roads Policy

6. LANGUAGE/VERBAL COMMUNICATIONS

The Department conducts its official business in English. All Operators and personnel shall be fluent in English.

7. SERVICE PATROL COVERAGE AREA

The service patrol coverage area spans approximately 137 centerline miles (one way) on I-95 in Brevard, Flagler, and Volusia Counties and 69 centerline miles (one way) on I-75 in Marion and Sumter Counties. During the life of the contract, the service area may expand for additional routes. The delivery of services shall be broken down into Patrol Sectors or “beats” that enable each patrol to operate within their assigned area and reach incidents and/or stranded motorists with minimum delay. Each sector shall have specific turn-around locations and shall start and end at specific entrance/exit ramps.

The Contractor will submit a proposed plan of patrol zones or “beats” to the TIM Program Manager for approval. The Department will have final approval authority on establishment of patrol zones.

Route Adjustments

At any time during the Contract’s term, the Department reserves the right to require adjustment, alteration, or addition of sector locations to better accommodate the demand for services and the needs of the Department. The recommendation may also be provided by the Contractor. Changes that result in an expansion of services would be paid at the contracted hourly rate or via amendment to this contract.

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a) Except during times of emergency, the Department will advise the Contractor of any required adjustment to a sector within forty-eight (48) hours prior to the effective date of adjustment.
b) The Contractor will be given thirty (30) days notice when a new "permanent" service area is added to the Contract that will increase the total number of hours of service.
c) The Contractor may agree to shorter notice at the time of the notification.

8. CONTRACTOR'S SUPERVISOR/LEAD

The Contractor shall identify a Supervisor(s) or Lead(s) for each corridor who shall be the point of contact for the Department for urgent issues relating to day-to-day operations. At least one Supervisor or Lead, per corridor, shall be available to the Department during all on-duty hours through a reliable phone number.

If required, the Supervisor or Lead shall be at a requested location within one (1) hour after being contacted by the Department, the Department's Project Manager, or their designee, for emergencies.

The Supervisor or Lead shall be available (on-call) to assist individual operators, as needed, in the re-supply of expendable supplies or vehicle replacement, and shall be capable of replacing an operator on a designated route in the event of an emergency.

If during the term of this contract, a new Supervisor or Lead is to be employed by the Contractor to meet the provisions of the Contract, the new Supervisor/Lead shall be available to meet with the Department's Project Manager or their designee. The time spent shall not be billable to the Department.

An interim Supervisor or Lead shall be assigned if the Contractor's Supervisor/Lead is away or the position is temporarily vacant.

The Contractor's Supervisors or Leads for this contract shall meet the background and training requirements for the Driver/Operator.

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9. EMERGENCY & OTHER SERVICES

At times, the Department may identify a need to utilize the Service Patrol Operators for purposes not specifically outlined in this Scope such as expositions, safety events, and meetings. The Department also reserves the right to assign the Service Patrol Operators to duties that are consistent with those outlined in this Scope, including emergency services.

Emergency Services

The Contractor shall make resources available for all activities described herein for providing services during a hurricane evacuation, major incidents, roadway construction, or FHP requests after receipt of approval from the Department's Project Manager, TIM Program Manager, or their designee.

During hurricane evacuations, emergencies, or occasionally during special events, the Contractor may be asked to expand the designated Road Ranger Patrol coverage area (by manning and deploying back-up vehicles) to provide disabled vehicle assistance until such time as normal traffic operations have resumed. Payment shall be the same as that for regular working hours and the period for payment shall be calculated to the nearest one-half (1/2) hour.

Traffic Incident Management (TIM) Team

The Contractor or their designee (Lead/Supervisor level or higher) shall attend and participate as an active team member at quarterly TIM meetings for their respective areas. (There are 3 TIM teams for the I-75 and I-95 corridors.) Attendance at these meetings shall not be billable to the Department.

1. The Department's Traffic Incident Manager will provide the date, time, and location for the meeting(s) to the Contractor at least two (2) weeks in advance.
2. Attendance at the meeting shall not result in fewer Road Rangers on patrol.

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10. SERVICE PATROL HOURS OF OPERATION

Anticipated Service Patrol hours

I-95: Monday through Friday (5-days/week), 6:30AM to 6:30PM
I-75: Sunday through Saturday (7-days/week), 6:30AM to 6:30PM

Holidays or special events that fall within the typical work week for a given corridor shall be covered in accordance with the standard schedule and shall meet outlined performance measures. Any changes in the schedule will be addressed by the Department's Project Manager, or their designee, on an as needed basis. If the Department requests additional hours or units, beyond the regularly scheduled service hours/staffing level, the Contractor will be paid at the contracted hourly rate.

The Contractor is required to begin all shifts/assignments with the appropriate number and type of vehicles according to approved schedule.

The Department reserves the right to require adjustment in schedules, shift times, and service levels to meet the Department's needs.

11. SERVICE PATROL SHIFT CHANGES

The Contractor shall submit to the Department for approval prior to implementation, their plan for shift change times, duration of shifts, and staffing plan. Shift change hours shall coincide with low traffic volume hours.

Changes to the Contractor's plan during the contract period shall also be submitted for approval prior to their implementation.

Service Patrol Operators shall respond to all requests for service or assistance from the Department or Law Enforcement Officers, even if the request comes near the end of the Operator's shift. The services requested shall be accomplished prior to the Operator terminating their shift.

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Service Patrol Operators providing MOT at an incident shall not leave an active incident at the end of their shift, without relief from FDOT, Asset Management, or authorization from the RTMC, TIM Program personnel, or on-scene LEO command staff. If an incident is expected to exceed normal service patrol hours by more than 1-hour, the Service Patrol Operator shall coordinate with the RTMC for relief by FDOT or the appropriate Asset Management team.

At shift changes, the Contractor shall be allowed a maximum of (30) minutes from the time a unit leaves the designated route, until the time the unit must be back on route, to change drivers, fuel, inspect vehicles, and re-stock supplies.

12. SHIFT CHANGE and RE-FUELING/RE-EQUIPPING LOCATIONS

Geographic Locations of Facilities

The locations where Service Patrol Operators refuel and/or replenish their supplies shall be within one (1) mile of patrol area, or within limits approved by the Department's Project Manager or their designee, with the intent of minimizing downtime.

Physical Facilities

The facilities where Service Patrol Operators pick up their trucks to begin or end their shifts shall be in locations that meet all local zoning requirements for the purpose and should allow all drivers to reach their patrol routes within 30-minutes of beginning shifts. The Department may allow use of weigh stations, rest areas, or other Department-owned properties or facilities for operations, staging and/or parking of Road Ranger Service Patrol vehicles. The use of auxiliary structures on FDOT property is subject to FDOT approval. All costs for auxiliary structures, including but not limited to utility upgrades, utility costs, etc. shall be the responsibility of the vendor and shall be reflected in their bid price.

13. SERVICE PATROL VEHICLE ASSIGNMENTS

All Service Patrol vehicles are restricted for the Department's official use only and are to be used to provide the services contained herein. Service Patrol vehicles are not to be

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used for personal or other business-related work of the Contractor. Covering Department identification logos or markings shall be prohibited.

Backup Vehicles

Backup vehicles shall be used when a regular, dedicated vehicle is taken out of service for any reason and shall be the same type, be equipped the same, and perform all the functions of a regular vehicle.

Backup vehicles shall be deployed and in service as a replacement within thirty (30) minutes of a regular vehicle breakdown.

If the replacement vehicle is not placed into service within thirty (30) minutes, the Contractor shall reduce the monthly invoice to reflect the time the Service Patrol is unavailable.

In the event of recurring unavailability of vehicles on patrol, the Department has the right to terminate the contract for non-compliance.

Re-Supply Vehicles

Supervisors on the road during the shifts shall carry in their vehicle extra expendable supplies to assist in the re-supply of other patrol vehicles.

14. SERVICE PATROL VEHICLE MINIMUMS & REPLACEMENT REQUIREMENTS

The Contractor shall staff each corridor at a level that ensures their ability to meet all performance measures, including response time. If the Contractor fails to achieve the average response time described in Section 35, at least 90% of the time for two consecutive quarters, the Contractor shall increase Service Patrol Vehicles for at least the next two consecutive quarters, unless otherwise approved by the Department. The Department reserves the right to decrease or increase the number of vehicles without a Contract Amendment. The Contractor will be given 14-days notice when the Department increases or decreases the number of vehicles.

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All vehicles in the Service Patrol vehicle fleet shall meet the specific vehicle requirements and be capable of carrying the equipment specified in this contract. All vehicles must be licensed in the State of Florida. Proof of such licensing must be provided to the Department prior to a vehicle being used on this Contract.

The Department may require an independent safety inspection of the vehicles by a technician of the Department's choosing and at the Contractor's expense.

a) Contractor shall assure vehicle availability during the entire service period
b) Upon contract execution, all vehicles in the fleet shall not be greater than one (1) year old from their original manufactured date with a maximum of 2,000 miles
c) All used vehicles shall have verifiable maintenance records available for each vehicle that show the vehicle was consistently maintained according to the manufacturer's service/interval recommendations
    a. All body panels and parts on the used vehicles shall meet the same appearance standards as new vehicles
    b. "Used" vehicles shall be replaced under the same guidelines as new vehicles
    c. Consideration will be given to the replacement of chassis and/or body separately of each other for vehicles so designed. Should Contractor desire separate replacement they shall request, in writing, and include the specific reason for the request.
d) Any tow trucks must meet FHP standards for use on Florida's interstates or freeways.
e) During the term of the contract, vehicles will be maintained to OEM standards for operations on public highways. Any vehicle that fails to meet these criteria shall be removed from service regardless of years or mileage.

15. SERVICE PATROL VEHICLE LOGOS AND MARKINGS

Vehicle markings shall be in compliance with ***Road Ranger Operations*** Procedure (750-030-015-d, or the most recent version.)

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Vehicle numbering (as defined in Section B of ***Road Ranger Operations*** Procedure 750-030-015-d) shall be coordinated with the Department to avoid conflicts or duplicities with other Service Patrol contracts, allowing for unique identification

Additional Conspicuity Markings

A single two (2) inch wide, red/white strip of reflective tape applied to allow the limits of the truck to be visible at night from any angle when illuminated by oncoming traffic.

- The tape should be applied at a minimum height of four (4) feet, but may vary according to truck or body configuration.
- Gaps in the tape where configuration does not lend itself to tape application shall be considered normal.

All markings and decals shall be maintained in a clean, bright, and readable condition throughout the term of this contract. Markings' placement may vary due to vehicle type and configuration, but shall be approved by the Department.

Should a Service Patrol vehicle become permanently inoperable for any reason or should the Service Patrol Contract be terminated for any reason, or at the conclusion of this Contract, the service Patrol vehicles shall have all logos referencing this contract permanently removed before being junked, sold, or placed in private sector use.

The Department may require the addition/deletion of markings at any time during the Contract.

- Contractor is required to apply any Department approved Service Patrol sponsorship markings and/or decals to the Service Patrol vehicles provided that: Sponsorship markings/decals do not cover any FDOT required logos

Any variations to the Road Ranger vehicles (i.e., vehicle size or type) must be submitted, in writing, to the District TIM Program Manager for approval.

- Contractor shall equip all trucks with a portable dynamic message sign (DMS) that meets or exceeds the specifications described in Appendix B.
- Any and all equipment shall be securely attached and, when appropriate, in reach of the driver without distraction to driving safely.

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16. SERVICE PATROL VEHICLE SPECIFICATIONS

Road Ranger vehicles must:

- be a minimum of full-size, ¾ ton, 4-door pickups;
- have the capability to push, drag, pull, tow, or reposition/relocate disabled vehicles out of travel lane(s);
- be capable of transporting all required equipment, properly secured;
- be capable of transporting the Road Ranger and potential passengers (not to exceed the maximum occupancy of the vehicle);
- accommodate mounting of a Department-provided laptop or tablet
- include a an AVL system, compatible with the Department-provided laptop or tablet, and software
- be equipped with the lights, equipment, tools, expendables, and communications devices outlined in ***Road Ranger Operations*** Procedure (750-030-015-d, or the most recent version), or as outlined in this contract

Additional vehicle specifications are defined in Appendix B.

17. EQUIPMENT, TOOLS, and EXPENDABLES REQUIREMENTS

The Contractor shall ensure that all required equipment, tools, and expendable items are present and in the Road Ranger Service Patrol vehicle before, during, and after each shift.

The required equipment, tools, and expendables are outlined in Appendix B.

18. AUTOMATIC VEHICLE LOCATION (GPS) SYSTEM

Contractor is required to provide AVL (GPS) location for all Road Ranger vehicles on active duty. Specifications are further outlined in Appendix B.

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The AVL (GPS) system shall be monitored by the Contractor the Department's Program Manager or designee, the Departments' Traffic Incident Management team, and the RTMC.

Throughout the term of the Contract, the Contractor shall be responsible for all costs associated the maintenance of the AVL (GPS) system.

19. COMMUNICATIONS EQUIPMENT REQUIREMENTS

The Road Ranger Service Patrol operator shall provide firsthand information directly to the RTMC operators. SLERS is the primary method of communications. Cellular radio talk communications will be the back-up where SLERS reception is not reliable, unless otherwise prescribed by the TIM Program Manager. All traffic incidents/events will be dispatched by RTMC and/or TIM personnel. At no time will incident-related communications be relayed through another party or outside dispatch/communications center. The RTMC and TIM program staff shall have direct communication to each on-duty Service Patrol operator.

SLERS (State Law Enforcement Radio System)

Each Road Ranger Service Patrol vehicle shall be equipped with a SLERS radio, provided by the Department, to enable their operators to communicate with all other Service Patrol operators, FHP, and the RTMC.

- Contractor must immediately notify the RTMC to report any loss of signal or SLERS radio problems.

Specifications are outlined in Appendix B.

Cellular Telephones

The Contractor shall provide each Service Patrol vehicle, including backup and Supervisors/Leads with a licensed cellular smart phone.

Specifications are outlined in Appendix B.

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Contractor shall be responsible for all fixed and recurring costs and licenses associated with the cellular smart phones throughout the term of this Contract.

- Contractor must immediately notify the RTMC to report any loss of signal or cellular phone problems.
- Inoperable or faulty cellular phones shall be replaced within thirty (30) minutes of detection of the fault.

Electronic Mail (e-mail)

Contractor shall maintain a reliable e-mail service, capable of receiving attachments, for the Contractor's project manager and each Supervisor/Lead. The Contractor's email addresses shall be provided to the Department's Project Manager or their designee at the commencement of this Contract. E-mail addresses for any new or additional Supervisors/Leads shall be provided to the Department when placed into service. All e-mails associated with this Contract shall fall under the Department's requirements for Public Records requests and must be retained for three (3) years.

Public Address System

Each Service Patrol vehicle shall be equipped with an external speaker, public address system with an "air horn" feature.

Specifications are outlined in Appendix B.

20. SERVICE PATROL VEHICLE ACCESSORIES/PARTS/TOOL BOX REQUIREMENTS

Each Service Patrol vehicle shall, at a minimum, have a toolbox containing tools for minor roadside repairs.

Specifications are outlined in Appendix B.

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21. MAINTENANCE OF SERVICE PATROL VEHICLES

The Contractor shall perform all necessary Service Patrol Vehicle maintenance outside of the service periods specified herein.

a) Vehicle exteriors and interiors shall be kept neat, clean, and polished, and shall be maintained in conformance with the requirements of the Motor Vehicle Code, applicable Florida Statutes, and Rules of the Department of Highway Safety and Motor Vehicles.

22. SERVICE PATROL VEHICLE INSPECTIONS

Prior to the beginning of each shift, the Contractor shall inspect each patrol vehicle and its associated equipment, accessories, and parts to ensure they meet all specifications and requirements contained herein.

a) Should the AVL (GPS) system be inoperable, the vehicle shall not be placed into service until the system is functioning and shall be at the expense of the Contractor.

All Service Patrol vehicles are subject to inspection by the Department's Project Manager or their designee at any time. Any deficiencies noted during these inspections will be corrected prior to the deficient vehicle being used on a service patrol. Inspections and corrections of the deficiencies shall be documented and provided to the Department.

The Department reserves the right to reject any vehicle prior to being assigned to duties related to this Contract. At any time during the term of this Contract, the Department can request a vehicle be removed from service for safety reasons and/or appearance. The Department's Project Manager or their designee will provide written notice with cause for the removal. The Contractor will be responsible for immediate replacement of the vehicle to maintain designated service levels.

The Service Patrol vehicles shall be kept neat and clean, and shall be maintained in good condition. The Operator(s) must comply with the Department's ***Tobacco Use Policy*** Topic No. 001-010-015.

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23. SERVICE PATROL OPERATOR REQUIREMENTS

Service Patrol Operators shall be competent in the tasks of operating the Service Patrol vehicle and providing safe and proper discharge of the service responsibilities outlined herein.

Rejection of Driver/Operator, Supervisors, or Managers

The Department reserves the right to reject, without reason or explanation given, any Drivers, Operators, Supervisors/Leads, or Managers prior to their being assigned duties related to this Contract.

Removal of Driver/Operators

The Department reserves the right, without reason or explanation given, to require the Contractor to relieve an employee from duty assignments and/or bar an employee from further service under this Contract at any time.

Operator Resumes

All operators shall be competent in the tasks of operating the Service Patrol vehicle and providing safe and proper discharge of the service responsibilities outlined herein. The Department reserves the right to reject Service Patrol operators, for just cause, prior to being assigned duties. The Department also reserves the right to require removal of any employee from this contract who cannot perform the duties or becomes a discredit to the Department.

The Contractor shall maintain and provide, upon request of the Department, resumes of the Management, Supervisors/Leads, Service Patrol Operators and potential Service Patrol Operators.

The resumes shall contain verifications that the employee complies with the following requirements:

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a) Minimum age of eighteen (18) years old
b) Speaks and understands English fluently
c) Demonstrated ability to exercise sound judgement
d) Documented mechanical background to perform the required vehicle repairs
e) Possesses a class “E” or higher driver’s license in accordance with the Florida Motor Vehicle Code. Contractor is responsible for ensuring the Service Patrol Operators maintain current and valid licensing requirements throughout the term of the contract
f) Verification of “safe driving record”
g) References which have been verified by Contractor supervisor personnel or a service paid for this purpose
h) Results of driving record and criminal background checks

Driving Record and Criminal Background Checks

The Contractor will conduct driving record and background checks for all employees of the Contract at (or prior to) the contract begin date and as new employees are hired. Copies shall be provided when requested by the Department throughout the term of the Contract. Contractor shall conduct routine driver’s license checks every six (6) months to ensure ongoing compliance with FDOT ***Driver’s Records Requirement Procedure*** (topic number 250-000-010).

The Department’s Project Manager or their designee may have the Contractor conduct additional checks on approved drivers at any time during the term of the contract, at Contractor’s expense.

a) The Contractor shall furnish to the Department the name, date of birth, social security number, and address of all applicants for employment on this contract via Department provided Security Access Request (SAR) and Joint Task Force (JTF) forms.
b) The Department’s Project Manager or their designee may have one or more of the following conduct driving and/or criminal background checks on the applicant(s):

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Florida Department of Law Enforcement (FDLE), Florida Highway Patrol (FHP), the Department, or other authority approved by the Department.

Operator Security Clearance for Use of SLERS

All Managers, Supervisors/Leads, Drivers, and Operators must successfully complete the Joint Task Force (JTF) Application for the State Law Enforcement Radio System (SLERS) criminal background check. This background check is performed by the Florida Department of Law Enforcement. District Program Managers and Contractors shall ensure all criteria have been met and that all steps in the application process are taken in accordance with the Joint Task Force Statewide Law Enforcement Radio System Standard Operating Procedure (SOP).

a) All Managers, Supervisors/Leads, Drivers, and Operators will be required to submit to fingerprinting as part of the FDLE criminal background check, required for access to SLERS. This can typically be done at a designated DHSMV facility at no cost to the Contractor. Any costs arising from this requirement shall be the responsibility of the Contractor.
b) Drug free in accordance with Section 112.0455, Florida Statutes, prior to beginning operations. Additional testing will be in concurrence with the Department's ***Drug Free Workplace and Testing Policy*** (Topic No. 001-250-013) and at a minimum of every six (6) months.

Potential security clearance denial reasons may include:

- The applicant has been convicted of a felony offense.
- The applicant is current on probation for any offense or has charges pending (felony or misdemeanor).
- The applicant has been convicted of a misdemeanor offense involving any type of theft, violence, or drug offenses within the past three (3) years.
- The applicant's driver's license is currently suspended or revoked for any reason.
- The applicant has been convicted of a crime involving domestic violence or currently has a restraining order involving domestic violence or threats.

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- The applicant has been arrested for any charge involving resisting arrest, battery, or assault on a law enforcement officer.
- The applicant is wanted for any criminal offense.
- The applicant is illegally residing in or is not approved to work in the United States.
- The identification of adverse Homeland Security intelligence information for the applicant.
- At the discretion of the Security Manager based on any other adverse information regarding the applicant.

If a Road Ranger Operator's security clearance is denied based on any of the above denial reasons, they will be disqualified as an applicant for the Road Ranger program. If an applicant suspects an error in information received, they can appeal the decision directly to FDLE (contact information to be provided by the Department). The applicant will not be permitted to operate as a Driver, Operator, or Supervisor/Lead without clearance from FDLE.

24. DRIVER/OPERATOR CONDUCT AND GROOMING

a) The Drivers/Operators shall be professional and courteous at all times, and shall exercise good sound judgment in carrying out their duties and shall conduct themselves in such a manner that will reflect favorably upon the Department.

b) Drivers/Operators shall wear clean uniforms at the start of each shift. All uniforms items shall be maintained in good repair and appearance.

Uniform specifications are outlined in Appendix B.

c) Service Patrol Operators shall display clearly visible FDOT approved Road Ranger Operator picture identification at all times.

<u>Alcohol/Drugs</u>

a) Service Patrol Operators shall not have the smell of alcohol, be intoxicated or under the influence of alcohol or any controlled substance or medical

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prescription or any other drug that causes impairment anytime while working or reporting for duty under this contract.

b) The Contractor shall never allow a Service Patrol Operator to work under this contract if they feel he/she is impaired in any way.

c) No tobacco use will be allowed in Service Patrol vehicles or while involved in roadway incidents. Tobacco use will only be permitted on breaks outside of Service Patrol vehicle, away from public view.

d) If the Contractor determines that a Service Patrol Operator reported for work or was working while in violation of any part of this section, they shall immediately and permanently remove the Service Patrol Operator from eligibility to work under this contract.

25. TRAINING REQUIREMENTS FOR SERVICE PATROL OPERATORS

All Service Patrol Operators shall obtain the following training and certifications prior to implementation of Road Ranger services and before scheduling of Road Ranger Basics (described below) with the Department, unless otherwise specified. The cost for training and licensing operators is the responsibility of the Contractor.

a) Intermediate Maintenance of Traffic (MOT)/Temporary Traffic Control (TTC);
b) Basic First Aid Certification
c) Cardio-Pulmonary Resuscitation (CPR) Certification
d) Road Ranger Basics – Department provided training (One 8-hr day)
    a. SHRP 2 National Traffic Incident Management Responder Certification – Department provided training (4-hours)
    b. RISC Training (1.5-hours)
    c. SLERS Training (1.5-hours) – This training provides an overview of SLERS and how the system operates. Only Florida Highway Patrol or JTF approved training materials may be used for the SLERS training;

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e) Annual Road Ranger Refresher Training – Department provided and/or approved (1-hour)

Road Ranger Basics for new hires, beginning after the initial start date for contracted term, can be divided into 2 segments at the discretion of the Department and based on course availability. SLERS and RISC Training shall be completed prior to Operator being assigned to solo patrol duties. SHRP-2 Certification shall be completed within 6-months of the date of hire.

Under no circumstance shall a Service Patrol Operator be allowed to operate under this Contract if their various mandatory certifications/trainings have expired. Contractor shall ensure that all Service Patrol Operator Certifications remain valid for the duration of the contract and maintain documentation of all required training. The Contractor shall maintain a current listing, by Service Patrol Operator names, documenting the types of training received, date of training/certification, expiration date, location of training, and instructor's name. This list shall be provided to the Department's Project Manager, or their designee, during the designated performance review.

If the Contractor chooses to do their own training, the trainer(s) must be fully certified and licensed (if required) to conduct the training.

Special Training – The Department may identify "special training" at a time after the start date of this contract. If the Department requires the Road Rangers to attend special training or meetings that are not specified in this Contract, the Department will pay all charges through a Letter of Authorization.

26. SAFETY RULES AND GENERAL REGULATIONS

a) Conform to the latest Department ***Conduct Standards Rules*** and the ***Ethical Conduct***

b) Inspect assigned vehicles at the beginning of each shift, and take action as necessary to ensure that they are in compliance with all specifications and requirements of this procedure

c) Keep all communications radios and monitors "on" and the volume "up".

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d) Remain on their assigned Patrol Route and depart only as directed by Law Enforcement, the Transportation Management Center or FDOT

e) Obey all traffic laws

f) Exercise caution and safety at all times

g) Use extreme caution in moving all disabled vehicles

h) Service Patrol Operators shall remain on scene until all responders have left, unless dispatched to another event.

- Established protocols for prioritizing calls should be considered when leaving an event prior to its conclusion.
- If responders are in a potentially hazardous location and Road Ranger is dispatched to another event, Road Ranger will coordinate response from another Road Ranger unit, if available.
- Prior to departing a scene where other responders remain, the Service Patrol Operator shall communicate intent to leave with primary LEO or tow truck operator and coordinate any additional need for TTC.

i) Operators shall not carry firearms or other weapons either on their persons or in the vehicle

j) Operators shall not accept gratuities, gifts, or compensation of any type from motorist or others to whom service is provided

k) Use flashing light bars only when merging or exiting from traffic lanes to an incident site or to warn traffic when performing incident management services

l) All Road Ranger operators and all passengers shall wear seat belts or utilize occupant restraint systems while operating or riding in a Road Ranger vehicle.

m) Road Rangers shall not share incident photos or videos via text or email, except to the RTMC or Department's TIM team as requested. Road Rangers shall not post incident information, photos, or video on any social media site.

n) Operators shall not smoke or use tobacco in the Road Ranger Vehicle or while assisting motorist, in accordance with Department ***Topic No. 001-010-015, Smoking Policy.***

o) Survey cards should not be completed for the motorist

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p) Conform to the latest Department Conduct Standards Rules and the Ethical Conduct Rules. **Each Road Ranger Service Patrol Operator shall be provided a copy.**

27. AUTHORIZED SERVICE PATROL VEHICLE STOPS

Service Patrol Operators shall not stop continuous patrolling of their designated Patrol Routes without authorization of the Department. Authorized stops shall include, but are not limited to:

a) Assisting stranded motorist(s) with minor repairs.

b) Removing disabled vehicles from travel lanes.

c) Removing small spills (non-hazardous) and debris from the travel lanes.

d) Assisting Law Enforcement Officials with crash site traffic management.

e) The initial check of “abandoned” vehicles to confirm that the vehicle is without occupants or animals that may be sick, injured or deceased.

f) Red Tagging abandoned vehicles with FDOT Event number.

g) Meal and/or rest breaks

- Contractor shall submit a staffing proposal with shift and break information to the Department’s TIM Program Manager or their designee for approval. The Department will have final approval authority on all Service Patrol schedules and patrol hours. agreed upon by the District Project Manager or their designee.

h) Restroom breaks

- Outside of an emergency, breaks shall not be taken between 7:00 A.M. - 9:00 A.M. and 4:00 P.M. - 6:00 P.M. on any week day. Meal periods shall be postponed or interrupted by the Department if the immediate services of the Service Patrol Operator are needed.

i) Completing Road Rangers Service Patrol Log or SPARR entry for five (5) minutes.

j) Re-fueling Service Patrol Vehicle.

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k) Assisting the Department, Department Contractors, or Emergency Responders with Incident Management.

Restrictions

Road Ranger Service Patrol vehicle(s) may not leave a Patrol Sector or "beat" during scheduled hours, except for the following reasons:

a) Mechanical failure of the Service Patrol vehicle. In this instance, a backup vehicle shall be put into service immediately.
b) To replenish fuel at the nearest facility
c) In response to an order from a law enforcement officer, fire department official, or at the direction of the Department.
d) To bypass traffic congestion to reach an incident or lane blocking event.

28. TOWING REQUESTS FROM MOTORISTS

IN NO EVENT SHALL THE CONTRACTOR OR THE ROAD RANGER SERVICE VEHICLE OPERATOR PROVIDE OR RECOMMEND ANY TOWING, REPAIR SERVICE OR FACILITY TO THE DISABLED MOTORIST.

If the motorist requests the assistance of a motor club, the Service Patrol Operator will assist the motorist with the cellular phone call. If the motorist cannot identify a towing vendor and requires further assistance, the Service Patrol Operator will assist by notifying the RTMC of the need for an FHP rotation wrecker, as requested by the disabled motorist.

29. SURVEY CARDS AND OTHER PRINTED MATERIALS

The Contractor shall be responsible for all costs associated with the printing and distribution of a Department-designed Customer Service Survey Card. Cards are double-sided, full color business cards that direct motorist to a website to complete a customer service survey.

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a) Using a format approved by the Department, the Contractor shall have prepared one thousand (1,000) Survey Cards prior to beginning Road Ranger Service Patrol activities.
b) The Contractor shall report how many survey cards are printed and/or distributed during the designated performance review.
c) The Contractor shall be responsible for ensuring that each active Service Patrol Vehicle is supplied with an adequate number of cards at all times.
d) The Department reserves the right to change this method of collection at any time. The Department will provide at least thirty (30) days' notice to the Contractor of any changes that require the printing of new cards.
e) The Department may require the Contractor to distribute other printed material to motorists, such as maps or safety information. Any additional printed materials outside of those clearly defined in this contract will be provided by the Department.

30. SERVICE PATROL DRIVER RRMA OPERATOR LOGS

a) Service Patrol Operators shall log all actions into the RRMA.
b) Contractor shall notify the RTMC immediately of technical issues.
c) The Department reserves the right to change the type of log data required or the method of collection the contractor will utilize and reporting timeframe at any time.

31. DAMAGE TO MOTORIST PROPERTY

a) The Contractor shall bear the cost of repair for any damage caused by negligence of the operator to the Department's or a motorist's property while performing service under the Contract.
b) The Contractor shall notify the Department, in writing, of any and all "claims" of injury or damage by the Contractor within twenty-four (24) hours of the claim being made.

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32. SPONSORSHIP

The DEPARTMENT has entered into a contractual agreement with a marketing firm for the purpose of negotiating with potential sponsors and securing financial support for the Road Ranger Service Patrol program. In addition to displaying the SPONSOR's logo and company name on Road Ranger Service Patrol vehicles, financial support is given in exchange for the following activities:

Distribution of Promotional Materials

The Sponsor shall have the right to develop other promotional materials to be distributed by Road Rangers to motorists who receive services. All such materials shall be submitted by the Sponsor for FDOT's written prior approval before such distribution. The promotional materials shall be paid for by the Sponsor directly at no cost to FDOT or Contractor. The Sponsor will have the right to provide, and Road Rangers will distribute, an optional online survey for assisted motorists to provide their feedback via a website that will be provided by the Sponsor.

Special Events

The Sponsor shall have the rights and benefits of promotional use of the Road Ranger Service Patrol Vehicles and their operators for events such as child safety seat inspections, the fairs, parades and other safety events as may be jointly agreed upon, subject to the availability as reasonably determined by FDOT. The Sponsor shall make written requests to Department for such use with a minimum of thirty (30) days' notice in advance. Scheduling and coordination will be between the Department and the Road Ranger Service Patrol Contractor. Participation of Service Patrol Vehicles and Road Rangers assisting with the special event/publicity shall not hinder the normal contracted operations of the Road Ranger service provider. The Sponsor shall be responsible to pay for the driver's wages and pay Federal mileage rates only and shall compensate the Road Ranger service provider directly.

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33. LIQUIDATED DAMAGES DUE TO NON-PERFORMANCE

It is recognized that the certain infractions will be construed by the DEPARTMENT as non-performance and shall carry an immediate reduction in payment. These infractions can include, but are not limited to:

1. Truck not properly equipped, marked, or maintained - $60.00 per 1-hour;
2. No cellular telephone or inoperative telephone -$60.00 per 1-hour;
3. Sleeping on Duty - $2,000.00 per occurrence;
4. Incomplete Motorist Aid Service Logs -$45.00 per occurrence;
5. Improper uniforms -$50.00 per occurrence;
6. Crossing of medians, except as defined in Appendix A: Duties and Responsibilities - $120.00 per occurrence;
7. Speeding or driving in an unsafe manner - $120.00 per occurrence;
8. Non-compliance of DEPARTMENT Conduct Standard Rules, latest edition and/or Ethical Conduct Rules latest edition -$50.00 per occurrence;
9. Use of the vehicle for personal or other business of the CONTRACTOR, outside the scope of service - $75.00 per occurrence;
10. Covering DEPARTMENT identification marking -$50.00 per occurrence;
11. No representation at required meetings -$100.00 per occurrence;
12. Service Patrol Operator under the influence of alcohol or a controlled substance, rendering the operator impaired - $10,000 per occurrence;
13. Tampering, removing, disengaging, or disabling radio, video, AVL, or other data collection or communications components - $500 per occurrence, plus $60.00 per 1-hour of lost service/data collection;
14. Improper communications on SLERS - $500 per occurrence;
15. Safety violation by Operator/Driver (examples: not wearing/using safety equipment, careless operation of the vehicle, etc.) - $100 per occurrence;
16. Service Patrol Vehicle and/or Operator unavailable for scheduled patrol or dispatch - $60.00 per 1-hour;
17. Failure to provide the minimum number of service patrol hours - $60 per hour below monthly minimum requirement

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18. Not deploying the backup vehicle within thirty (30) minutes from the breakdown of the regular vehicle - $60 per hour, until vehicle is made available;
19. Service Patrol Vehicle Operators not patrolling their beat in a continuous loop - $100.00 per occurrence/per day;
20. Road Ranger vehicle off route more than one (1) mile without approval or direction by law enforcement officer or other official - $100 per occurrence;
21. Unauthorized leave of Service Patrol vehicle from service patrol coverage area/zone - $60.00 per 1-hour;
22. Failure to comply with training requirements as specified in this contract - $50 per day/per employee for each day out of compliance;
23. Failure to change shifts within the allotted thirty (30) minutes - $50 per occurrence/per unit;
24. Not maintaining the interiors and exteriors of Service Patrol Vehicles in neat and clean, as described in this contract - $50 per occurrence/per day;
25. Recommending a tow company - $500.00 per occurrence for confirmed reports of this violation;
26. Accepting tips - $500.00 per occurrence for confirmed reports of this violation;
27. Tobacco use in vehicles or in commission of Service Patrol duties - $500.00 per occurrence;
28. Failure to meet implementation date requirements - $1,500 per day of delayed implementation on I-75 and $2,500 per day of delayed implementation on I-95.
29. Supervisor/Lead not available - $200.00 per day;

    Process is as follows: Department representative will call RRSP supervisor. If no response is received on the first call, a message will be left. Department representative will call again 15-minutes later. If no response is received, a second message will be left. If the supervisor/lead has not responded within 15-min of the second call, liquidated damages will be assessed.
30. Supervisor/Lead (or designee) failed to respond to incident scene within one (1) hour after notification by RTMC - $100 per occurrence;

    Process is as follows: the supervisor will be called by the Department representative. If the supervisor cannot arrive at the incident scene within 30

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minutes due to unforeseen circumstances (traffic delays or diversion to multiple incidents), they must notify the RTMC. If no call is made and supervisor has not arrived at the scene, liquidated damages will be assessed;

31. Failure to participate in annual Road Ranger training for all operators - $1,000.00
32. Failure to comply with requests from the TIM Program staff - $100.00 per occurrence.
33. Failure to comply with lawful orders of a law enforcement officer - $1,000.00 per occurrence.
34. Failure to maintain an average response time of 30-minutes or less on RTMC dispatched events, 90% of the time - $12,500 per month.

The list above is not inclusive of all non-performance payment reductions. For any non-performance payment reductions not listed above, the Department shall assess a payment reduction between the amounts of $50.00 and $500.00 per occurrence and/or per day, depending on severity of the infraction and in alignment with the damages outlined above.

The reduction in payment as described will continue to be applied daily until the Contractor complies with the terms and conditions of the contract. It shall be the Contractor's responsibility to notify the Department's Contract Project Manager or their designee when in compliance. Application of this non-compliance reduction in payment will not waive the Department's right to terminate the Agreement in the interest of the Department.

At the discretion of agreement between the Project Engineer, Contract Manager, and/or TIM Program Manager, the Department may elect to forego certain deductions based on traffic volume intensity, or other circumstances that the Department deems to be outside of the Contractor's control, or what the Department considers sufficiently documented by any party.

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34. CONTRACT MONITORING/PROGRESS REPORTING/COORDINATION

The Department will use Contractor reports, RTMC/Sunguide reports, training documentation, feedback from the RTMC, TIM Program personnel, and other incident responders, motorist survey responses, etc., along with periodic contact with the Contractor to monitor the compliance with agreement terms and conditions, applicable laws, and regulations. Contract monitoring will also be used to verify that activities are being, or have been, performed in accordance with this agreement; that deliverables have been completed; that funds have been accounted for and used appropriately; and that the goals and objectives of this Contract are being met by the Contractor.

The Contractor is required to develop and maintain a schedule to assist with coordination and monitoring of work performed under the Contract. Coordinate the format of the schedule and the frequency of updates with the Department's Project Manager, or their designee.

The Contractor shall submit invoices on a monthly basis in a format acceptable to the Department. The Contractor shall provide all supporting documentation, as requested by the Department, relevant to the period associated with a given invoice.

The invoice shall list Department-authorized extended services and charges on a separate line, indicating the date(s) and time(s). The invoice shall list all reductions for deficiencies or lack of services provided.

The Department may withhold some or all of the payment for a given invoice if, in the Department's judgment, the Contractor has not fulfilled all requirements of this contract during the invoicing period or is unable to produce documentation that supports charges submitted as part of the invoice.

The Department will document the amount of and reason(s) for invoice payment to be withheld. The Department will determine whether withheld payment will be deleted from

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the total contract amount or provided to the Contractor as part of another contract invoice. The Department will notify the Contractor, in writing, of its intent to withhold all or part of an invoiced payment within 10 business days of receipt of the affected invoice.

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Appendix A: Duties and Responsibilities

The Service Patrol Operator shall perform the following duties and responsibilities in an efficient and professional manner.

Pre- and Post-Shift

a) Inspect assigned Service Patrol Vehicle(s) and take action as necessary to ensure they are in compliance with all specifications and requirements of this Contract.
b) Vehicles should be stocked, refueled, and ready for deployment for assigned shifts and/or as designated for any emergency response scenarios.
c) Insure all communications devices (SLERS, laptops/tablets, cell phones, etc.) are secured.
d) Verbally notify RTMC at start and end of patrol service via designated communications protocols.

Patrolling

a) Keep all communications radios and monitors ‘on’ and the volume ‘up.’
b) Notify RTMC any time Service Operator is out of service and/or unavailable to take calls.
c) Respond to all RTMC dispatches.
d) Provide firsthand, real-time information to the RTMC and/or TIM Program staff about any roadway incidents, observations of abnormal roadway conditions, or as requested.
e) Create, update, and close events in the Department’s Road Ranger software application.
    - Road Rangers must have a method for maintaining manual motorist aid service logs in the event of technical issues that prevent activity logs being generated through the Department’s software.
        i If Road Ranger laptop/tablet software is non-operational, Road Range Operators will notify the RTMC immediately. Road Rangers will follow Department designated procedures for manually documenting events and related information until the issue is resolved.

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ii The Contractor must coordinate with the Department to insure all manually logged events or motorist aid service logs collect appropriate information to satisfy the Department's needs for activity and performance measure data reports. Contractor will submit all logs upon the Department's request.

f) Patrol the designated areas in continuous loops seeking disabled vehicles, stranded motorists, debris in the roadway, spilled loads, vehicle crashes, obstructions to traffic and other potential hazards.

g) Service Patrol operators will normally enter and exit at the nearest interchange, rest area, or designated paved crossovers. Crossing the median will be allowed in emergency situations as defined by the Department or as approved/directed by a law enforcement officer.

h) Service Patrol Operators shall not use road shoulders during normal patrolling. Using due care and at a reasonable and prudent speed, Service Patrol Vehicles may use the road shoulder when responding to a specific emergency request, if it allows them to reach the destination faster.

i) Any path or maneuver contrary to law or this contract must be cleared by law enforcement and Service Patrol Operators shall comply with lawful orders of Law Enforcement.

j) If necessary, when responding to crashes or other incidents, the Service Patrol Operator shall communicate to the Law Enforcement officer at the scene the need to gain access to the scene.

k) All inquiries into controversies shall be handled by the Department's TIM Program Manager or their designee

l) Service Patrol Operators shall use their horn and/or air horn when necessary to alert drivers.

m) All requests for wrecker or towing services shall be coordinated through the RTMC. Road Rangers shall not request or recommend wrecker or towing services for the motorist.

n) Offer Road Ranger survey cards to motorists who receive assistance

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o) Wear an FDOT-approved ANSI/ISEA 107-2015 (Class 3) high visibility safety uniform, vest, and/or rain suit at all times while outside the Service Patrol Vehicle.

p) Ensure all communications equipment (SLERS, laptops/tablets, cell phones) are secured any time the Service Patrol Operator is outside the vehicle.

- On-duty Service Patrol Operators shall have SLERS and cell phones available for emergency contact when outside of the vehicle.

Clearing and Clean Up

a) Clear lanes of all disabled vehicles encountered in the Road Rangers' Service Patrol Sector.

b) Remove small non-hazardous debris from the roadway and paved shoulder area and place in areas for collections by the Asset Management team.

c) Any debris too large, or unsafe, for the Road Ranger vehicle to transport to the designated area shall be moved out of the travel lane and away from shoulder, if possible. The Service Patrol Operator will notify the RTMC of the location and item description.

Notifications

Notify the Department RTMC or Project Manager for the following:

a) All major incidents or crashes resulting in road or lane closures.

b) Crashes, emergencies, law enforcement situations, or responding to directives given by external agencies outside the scope of the contracted services.

c) All abandoned vehicles

d) Any disabled vehicle causing lane blockage or posing risk to motoring public and/or responders

e) Any incidents that may warrant RISC activation.

f) Large spilled loads or large debris, or in other situations as appropriate.

g) Spilled loads or large debris or incidents requiring advanced maintenance of traffic (MOT) or roadway repairs.

h) Verified fires that will impact traffic and lane blockage.

i) Any road damage or other damage needing repair.

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Advise Motorists

Motorists shall be initially advised, prior to providing services, of the following:

a) That moving, fueling, servicing their vehicle or calling a towing service is being provided FREE of charge as a courtesy by Florida Department of Transportation.
b) Once the vehicle is cleared from the travel lanes, Service Patrol Operators may only attempt minor repairs not to exceed approximately fifteen (15) minutes.
c) Should repairs not prove possible within the fifteen- minute time frame criteria due to their complexity, the motorist shall be allowed up to three (3) telephone calls of three (3) minute duration each, using the Service Patrol Vehicle's cellular telephone to make arrangements for further service, towing, or transportation.
d) All costs for further service, towing or transportation must be paid by the motorist.
e) The Service Patrol Operator shall never comment on the quality or lack of quality of any repairs or work done by dealerships or garages.
f) In no event shall the Contractor or Service Patrol Operators provide or recommend any towing, repair service or facility.

Assistance to Motorists

The Service Patrol Operators shall provide prompt, courteous and skillful assistance to motorists as follows:

a) Move the disabled vehicle from traffic lanes, either pushing, pulling, or towing.
b) Change flat tires.
c) Provide jump-starts.
d) Provide the minimum amount of unleaded (eighty-seven [87] octane) fuel to motorist enabling them to reach the closest fueling location. (Generally, motorists should not be provided more than 1-gallon of fuel.)
    - Fuel logs shall be maintained by the Contractor
e) Provide water for radiators and / or chilled bottled water for drinking.
f) Assist motorist with mechanical failures and perform minor repairs where feasible (maximum fifteen (15) minutes).

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g) Never leave a motorist stranded with a disabled vehicle in a potentially unsafe or dangerous location on the roadway. Make a concerted effort to remain with motorists in dangerous environments until help arrives or they can be relocated to a safe area.

h) The Contractor or Service Patrol Operators shall not charge any fees, accept any gratuities, recommend secondary towing service, or recommend repair/body shops. Violation of this requirement shall constitute grounds for immediate removal of employee and possible cancellation of this contract.

Disabled Vehicles

a) The Service Patrol Operator shall offer its services to all stranded motorists. Disabled vehicles shall be removed from the travel lanes to the road shoulder or nearest safe zone, with the least practical delay. The RTMC will be notified if the vehicle is relocated any significant distance.

b) Should a motorist refuse to allow a disabled vehicle to be cleared from the travel lanes, the Service Patrol Operator shall contact the RTMC for assistance, and shall remain on the scene until FHP or Law Enforcement personnel arrives or until advised by RTMC Operator to leave.

- The Service Patrol Operator shall provide the motorist with a copy of the "Move It Law" (Florida Statute 316.061) card informing them that they may be cited for a nonmoving violation, punishable as provided in chapter 318.

c) The Service Patrol Operator shall not attempt to move such disabled vehicles where injuries or fatalities are involved until directed to do so by authorized Law Enforcement personnel.

d) All disabled vehicles that are relocated shall be parked with the wheels turned away from the roadway and the parking brake set if possible.

Abandoned Vehicles

a) When an abandoned vehicle is observed, the Service Patrol Operator shall contact the RTMC to report the vehicle's location, make, color, and body type, license plate number and whether or not it is impeding traffic. The Operator

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shall tag the vehicle with an abandoned vehicle tag (red tag) depicting relevant the time/date the vehicle was discovered and FDOT event number. Abandoned vehicle tags (red tags) should conform to Department standards and include reference to Florida Statute 316.1945(1)(a)11 and 315.194(3)(b)2.

b) If the abandoned vehicle is impeding traffic or is considered to be a potential safety hazard, the Service Patrol Operator shall call the RTMC to report the vehicle location and request to relocate the abandoned vehicle.

- Upon relocation, the Service Patrol Operator shall immediately report the new location to the RTMC and request notification of appropriate law enforcement agency.

c) If the abandoned vehicle is in a travel lane or otherwise hazardous position, the Service Patrol Operator shall communicate the need for relocation to the RTMC. Upon approval by the appropriate law enforcement agency, the Service Patrol Operator shall relocate the vehicle to the shoulder or nearest safe zone. If the vehicle cannot be repositioned, the Service Patrol Operator shall provide MOT/TTC until law enforcement or the dispatched towing service arrives on scene.

Crashes

a) The Service Patrol Operator shall call the RTMC to request FHP or local Law Enforcement, Fire and Rescue assistance as necessary at crash scenes and shall remain at the scene until the appropriate assistance arrives.

b) If the crash involves no significant injury or fatality, the vehicle(s) shall be removed from the travel lanes to the road shoulder or nearest safe zone, with the least practical delay. If the crash vehicle(s) are relocated any significant distance, the Service Patrol Operator shall notify the RTMC so the responding law enforcement agency can be updated of the new location.

c) If the crash involves significant injury or fatality, the Service Patrol Operator shall avoid disruption of potential crime scene elements, while providing MOT/TTC. The Service Patrol Operator shall then work with the investigating law enforcement agency and responding towing company to clear travel lanes when appropriate to do so.

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d) The Service Patrol Operator shall follow all directions of Law Enforcement personnel.

e) The Service Patrol Operator is not to question or complain to Law Enforcement personnel directly, but shall inform the Department's TIM Program Manager or their designee of any incident where there is a difference of opinion, procedure or conflict with policies.

f) The Patrol Operator shall protect crash scenes by setting highway flares, cones, flagging, and/or flashing amber/white lights, arrow boards, and assisting in traffic control consistent with FDOT design standards.

g) Road Rangers shall not depart the scene before coordinating with on-scene responders including law enforcement, wrecker operators, etc.

h) If the Service Patrol Operator anticipates a lane closure of thirty (30) minutes or more, the Service Patrol Operator will make a request to the RTMC for asset management to be dispatched for longer-term TTC.

Assistance to Emergency Responders, FDOT, and/or FDOT Representatives

a) The Service Patrol Operator shall promote good will and cooperation while rendering assistance and shall follow the instruction of and obey the orders of Law Enforcement Personnel.

b) The Service Patrol Operator will provide appropriate Temporary Traffic Control (TTC) for Law Enforcement Personnel or other responders working in or alongside the travel lanes, especially when located in potentially hazardous areas such as curves (vertical or horizontal), narrow lanes, construction zones, blind spots, etc.

c) Any reasonable request by Law Enforcement Officials to provide assistance outside of the designated patrol highways shall be honored. The Operator must notify the RTMC of the deviation from their assigned beat.

Moving Disabled Vehicles from Traffic Lanes

Service Patrol Operators shall utilize all safety precautions, procedures and appropriate methods (pushing, pulling, dragging, or towing) when relocating

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disabled vehicles from traffic lanes to the shoulder or nearest safe zone. The Service Patrol Operator should do so with the least delay practicable.

a) Vehicles disabled due to crashes without injuries or fatalities shall not be moved without permission of the driver, except when directed by employees or agents of the Department, Law Enforcement Officials, Expressway, or Turnpike Authority (Florida Statue 316.061).
b) Drivers of vehicles involved in crashes without injuries or fatalities who refuse to relocate their vehicle from the travel lane shall be provided a copy of the "Move It Law" (Florida Statute 316.061) card informing them that they may be cited for a nonmoving violation, punishable as provided in chapter 318.
c) If the crash involves an injury or fatality, the vehicles shall not be moved until directed by Law Enforcement Officials.
d) Disabled vehicles on roadways or bridges without shoulders or sufficiently wide emergency lanes shall be pushed or towed to a safer location off the next exit ramp or an alternate location off the bridge or main traffic lanes/ramp within approximately 1/2 mile of the exit.
e) The Service Patrol Operator shall notify the RTMC of the vehicle's new location.

Transporting People

a) If vehicle assistance or towing services cannot be obtained for a motorist(s), the Service Patrol Operator shall notify the RTMC immediately prior to the beginning and at the completion of the transport, with the location and mileage.
b) Transport procedure must be established in Contractor's SOP and be approved by the Department's Project Manager or their designee. Transport procedures must be followed when requesting to transport.

Animals

a) After clearing the travel lane, the Service Patrol Operator shall call the RTMC to report the location, type, and condition of injured or dead animals. Should a

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Service Patrol Operator find a live animal in an unoccupied vehicle, they shall notify the RTMC to request assistance.

Additional Duties

a) Service Patrol Operator will perform any extraneous duties and/or accommodate requests by the Department's TIM Program Manager or their designee, within reasonable context of Road Ranger Service Patrol Operator duties.
b) Provide incident-specific information or issues with on-scene coordination, communications, etc. to the TIM Program staff.

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Appendix B: Uniforms, Equipment, Supplies, Expendables

Uniforms

1. All Operators shall wear a FDOT approved Road Ranger Operator picture ID that is visible while on duty;

2. The DEPARTMENT will determine all emblems, patches, and logos. The District's Sponsor may elect to provide uniform patches for the hats, shirts, sweatshirts, jackets and safety vests for existing uniforms or new uniforms for each Road Ranger. The Sponsor has the option to provide new Road Ranger hats, shirts, sweatshirts, lightweight jackets and safety vests that meet the specifications required by the procedure ***Road Ranger Operations, 750-030-015.***

3. Uniforms should provide maximum visibility and safety for the Road Ranger Safety Patrol Operator, with consideration of the extreme weather conditions operators will be exposed to. Uniforms shall comply with any standards established as part of the statewide Road Ranger program. Uniforms shall consist of dark blue, long pants with high visibility biometric, retro-reflectivity; a high visibility yellow colored shirt with ANSI/ISEA 107-2015 (Class 3) integrated striping, or a white or high visibility yellow shirt with an ANSI/ISEA 107-2015 (Class 3) vest; black footwear; and high visibility yellow cap. Shirts or vests (outermost layer) shall have "FDOT Road Ranger" printed on the back. Department approved patches will be applied to the shirt or vest (outermost layer). If pants have beltloops, a black belt with non-scratch buckle shall be worn. Road Rangers shall have rain gear and cold weather gear that meets ANSI/ISEA 107-2015 (Class-3) standards or can be worn with an ANSI/ISEA 107-2015 (Class-3) vest.

Due to the large number of uniform options available, Contractor may submit different configurations to the Department for approval.

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A uniform concept shall be approved by the Department prior to purchase and implementation. Any changes throughout the term of this contract must be approved by the Department. Final design of all uniform items may be reviewed and approved by the Central Office Traffic Incident Management/Road Ranger Program Manager, via the Department's Project Manager or their designee.

4. Operators will wear clean uniforms at the start of each shift. The uniform color combinations and configurations shall be consistent throughout their respective District;

Equipment

Each Service Patrol Vehicle shall be equipped, at a minimum, with the following equipment:

1. Light set(s) configured to illuminate the work area in or around the vehicle;
2. Equipment with the ability to jumpstart common configurations of personal and commercial vehicles;
3. One heavy-duty battery with the minimum of 750 cold cranking amps (CCA);
4. Functioning cab lighting;
5. A roof-mounted, light bar, front to rear controllable, utilizing amber colored lights. Red lights are not authorized by the Department;
6. Department-approved truck mounted dynamic message sign;
7. One (1) Five (5) gallon trash can;
8. Two (2) multi-purpose funnels;
9. Two (2) tire chock blocks;
10. Fifteen (15) 36-inch traffic cones, with reflective markings;
11. One jack, capable of lifting vehicles up to 5,000 lbs.;
12. Air compressor capable of inflating tires of vehicles;
13. Heavy duty flashlight/traffic wand;

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14. One (1) 20’ tow strap, rated at three thousand (3,000) pounds minimum
15. One (1) 20’ chain, rated at three thousand (3,000) pounds minimum
16. Rubber face push bumper
17. Universal ball mount with 1 7/8-inch, 2-inch, and 2 5/16 inch balls
18. Cellular phone;
19. Department provided radio(s) and CCTV cameras.

Tools

Each Service Patrol Vehicle shall be equipped, at a minimum, with the following tools:

1. Shovel;
2. One (1) 24-inch street broom;
3. Impact or Lug wrench to fit lug nut sizes most commonly used by vehicle manufacturers;
4. Pry bar, minimum 36 inches in length;
5. Each Road Ranger Vehicle shall have:
6. Standard tool kit with tools to perform minor repairs;
7. Rubber mallet;
8. Electrical tape;
9. Duct tape;
10. Tire pressure gauge

Expendables

Each Service Patrol Vehicle shall be equipped, at a minimum, with the following expendable items at the Contractor’s expense:

1. Five (5) gallons of unleaded gasoline and five (5) gallons of diesel gasoline in an approved container designed for that type of fuel. The container shall be labeled “UNLEADED” and “DIESEL”, respectfully;
2. Radiator water (five [5] gallons);

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3. First Responder Kit, fully stocked, including gloves and disposable face masks;
4. Two (2) 5 pound, dry chemical, ABC fire extinguishers;
5. Twenty-four (24) highway wet flares or equivalent to provide delineation in low light conditions;
6. Minimum of ten (10) gallons of absorbent material;
7. Twelve (12) bottles of drinking water;
8. Fifty (50) Department designed or approved survey cards;
9. Twenty-Five (25) Department designed or approved “Move it Law” cards.
10. Twenty (20) Department designed or approved Abandoned Vehicle tags (Red tags)
11. Should any of the equipment, tools, and/or expendables malfunction or become depleted during the shift, the Road Ranger operator shall replenish or replace these items to the required quantities as early as possible.

Communications

Road Ranger Service Patrol operators will utilize the Department’s preferred method of communications and established back-ups throughout the term of this Contract. All technology issues resulting in communications failures must be reported to the RTMC immediately and a back-up plan coordinated. The Road Ranger Service Patrol Vehicle shall be equipped with communications equipment identified in this scope and utilize communications providers that are able to provide support service for the equipment being used and the area covered by this contract, including:

Department Provided Radios

Each Road Ranger Service Patrol Vehicle shall be equipped with a radio system to enable their Operators to communicate with all other Service Patrol Vehicles, FHP and/ or the RTMC. This may include, but shall not be limited to SLERS radios. All equipment shall be maintained by the Contractor. Any supporting accessories shall be provided and maintained by the Contractor. This shall include:

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- Headset
- Cradles
- Backup Battery
- Shoulder microphones
- Other accessories deemed necessary for operations and safety

Cellular Telephones

Each Road Ranger Service Patrol Vehicle shall be equipped with an operable cellular mobile telephone with radio talk features. The cellular phones are also to be available for all motorist service contacts. The Contractor will provide one additional cellular handset, compatible with their cellular network and radio talk service, to the RTMC. The Contractor cellular handset shall be a smartphone with photo and/or video capability, compatible with RTMC communications platforms, and include an unlimited data plan with at least one gigabyte of space remaining for FDOT applications. The Contractor shall be responsible for all costs associated with the cellular telephones throughout the term of this contract. The Contractor shall obtain and maintain all necessary licenses. Phone numbers and hours of service shall be provided to FDOT Regional Transportation Management Center a minimum of 24 hours prior to a Road Ranger Service Patrol Vehicle using a new number.

Public Address System

Each Road Ranger Service Patrol Vehicle shall be equipped with an external speaker and public-address system with an air horn feature, 100 watts minimum.

AVL/GPS System

AVL system (or equivalent) compatible with Department-provided laptop or tablet (not to be disabled at any time) that provides, at a minimum, the following vehicle location information:

- Latitude and longitude or GPS location;
- Vehicle number;

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- Speed;
- Direction

Laptop/Tablet

Department will provide a laptop or tablet (including mount/pedestal) for use with the Department's Road Ranger software. Contractor shall use the Department's Road Ranger Software for incident dispatch and response documentation. Contractor will be responsible for maintenance, repairs, and/or replacement of Department provided laptops/tablets for any damage beyond normal wear and tear. Contractor shall be responsible for ensuring all equipment is securely attached and, when appropriate, in reach of the driver/operator without distraction to driving safely.
* Contractor shall provide the base for the Havis pedestal. Contractor should coordinate the purchase of base to ensure compatibility with Department-provided equipment.

Service Patrol Vehicles

In addition to the requirements outlined in Section 16: Service Patrol Vehicle Specifications, all vehicles and vehicle markings shall be in compliance with ***Road Ranger Operations*** Procedure (750-030-015-d, or the most recent version.)

Vehicle numbering (as defined in Section B of ***Road Ranger Operations*** Procedure 750-030-015-d) shall be coordinated with the Department to avoid conflicts or duplicities with other Service Patrol contracts, allowing for unique identification

Additional Conspicuity Markings

A single two (2) inch wide, red/white strip of reflective tape applied to allow the limits of the truck to be visible at night from any angle when illuminated by oncoming traffic.

- The tape should be applied at a minimum height of four (4) feet, but may vary according to truck or body configuration.
- On the rear of the vehicle, the tape shall be applied to the upper portion of the bumper.

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- Gaps in the tape where configuration does not lend itself to tape application shall be considered normal.

All markings and decals shall be maintained in a clean, bright, and readable condition throughout the term of this contract. The placement of markings may vary due to vehicle type and configuration, but shall be approved by the Department.

Should a Service Patrol vehicle become permanently inoperable for any reason or should the Service Patrol Contract be terminated for any reason, or at the conclusion of this Contract, the service Patrol vehicles shall have all logos referencing this contract permanently removed before being junked, sold, or placed in private sector use.

The Department may require the addition/deletion of markings at any time during the Contract.

- Contractor is required to apply any Department approved Service Patrol sponsorship markings and/or decals to the Service Patrol vehicles provided that: Sponsorship markings/decals do not cover any FDOT required logos

Any variations to the Road Ranger vehicles (i.e., vehicle size or type) must be submitted, in writing, to the District TIM Manager for approval.

DMS (Dynamic Message Sign)

Contractor shall equip all trucks with a portable dynamic message sign (DMS) that meets or exceeds the following specifications:

a) Minimum 10” character LED changeable message sign, with minimum 2 lines and 8 characters per line
b) Large character height (up to 4 characters) of 23”
c) 650+ feet of legibility
d) User programmable with multiple messages
e) Each message able to display up to three (3) pages or panels.
f) Link function enables up to five (5) messages, or up to fifteen (15) pages/panels to alternate.

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g) Handheld or mounted control keypad with all programming and message selections.
h) Outside dimensions of 75” x 30” x 5”
i) Sturdy welded aluminum frame
j) Scratch resistant, UV stabilized polycarbonate window
k) Must have arrow board capability
l) No PC/laptop required for programming or message selection function
m) DMS signs must be certified in accordance with the Department’s Approved Product List

* Any and all equipment shall be securely attached and, when appropriate, in reach of the driver without distraction to driving safely.

Light Bar

The following are minimum specifications for the light bars required on each Road Ranger Service Patrol vehicle:

a) Light bars shall have a minimum of four (4) LED strobes
b) Light bars shall be of sufficient width to span the roof of the vehicle on which they are mounted
c) Light bars shall include front to rear directional flashing capability
    - The light bar shall include a minimum of two (2) rear facing flashers

d) Sample Configuration for Front of Light Bar (Any combination of amber and white)

Amber/White	Amber/White	Amber/White	Amber/White

e) Sample Configuration for Back of Light Bar (Any combination of amber and white)

Amber/White	Amber Flasher	Amber/White	Amber/White	Amber Flasher	Amber/White

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f) Light bars shall only have amber or clear lenses with amber lights unless approved in writing by the Department
g) White lights are acceptable for installed work lights
h) The light bar shall be equipped with removable/replaceable lenses
i) Light bar shall be equipped with an in-cab on/off switch and front-to-rear control
j) Light bar shall be equipped with an in-cab switch to control front or rear only operation
k) Light bars shall be certified in accordance with the Department's Approved Products list.

- Due to the large number of options available on light bars, Contractor may submit to the Department, different configurations for approval, prior to purchase and installation
- In the interest of safety, Contractor is encouraged to upgrade quality and features

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Appendix A

ROAD RANGER DISQUALIFYING CRITERIA

1. The applicant has been convicted of a felony offense.
2. The applicant is currently on probation for any offense or has charges pending (felony or misdemeanor).
3. The applicant has been convicted of a misdemeanor offense involving any type of theft, violence or drug offense within the past three years.
4. The applicant's driver's license is currently suspended or revoked for any reason.
5. The applicant has been convicted of a crime involving domestic violence or currently has a restraining order involving domestic violence or threats.
6. The applicant has been arrested for any charge involving resisting arrest, battery, or assault on a law enforcement officer.
7. The applicant has a pending warrant for any criminal offense.
8. The applicant is illegally residing in or is not approved to work in the United States.
9. Identification of adverse intelligence information regarding the applicant.
10. At the discretion of the District Road Ranger Program Manager based on any other adverse information regarding the applicant.

These criteria were adopted from the Joint Task Force for Law Enforcement Communications State Law Enforcement Radio System (SLERS) security procedures.

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Appendix B

NOW, THEREFORE, in consideration of the mutual covenants contained in this

State of Florida

OPEN ROADS POLICY AGREEMENT
(Revised January 2014)

Quick Clearance for Safety and Mobility

This Open Roads Policy Agreement (Agreement) is entered into between the Florida Highway Patrol (FHP) and the Florida Department of Transportation (FDOT) and establishes a policy for FHP and FDOT personnel to expedite the removal of vehicles, cargo, and debris from roadways on the State Highway System to restore, in an **URGENT MANNER**, the safe and orderly flow of traffic following a motor vehicle crash or other traffic incident on Florida's roadways.

Whereas, public safety is the highest priority and must be maintained on Florida's roadways before, during, and after traffic incidents; and

Whereas, the quality of life in the State of Florida is heavily dependent upon the free movement of people, vehicles, and all types of commerce, and FHP and FDOT share the responsibility for achieving and maintaining the degree of order necessary to make this free movement possible; and

Whereas, traffic incidents account for approximately twenty-five percent of non-recurring congestion and the impacts on commerce can be minimized with sound traffic incident management practices by responding agencies; and

Whereas, nationally, it is estimated that five fire personnel, twelve police officers, and sixty tow truck operators are killed in struck-by incidents each year, and governmental entities have the responsibility to do whatever is reasonable to reduce the risks to responders; and

Whereas, secondary crashes pose safety risks to incident responders and all motorists; and

Whereas, the expeditious clearance of traffic incidents promotes safety, and that vehicle removal, move-over laws, and quick clearance policies minimize exposure and the potential for secondary crashes; and

Whereas, it is understood that damage to vehicles or cargo or both may occur as a result of clearing the roadway on an urgent basis. While reasonable attempts to avoid such damage shall be taken, the priority of responders is to safely restore traffic to normal conditions because traffic incident related congestion has an enormous cost to society. This cost is significantly greater than the salvage value of an already damaged vehicle and its cargo.

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NOW, THEREFORE, in consideration of the mutual covenants contained in this Agreement, the parties agree as follows:

1. Roadways will be cleared of damaged vehicles, spilled cargo, and debris as soon as it is safe to do so. Reasonable attempts will be made to avoid unnecessary damage to vehicles and cargo in the process of clearing the roadway.

2. The following operating standards are based on the philosophy that the State Highway System will not be closed or restricted any longer than is absolutely necessary following a traffic crash or other roadway traffic incident.

3. Florida Highway Patrol Operating Standards:

a. Members of FHP who respond to the scene of traffic incidents will make clearing the travel portion of the roadway a high priority. When an investigation is required, it will be conducted in as expedient a manner as possible considering the severity of the incident. Non-critical portions of the investigation may be delayed until lighter traffic conditions allow completion of those tasks. FHP will close only those lanes absolutely necessary to safely conduct the investigation. FHP will coordinate with FDOT representatives to set up appropriate traffic control, establish alternate routes, expedite the safe movement of traffic at the scene, and restore the roadway to normal conditions as soon as possible.

b. Whenever practical, damaged vehicles on access-controlled roadways will be removed to off ramps, accident investigation sites, or other safe areas for completion of investigations to reduce delays. Tow truck operators will be requested as soon as it is evident that they will be needed to clear the roadway. FHP will assure that all authorized tow operators have met established competency levels and that the equipment is of appropriate size, capacity, and design to meet all standards of the State of Florida.

c. FHP will not unnecessarily cause any delay in reopening all or part of a roadway to allow a company to dispatch its own equipment to off-load cargo or recover a vehicle or load that is impacting traffic during peak traffic hours or creating a hazard to the public. FHP and FDOT will cooperate in planning and implementing clearance operations in the most safe and expeditious manner, to include the use of FDOT's Rapid Incident Scene Clearance (RISC) Procedure Number 750-030-020 when and where appropriate.

4. Florida Department of Transportation Operating Standards:

a. When requested by FHP or any other emergency response agency, FDOT will respond and deploy resources to major traffic incidents 24 hours a day, 7 days per week. Each FDOT District will develop and implement response procedures to meet the goal of providing initial traffic control within **30 minutes** of notification during the assigned working hours of each maintenance yard, and **60 minutes** after hours.

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b. FDOT, in coordination with FHP, will upgrade traffic controls, determine detour routes, and discuss clearance strategies. When requested, FDOT will provide temporary traffic controls to ensure a safe work zone for all responders and the motoring public.

c. FDOT, in cooperation with FHP, will determine and deploy the necessary heavy equipment and manpower to reopen the roadway if there is a delay in clearing the travel lanes, or if the task is beyond the capabilities of the tow truck operator on scene. If cargo or spilled loads [non-hazardous] are involved, FDOT will make every effort to assist in the relocation of the materials in the shortest possible time, using whatever equipment necessary. All such materials or any vehicles relocated by FDOT will be moved the minimum practical distance to eliminate traffic hazards.

d. FDOT personnel will document all hours and equipment used for traffic control, roadway clearance, and debris clean up. FDOT will place traffic control devices at the scene should any damaged vehicles or cargo remain on the shoulder adjacent to the travel lanes for removal at a later time.

5. FDOT and FHP will continually work together to ensure that the needs of motorists on state roadways are being met in the most professional, safe, and efficient manner.

6. FHP and FDOT will evaluate and continually update and modify their operating policies, procedures, rules, and standards to assure they are consistent with this Agreement.

7. FHP, together with FDOT, will research, evaluate, and conduct training in the most advanced technologies, equipment, and approved methods for the documentation and investigation of crash or traffic incident scenes. FHP, using these techniques, will prioritize the investigative tasks that impede traffic and reopen travel lanes upon completion of such tasks that must be conducted in order to minimize impeding traffic.

8. Roadways will be cleared as soon as possible. It is the **goal** of all agencies that **all incidents be cleared from the roadway within 90 minutes of the arrival of the first responding officer.** This goal is made with the understanding that more complex scenarios may require additional time for complete clearance.

9. This Agreement applies to the impacts of roadway traffic incidents and does not apply to closures that are necessary for the furtherance of motorists' safety such as those undertaken for high winds, flooding, ice, fog, smoke, or other circumstance.

10. FHP and FDOT will actively solicit and enlist other state, county, and local agencies, political subdivisions, industry groups, and professional associations to endorse this Agreement for the State of Florida.

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11. FHP will be responsible for calling a meeting with FDOT in July of each year to review this policy, and make changes as necessary.

12. With the mutual agreement of both parties, this policy agreement may be terminated on an agreed upon date without penalty to either party.

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Appendix C: Florida Road Ranger Operations Procedure

Approved:

Effective: April 19, 2018
Review: August 1, 2017
Office: Traffic Engineering and Operations
Topic No.: 750-030-015-d

Department of Transportation

ROAD RANGER OPERATIONS

AUTHORITY:

Sections 20.23(3)(a) and 334.048(3), Florida Statutes (F.S.)

REFERENCES:

Topic No. 250-000-010 Driver's Record Requirements
Topic No. 001-010-015 Tobacco Use Policy
Topic No. 001-250-013 Drug-Free Workplace and Drug Testing Policy
Topic No. 001-010-020 Ethics Policy
Sections 112.0455, 316.003(1), and 316.072(5) F.S.
Joint Task Force for Law Enforcement Radio System Security Procedure
Road Ranger Disqualifying Criteria – Appendix A
Florida's Open Roads Policy – Appendix B

STATEMENT OF POLICY

It is the policy of the Florida Department of Transportation (Department) to establish a uniform and consistent statewide Road Ranger program that supports Florida's ***Open Roads Policy***.

PURPOSE:

This program provides incident management response services and limited, no-cost highway assistance to motorists to improve highway safety for emergency responders and the motoring public.

SCOPE:

The principal users for this document will be the FDOT (Department) Road Ranger Program managers and others involved in the Road Ranger Program. This document will apply to all future Road Ranger contracts, and to the extent consistent with current terms, all outstanding Road Ranger contracts.

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DEFINITIONS

Approved Container: A closed container of not more than 5 gallon capacity, having a flash arresting screen, spring closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to exposure to fire. These containers shall meet Occupational Safety and Health Administration (OSHA) requirements. Approval must be given by a nationally recognized testing laboratory and the container marked as "UL Listed".

Booster Outlets/Hot Boxes: Outlets on exterior of a vehicle compatible with 12-volt booster cables used to jump start other vehicles.

Contractor: The individual company contracted with the Department to deliver roadside emergency assistance/services for contracts issued to implement the Road Ranger Program.

Expendables: Items given at no cost to motorists or emergency responders including, but not limited to, supplies, drinking water, flares, etc.

Marketing Firm: Firm that has negotiated the agreement between the Sponsor and the Department. It also manages the interaction between the Department and the Sponsor.

Road Ranger: Individual or unit that patrols specifically defined locations on Florida's State Highway System to aid in incident response, quick clearance, motorist safety and providing assistance to motorist(s) who are in need of assistance/services. Also referred to as "Operator".

Regional Traffic Management Center (RTMC): A dispatch and communications facility housing both FDOT and State Law Enforcement Agency (FHP Communications) personnel. The RTMC is used for dispatch, communications and management of traffic and traffic incidents on the freeways as well as law enforcement activities.

Service Patrol: A roving patrol used by many states to provide incident management assistance, known in Florida as the Road Rangers.

Sponsor: An organization that provides financial support to the Road Ranger Service Patrol in exchange for the display of its logos and likenesses on vehicles, uniforms and roadway signs.

State Law Enforcement Radio System (SLERS): SLERS is a secured, unified digital radio network used by state law enforcement officers and other participating agencies throughout the state to communicate.

Strategic Highway Safety Research Program, Part 2 (SHRP2): The second Strategic Highway Research Program (SHRP 2) authorized by Congress to address some of the most pressing concerns related to saving lives and reducing congestion in the transportation infrastructure.

Traffic Management Center (TMC): A dispatch and communications facility housing FDOT personnel. The TMC is used for dispatch, communications and management of traffic and traffic incidents.

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1. ROAD RANGER VEHICLE REQUIREMENTS

The Districts may choose to utilize in-house or contract employees to provide operational services to the Road Ranger Program. The Road Ranger Program Manager for each District shall establish a Quality Assurance process to ensure that the standards established in this procedure are met and maintained by the contractors. This section provides minimum standards for vehicles, equipment, tools, and expendables to be used for the Road Ranger Program.

1.1 VEHICLE REQUIREMENTS

A. The following requirements are the minimum standards for the Road Ranger vehicle:

1. Road Ranger vehicle must have the ability to push, tow, or reposition disabled vehicles out of travel lane(s);
2. Road Ranger vehicle must be capable of transporting the Road Ranger and passengers not to exceed the maximum occupancy of the vehicle;
3. Road Ranger vehicle must be capable of transporting all specified equipment properly secured;
4. Road Ranger vehicle shall be equipped with a system which provides, at a minimum, the following vehicle location information:
    a. Latitude and longitude or GPS location;
    b. Vehicle number
    c. Speed
    d. Direction

B. The base color of each Road Ranger vehicle shall be white. The Department will also coordinate with the Road Ranger Sponsor, if applicable, to ensure vehicles have the following approved identification markings included as part of the graphics displayed on the vehicle:

1. FDOT logo: shall be proportionate and spaced to provide maximum visibility to sponsorship graphics, as needed;
2. "ROAD RANGER": shall be placed just below the FDOT logo and be proportionate and spaced to provide maximum visibility to corresponding graphics, as needed;
3. SunGuide® logo: shall be proportionate and spaced to provide maximum visibility to sponsorship graphics, as needed;
4. "FREE ASSISTANCE" painted or affixed below the FDOT logo. The letters will be no less than two inches (2") in height;
5. "INCIDENT RESPONSE" painted or affixed on utility body or similar area on left and right side of the Road Ranger vehicle as well as the rear of the Road Ranger vehicle. The letters will be no less than two inches (2") in height;
6. "Dial *FHP (347)" painted or affixed. The letters will be no less than two inches (2") in height and will be placed on the Road Ranger vehicle in an area that provides visibility to motorists without hindering the safe operation of the vehicle;
7. Pickup trucks shall paint or affix "FREE ASSISTANCE" on the rear bumper or tailgate of the vehicle. The letters will be no less than two inches (2") in height;

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8. Road Ranger and Sponsor logos and text shall not cover more than 50% of the rear-facing vertical surfaces and will be integrated with alternating 6-inch, yellow and red, high conspicuity, retro-reflective chevrons that are at a 45% angle, down and out from the center of the vehicle.
9. Each Road Ranger vehicle shall display a three-digit number placed on or near the driver's and passenger's doors, the rear of the vehicle and the front of the vehicle that will individually identify each service patrol vehicle. The numbering sequence shall be as follows:
    a. DXX
        - D = district number
        - XX = sequential vehicle numbering beginning with 01
10. All markings shall be maintained in a clean and readable condition. No reference to the Contractor's company name or logo shall be placed on the Road Ranger Vehicle. Markings placement may vary due to vehicle type and configuration but must be approved by the Central Office Road Ranger Program Manager and the State Traffic Incident Management (TIM)/Commercial Vehicle Program Manager.
11. If the District is participating in an FDOT sanctioned sponsorship program, the truck will be marked or wrapped by the sponsor as agreed upon by the Department and the contracted marketing firm. The Road Ranger vehicle wrapping will be maintained by the Road Ranger contractor as agreed to in any FDOT sponsorship agreement.
12. Any suggested variations to the Road Ranger Vehicle (i.e., vehicle size or type) must be submitted, in writing, to the District TIM/Road Ranger Program Manager and approved by the State TIM/Commercial Vehicle Program Manager.

Pursuant to its authority granted in section 316.003(1), Florida Statutes, the Department designates each Road Ranger Vehicle as an "Emergency Vehicle." This designation is being made for purposes of authorizing Road Ranger Service Patrol Vehicles to exercise only the privileges set forth in sections 316.072(5)(b)(1) and 316.072(5)(b)(4), Florida Statutes. As authorized Emergency Vehicles, provisions set forth in section 316.126(1)(b), Florida Statutes, also known as the "Move Over" law, apply to Road Ranger Vehicles participating in incident response operations or providing assistance to motorists.

1.2 EQUIPMENT, TOOLS, and EXPENDABLES REQUIREMENTS

Each configuration of Road Ranger vehicle will have an established equipment checklist. At the beginning of each shift, the vehicle operator will conduct an inventory of equipment, tools, and expendables assigned to their vehicle, and ensure that the following items are present.

1.2.1 Equipment

A. Light set(s) configured to illuminate the work area in or around the vehicle;
B. Equipment with the ability to jumpstart common configurations of personal and commercial vehicles;
C. One (1) heavy-duty battery with the minimum of 750 cold cranking amps (CCA)
D. Functioning cab lighting;

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E. Roof-mounted, light bar, front to rear controllable, utilizing amber colored lights;
F. Department-approved arrow board or truck mounted dynamic message sign;
G. Two (2) multi-purpose funnels;
H. Two (2) tire chock blocks;
I. Fifteen (15) FDOT approved 36-inch traffic cones, with reflective markings;
J. One (1) jack, capable of lifting vehicles up to 5,000 lbs.;
K. Air compressor, hose and appropriate subcomponents capable of inflating tires of vehicles;
L. Heavy duty flashlight/traffic wand;
M. Cell phone;
N. Department approved radio(s).

1.2.2 Tools

A. Shovel;
B. One (1) 24-inch street broom;
C. Impact or lug wrench to fit lug nut sizes most commonly used by vehicle manufacturers;
D. Pry bar, minimum 36 inches in length;
E. Standard tool kit with tools to perform minor repairs;
F. Rubber mallet;
G. Electrical tape;
H. Duct tape;
I. Tire pressure gauge.

1.2.3 Expendables

A. Five (5) gallons of unleaded gasoline in an approved container designed for that type of fuel. The container shall be labeled "UNLEADED". This requirement only applies to vehicles configured to carry fuel;
B. First Responder First Aid Kit, fully stocked, including disposable protective gloves (non-latex);
C. Two (2) 5 pound, dry chemical, ABC fire extinguishers;
D. Twenty-four (24) highway wet flares or equivalent to provide delineation in low light conditions;
E. Minimum of ten (10) gallons of absorbent material;
F. Twelve (12) bottles of drinking water;
G. Fifty (50) Department approved survey cards;
H. Twenty-Five (25) "Move It Law" cards.

2. ROAD RANGER OPERATOR REQUIREMENTS

The Districts may choose to utilize in-house or contract employees to provide operational services for the Road Ranger Program. Road Ranger operators are in direct contact with the motoring public daily and therefore are required to perform their duties at a high standard. Road Ranger operators should possess the basic knowledge, skills and abilities to relocate the disabled vehicle from the travel lane and conduct minor repairs. The contractor shall be responsible for ensuring that Road Ranger operators meet the following requirements:

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2.1 OPERATOR REQUIREMENTS:

A. Hold and maintain a valid Florida Driver's License
B. Be a minimum of eighteen (18) years of age
C. Be fluent in English
D. Have achieved a minimum of a High School Diploma or equivalent General Education Diploma;
E. Have a documented automotive mechanical background sufficient to perform tasks and/or repairs most likely to be encountered during their shift;
F. Have an acceptable driving record, in accordance with Department ***Procedure No. 250-000-010, Driver's Record Requirements***.
G. Successfully complete the Joint Task Force (JTF) Application for the State Law Enforcement Radio System (SLERS) and pass a criminal background check;
H. Be drug free in accordance with ***Section 112.0455, F.S.,*** prior to beginning operations. Additional testing will be in accordance with Department ***Topic No. 001-250-013, Drug-Free Workplace and Drug Testing Policy,*** and at a minimum of every six (6) months.

The contractor shall maintain documentation demonstrating operator's compliance with the requirements identified in this section. Copies will be furnished to the FDOT Road Ranger Program and/or Contract Manager upon request.

2.2 GENERAL RULES AND REGULATIONS:

The Road Ranger operators shall exercise good sound judgment in carrying out their duties and conduct themselves in such a manner that will reflect favorably upon the Department.

A. Operators shall:

1. Wear clean uniforms at the start of each shift. The uniform color combinations and configurations for Road Rangers shall be consistent within their respective Districts;
2. Be well groomed;
3. Wear clearly visible name tags, with the operator's first name affixed to uniform shirt;
4. Wear an FDOT-approved Road Ranger Operator picture ID that is visible;
5. Wear an FDOT-approved ANSI/ISEA 107-2004 or ANSI/ISEA 207-2006 high visibility safety vest and/or rain suit at all times while outside the Road Ranger Vehicle;
6. Offer Road Ranger survey cards to motorists who receive assistance
7. Inspect assigned vehicles at the beginning of each shift, and take action as necessary to ensure that they are in compliance with all specifications and requirements of this procedure;
8. Wear and shall require passengers to wear seat belts or utilize occupant restraint systems while operating or riding in a Road Ranger vehicle;
9. Obey all traffic laws;
10. Keep all communications radios and monitors "on" and the volume clearly and easily audible;
11. Use flashing light bars only when merging or exiting from traffic lanes to an incident site or to warn traffic when performing incident management services;
12. Remain on their assigned Patrol Sectors or staging areas and depart only as directed by law enforcement, the Transportation Management Center, or supervisor;
13. Exercise caution and safety at all times;

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14. Conduct themselves in a manner that creates a positive reflection of the Department.

B. Operators shall not:

1. Recommend wrecker or towing services to the motorist;
2. Carry firearms or other weapons either on their persons or in the vehicle;
3. Accept gratuities, gifts, or compensation of any type from motorists;
4. Complete comment cards for motorists;
5. Smoke in the Road Ranger Vehicle or while assisting motorists, in accordance with Department ***Topic No. 001-010-015, Tobacco Use Policy.***

C. All requests for wrecker or towing services shall only be coordinated through the Transportation Management Center.

D. All requests for Road Rangers to provide information or to participate in interviews shall be submitted through the District Road Ranger Contract Manager for approval by the District Public Information Officer. Approval must be given ***prior*** to providing the information or participating in an interview;

3.0 STATE LAW ENFORCEMENT RADIO SYSTEM

The Florida Department of Transportation, Traffic Operations section strongly supports the statewide use of the SLERS for Road Ranger dispatch and during incidents.
In Districts where 800 MHz radios are provided and being used to assist Florida Highway Patrol (FHP) and the Department in the pursuit of the 90 minute clearance goal stated in the ***Open Roads Policy,*** the following shall apply:

3.1 SECURITY CLEARANCE

A. Road Ranger operators and potential operators shall successfully complete a criminal background check performed by the Joint Task Force (JTF) Security Manager prior to operating a SLERS radio. The TIM/Road Ranger Program Manager at FDOT Central Office will coordinate with the JTF Security Manager to process background investigations, as needed, and respond to inquiries regarding the status of applicants;
B. Districts shall only use security clearance forms approved by the Joint Task Force (JTF) Security Manager;
C. Transportation Management Center (TMC) personnel utilizing SLERS radios shall be subject to the background checks as listed in 3.1(A).

3.2 SLERS RADIO OPERATION

A. Road Rangers and other approved personnel shall not be permitted to use the SLERS radios until training has been completed;
B. Road Rangers shall use designated talk groups unless otherwise instructed by the FHP, TMC or Road Ranger supervisor;

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C. Only those persons with approved SLERS security clearance shall be authorized to transport SLERS radios.

3.3 PROPERTY MANAGEMENT

A. The Road Ranger Program Manager for each District shall have in place an inventory and control procedure for all documented radios in the District. Radio inventories shall be performed annually or upon request.
B. Within 5 days of the final date of employment for a Road Ranger, Road Ranger Dispatcher, TMC staff member, Department employee or other authorized contractor who has been cleared for SLERS radio usage, the Road Ranger Program Manager for that District shall inform the SLERS Security Manager and Central Office of the departure.
C. Storage security protocols for spare radios shall be observed at all times. Radios shall be secured in an area that has at least two layers of security measures in place.
D. Upon discovering the loss of a radio, a report shall be submitted immediately to the shift supervisor. The shift supervisor will contact the Systems Operations Center to notify them of the loss. The Central Office Road Ranger Project Manager shall be notified of the loss as soon as possible. At a minimum, the report will include the following information:
    1. Date and time of loss discovery;
    2. LID Number;
    3. Owner/Operator of radio
    4. Last known location
    5. Copy of any Police Report, if available.

4. INFORMATION TRACKING REQUIREMENTS

To accurately monitor the effectiveness of the Road Ranger Program certain data must be collected. The SunGuide Reporting System should be utilized to collect the required data. The following is the required data to be collected.

4.1 ROAD RANGER OPERATOR DAILY DATA COLLECTION

The data collection process is designed to provide detailed information about when Operators begin/end their shifts, what types of work they performed, and where services were provided. District Road Ranger Program and Contract Managers shall develop a Quality Assurance process to ensure that the data is being collected in accordance with this procedure and available upon request.

4.1.1 The following data shall be collected at the beginning of the Road Ranger Operator's shift:

A. Date
B. Shift start time
C. Operator name
D. Vehicle number
E. Route

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4.1.2 The following data shall be collected at each stop:

A. Dispatch time
B. Arrival time
C. License Plate Number
D. Issuing State
E. Vehicle type/configuration
F. Route
G. Direction of travel (NB, SB, EB, WB)
H. Mile marker/nearest intersection
I. How discovered / Event Notification Type
J. Lanes / Shoulder blocked
K. Cause for stop / Event Type
L. Activity(s) preformed or Services provided
M. Departure time

Collection of this data should not interfere with or delay incident clearance activities.

4.1.3 The following data shall be collected at the end of each shift:

A. Shift end time

SunGuide shall be the primary method used to collect and retain all data related to Road Ranger Service Patrol operations. Districts may implement additional measures to assist in the collection and retention of Service Patrol data, as needed. Such data shall be made available upon request.

4.2 DISTRICT ROAD RANGER PROGRAM MANAGER DATA COLLECTION

Each District Road Ranger Program Manager shall collect and compile Road Ranger Assist Data for their areas of responsibility into a quarterly report and provide the report to the Statewide Road Ranger Program Manager by the 15th day of the month after the close of the preceding quarter. The reporting quarters shall be as follows:

First Quarter – July 1 to September 30
Second Quarter – October 1 to December 31
Third Quarter – January 1 to March 31
Fourth Quarter – April 1 to June 30

4.3 STATEWIDE ROAD RANGER PROGRAM MANAGER DATA COLLECTION

The quarterly District reports will be compiled into an annual report. This report will provide an overall statewide perspective as well as summarize individual District information. The yearly report will be completed by the Department's Traffic Engineering and Operations Office Traffic Incident Management Program section by the end of the first quarter of the following fiscal year.

5. TRAINING

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Road Ranger operators must successfully complete the following courses or training classes prior to working on a shift:

A. Intermediate Maintenance of Traffic (MOT)/ Temporary Traffic Control (TTC) or the Department's MOT for Incident Responders;
B. SLERS Training- This training provides an overview of SLERS and how the system operates. Districts shall use Florida Highway Patrol or JTF approved training materials for the SLERS radio training;
C. 4 hour SHRP2 Incident Responder Training – Training can be delivered as a single course or conducted as individual sub-topics over time. This training can be completed via an instructor-led course or a web based training (WBT); and
D. Basic First Aid, to include Cardio-Pulmonary Resuscitation (CPR).

6. FORMS

There are no forms required by this procedure.

STANDARD CONTRACT TERMS AND CONDITIONS

The following form PUR 1000 is a standard contract terms form that the Department includes in all procurements, except that paragraphs 5, 11, 19, 20, 22, 23, 25, 26, 27, 29, 31, 35, 40, 41, and 42 do not apply to this Request for Proposal. Deletion of these paragraphs shall not be deemed to be deletion of content contained elsewhere and the substance of these excepted paragraphs may be addressed in other locations in the procurement documents. That substance located elsewhere continues to apply regardless of this exception paragraph.

State of Florida
PUR 1000

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45. Annual Appropriations.
46. Execution in Counterparts.
47. Severability.

1. Definitions. The definitions contained in s. 60A-1.001, F.A.C. shall apply to this agreement. The following additional terms are also defined:

(a) "Contract" means the legally enforceable agreement that results from a successful solicitation. The parties to the Contract will be the Customer and Contractor.

(b) "Customer" means the State agency or other entity identified in a contract as the party to receive commodities or contractual services pursuant to a contract or that orders commodities or contractual services via purchase order or other contractual instrument from the Contractor under the Contract. The "Customer" may also be the "Buyer" as defined in the PUR 1001 if it meets the definition of both terms.

(c) "Product" means any deliverable under the Contract, which may include commodities, services, technology or software.

(d) "Purchase order" means the form or format a Customer uses to make a purchase under the Contract (e.g., a formal written purchase order, electronic purchase order, procurement card, contract or other authorized means).

2. Purchase Orders. In contracts where commodities or services are ordered by the Customer via purchase order, Contractor shall not deliver or furnish products until a Customer transmits a purchase order. All purchase orders shall bear the Contract or solicitation number, shall be placed by the Customer directly with the Contractor, and shall be deemed to incorporate by reference the Contract and solicitation terms and conditions. Any discrepancy between the Contract terms and the terms stated on the Contractor's order form, confirmation, or acknowledgement shall be resolved in favor of terms most favorable to the Customer. A purchase order for services within the ambit of section 287.058(1) of the Florida Statutes shall be deemed to incorporate by reference the requirements of subparagraphs (a) through (f) thereof. Customers shall designate a contract manager and a contract administrator as required by subsections 287.057(14) and (15) of the Florida Statutes.

3. Product Version. Purchase orders shall be deemed to reference a manufacturer's most recently release model or version of the product at the time of the order, unless the Customer specifically requests in writing an earlier model or version and the contractor is willing to provide such model or version.

4. Price Changes Applicable only to Term Contracts. If this is a term contract for commodities or services, the following provisions apply.

(a) Quantity Discounts. Contractors are urged to offer additional discounts for one time delivery of large single orders. Customers should seek to negotiate additional price concessions on quantity purchases of any products offered under the Contract. State Customers shall document their files accordingly.

(b) Best Pricing Offer. During the Contract term, if the Customer becomes aware of better pricing offered by the Contractor for substantially the same or a smaller quantity of a product outside the Contract, but upon the same or similar terms of the Contract, then at the discretion of the Customer the price under the Contract shall be immediately reduced to the lower price.

(c) Sales Promotions. In addition to decreasing prices for the balance of the Contract term due to a change in market conditions, a Contractor may conduct sales promotions involving price reductions for a specified lesser period. A Contractor shall submit to the Contract Specialist documentation identifying the proposed (1) starting and ending dates of the promotion, (2) products involved, and (3) promotional prices compared to then-authorized prices. Promotional

prices shall be available to all Customers. Upon approval, the Contractor shall provide conspicuous notice of the promotion.

(d) Trade-In. Customers may trade-in equipment when making purchases from the Contract. A trade-in shall be negotiated between the Customer and the Contractor. Customers are obligated to actively seek current fair market value when trading equipment, and to keep accurate records of the process. For State agencies, it may be necessary to provide documentation to the Department of Financial Services and to the agency property custodian pursuant to Chapter 273, F.S.

(e) Equitable Adjustment. The Customer may, in its sole discretion, make an equitable adjustment in the Contract terms or pricing if pricing or availability of supply is affected by extreme and unforeseen volatility in the marketplace, that is, by circumstances that satisfy all the following criteria: (1) the volatility is due to causes wholly beyond the Contractor's control, (2) the volatility affects the marketplace or industry, not just the particular Contract source of supply, (3) the effect on pricing or availability of supply is substantial, and (4) the volatility so affects the Contractor that continued performance of the Contract would result in a substantial loss.

~~**5. Additional Quantities.** For a period not exceeding ninety (90) days from the date of solicitation award, the Customer reserves the right to acquire additional quantities up to the amount shown on the solicitation but not to exceed the threshold for Category Two at the prices submitted in the response to the solicitation.~~

6. Packaging. Tangible product shall be securely and properly packed for shipment, storage, and stocking in appropriate, clearly labeled, shipping containers and according to accepted commercial practice, without extra charge for packing materials, cases, or other types of containers. All containers and packaging shall become and remain Customer's property.

7. Inspection at Contractor's Site. The Customer reserves the right to inspect, at any reasonable time with prior notice, the equipment or product or plant or other facilities of a Contractor to assess conformity with Contract requirements and to determine whether they are adequate and suitable for proper and effective Contract performance.

8. Safety Standards. All manufactured items and fabricated assemblies subject to operation under pressure, operation by connection to an electric source, or operation involving connection to a manufactured, natural, or LP gas source shall be constructed and approved in a manner acceptable to the appropriate State inspector. Acceptability customarily requires, at a minimum, identification marking of the appropriate safety standard organization, where such approvals of listings have been established for the type of device offered and furnished, for example: the American Society of Mechanical Engineers for pressure vessels; the Underwriters Laboratories and/or National Electrical Manufacturers' Association for electrically operated assemblies; and the American Gas Association for gas-operated assemblies. In addition, all items furnished shall meet all applicable requirements of the Occupational Safety and Health Act and state and federal requirements relating to clean air and water pollution.

9. Americans with Disabilities Act. Contractors should identify any products that may be used or adapted for use by visually, hearing, or other physically impaired individuals.

10. Literature. Upon request, the Contractor shall furnish literature reasonably related to the product offered, for example, user manuals, price schedules, catalogs, descriptive brochures, etc.

~~**11. Transportation and Delivery.** Prices shall include all charges for packing, handling, freight, distribution, and inside delivery. Transportation of goods shall be FOB Destination to any point within thirty (30) days after the Customer places an Order. A Contractor, within five (5) days after receiving a purchase order, shall notify the Customer of any potential delivery delays. Evidence of inability or intentional delays shall be cause for Contract cancellation and Contractor~~

~~suspension.~~

12. Installation. Where installation is required, Contractor shall be responsible for placing and installing the product in the required locations at no additional charge, unless otherwise designated on the Contract or purchase order. Contractor's authorized product and price list shall clearly and separately identify any additional installation charges. All materials used in the installation shall be of good quality and shall be free of defects that would diminish the appearance of the product or render it structurally or operationally unsound. Installation includes the furnishing of any equipment, rigging, and materials required to install or replace the product in the proper location. Contractor shall protect the site from damage and shall repair damages or injury caused during installation by Contractor or its employees or agents. If any alteration, dismantling, excavation, etc., is required to achieve installation, the Contractor shall promptly restore the structure or site to its original condition. Contractor shall perform installation work so as to cause the least inconvenience and interference with Customers and with proper consideration of others on site. Upon completion of the installation, the location and surrounding area of work shall be left clean and in a neat and unobstructed condition, with everything in satisfactory repair and order.

13. Risk of Loss. Matters of inspection and acceptance are addressed in s. 215.422, F.S. Until acceptance, risk of loss or damage shall remain with the Contractor. The Contractor shall be responsible for filing, processing, and collecting all damage claims. To assist the Contractor with damage claims, the Customer shall: record any evidence of visible damage on all copies of the delivering carrier's Bill of Lading; report damages to the carrier and the Contractor; and provide the Contractor with a copy of the carrier's Bill of Lading and damage inspection report. When a Customer rejects a product, Contractor shall remove it from the premises within ten days after notification or rejection. Upon rejection notification, the risk of loss of rejected or non-conforming product shall remain with the Contractor. Rejected product not removed by the Contractor within ten days shall be deemed abandoned by the Contractor, and the Customer shall have the right to dispose of it as its own property. Contractor shall reimburse the Customer for costs and expenses incurred in storing or effecting removal or disposition of rejected product.

14. Transaction Fee. The State of Florida has instituted MyFloridaMarketPlace, a statewide eProcurement System ("System"). Pursuant to section 287.057(22), Florida Statutes, all payments shall be assessed a Transaction Fee of one percent (1.0%), which the Contractor shall pay to the State, unless exempt pursuant to 60A-1.032, F.A.C.

For payments within the State accounting system (FLAIR or its successor), the Transaction Fee shall, when possible, be automatically deducted from payments to the Contractor. If automatic deduction is not possible, the Contractor shall pay the Transaction Fee pursuant to Rule 60A-1.031(2), F.A.C. By submission of these reports and corresponding payments, Contractor certifies their correctness. All such reports and payments shall be subject to audit by the State or its designee.

Contractor shall receive a credit for any Transaction Fee paid by the Contractor for the purchase of any item(s) if such item(s) are returned to the Contractor through no fault, act, or omission of the Contractor. Notwithstanding the foregoing, a Transaction Fee is non-refundable when an item is rejected or returned, or declined, due to the Contractor's failure to perform or comply with specifications or requirements of the agreement.
Failure to comply with these requirements shall constitute grounds for declaring the Contractor in default and recovering reprocurement costs from the Contractor in addition to all outstanding fees. **CONTRACTORS DELINQUENT IN PAYING TRANSACTION FEES MAY BE SUBJECT TO BEING REMOVED FROM THE DEPARTMENT OF MANAGEMENT SERVICES' VENDOR LIST AS PROVIDED IN RULE 60A-1.006, F.A.C.**

15. Invoicing and Payment. Invoices shall contain the Contract number, purchase order number if applicable, and the appropriate vendor identification number. The State may require any other information from the Contractor that the State deems necessary to verify any purchase order placed under the Contract.

At the State's option, Contractors may be required to invoice electronically pursuant to guidelines of the Department of Management Services. Current guidelines require that Contractor supply electronic invoices in lieu of paper-based invoices for those transactions processed through the system. Electronic invoices shall be submitted to the Customer through the Ariba Supplier Network (ASN) in one of the following mechanisms – EDI 810, cXML, or web-based invoice entry within the ASN.

Payment shall be made in accordance with sections 215.422 and 287.0585 of the Florida Statutes, which govern time limits for payment of invoices. Invoices that must be returned to a Contractor due to preparation errors will result in a delay in payment. The Customer is responsible for all payments under the Contract. A Customer's failure to pay, or delay in payment, shall not constitute a breach of the Contract and shall not relieve the Contractor of its obligations to the Department or to other Customers. A vendor ombudsman has been established within the Department of Financial Services. The duties of this individual include acting as an advocate for vendors who may be experiencing problems in obtaining timely payment(s) from a state agency. The Vendor Ombudsman may be contacted at (850) 413-5516 or by calling the Division of Consumer Services at 1-877-693-5236.

16. Taxes. The State does not pay Federal excise or sales taxes on direct purchases of tangible personal property. The State will not pay for any personal property taxes levied on the Contractor or for any taxes levied on employees' wages. Any exceptions to this paragraph shall be explicitly noted by the Customer in the special contract conditions section of the solicitation or in the Contract or purchase order.

17. Governmental Restrictions. If the Contractor believes that any governmental restrictions have been imposed that require alteration of the material, quality, workmanship or performance of the products offered under the Contract, the Contractor shall immediately notify the Customer in writing, indicating the specific restriction. The Customer reserves the right and the complete discretion to accept any such alteration or to cancel the Contract at no further expense to the Customer.

18. Lobbying and Integrity. Customers shall ensure compliance with Section 11.062, FS and Section 216.347, FS.The Contractor shall not, in connection with this or any other agreement with the State, directly or indirectly (1) offer, confer, or agree to confer any pecuniary benefit on anyone as consideration for any State officer or employee's decision, opinion, recommendation, vote, other exercise of discretion, or violation of a known legal duty, or (2) offer, give, or agree to give to anyone any gratuity for the benefit of, or at the direction or request of, any State officer or employee. For purposes of clause (2), "gratuity" means any payment of more than nominal monetary value in the form of cash, travel, entertainment, gifts, meals, lodging, loans, subscriptions, advances, deposits of money, services, employment, or contracts of any kind. Upon request of the Customer's Inspector General, or other authorized State official, the Contractor shall provide any type of information the Inspector General deems relevant to the Contractor's integrity or responsibility. Such information may include, but shall not be limited to, the Contractor's business or financial records, documents, or files of any type or form that refer to or relate to the Contract. The Contractor shall retain such records for the longer of (1) three years after the expiration of the Contract or (2) the period required by the General Records Schedules maintained by the Florida Department of State (available at: http://dlis.dos.state.fl.us/barm/genschedules/gensched.htm). The Contractor agrees to reimburse the State for the reasonable costs of investigation incurred by the Inspector General or other authorized State official for investigations of the Contractor's compliance with the terms of this or any other agreement between the Contractor and the State which results in the suspension or debarment of the Contractor. Such costs shall include, but shall not be limited to: salaries of investigators, including overtime; travel and lodging expenses; and expert witness and documentary fees. The Contractor shall not be responsible for any costs of investigations that do not result in the Contractor's suspension or debarment.

~~**19. Indemnification.** The Contractor shall be fully liable for the actions of its agents, employees,~~

~~partners, or subcontractors and shall fully indemnify, defend, and hold harmless the State and Customers, and their officers, agents, and employees, from suits, actions, damages, and costs of every name and description, including attorneys' fees, arising from or relating to personal injury and damage to real or personal tangible property alleged to be caused in whole or in part by Contractor, its agents, employees, partners, or subcontractors, provided, however, that the Contractor shall not indemnify for that portion of any loss or damages proximately caused by the negligent act or omission of the State or a Customer.~~

~~Further, the Contractor shall fully indemnify, defend, and hold harmless the State and Customers from any suits, actions, damages, and costs of every name and description, including attorneys' fees, arising from or relating to violation or infringement of a trademark, copyright, patent, trade secret or intellectual property right, provided, however, that the foregoing obligation shall not apply to a Customer's misuse or modification of Contractor's products or a Customer's operation or use of Contractor's products in a manner not contemplated by the Contract or the purchase order. If any product is the subject of an infringement suit, or in the Contractor's opinion is likely to become the subject of such a suit, the Contractor may at its sole expense procure for the Customer the right to continue using the product or to modify it to become non-infringing. If the Contractor is not reasonably able to modify or otherwise secure the Customer the right to continue using the product, the Contractor shall remove the product and refund the Customer the amounts paid in excess of a reasonable rental for past use. The customer shall not be liable for any royalties.~~

~~The Contractor's obligations under the preceding two paragraphs with respect to any legal action are contingent upon the State or Customer giving the Contractor (1) written notice of any action or threatened action, (2) the opportunity to take over and settle or defend any such action at Contractor's sole expense, and (3) assistance in defending the action at Contractor's sole expense. The Contractor shall not be liable for any cost, expense, or compromise incurred or made by the State or Customer in any legal action without the Contractor's prior written consent, which shall not be unreasonably withheld.~~

~~**20. Limitation of Liability.** For all claims against the Contractor under any contract or purchase order, and regardless of the basis on which the claim is made, the Contractor's liability under a contract or purchase order for direct damages shall be limited to the greater of $100,000, the dollar amount of the contract or purchase order, or two times the charges rendered by the Contractor under the purchase order. This limitation shall not apply to claims arising under the Indemnity paragraph contain in this agreement.~~

~~Unless otherwise specifically enumerated in the Contract or in the purchase order, no party shall be liable to another for special, indirect, punitive, or consequential damages, including lost data or records (unless the contract or purchase order requires the Contractor to back-up data or records), even if the party has been advised that such damages are possible. No party shall be liable for lost profits, lost revenue, or lost institutional operating savings. The State and Customer may, in addition to other remedies available to them at law or equity and upon notice to the Contractor, retain such monies from amounts due Contractor as may be necessary to satisfy any claim for damages, penalties, costs and the like asserted by or against them. The State may set off any liability or other obligation of the Contractor or its affiliates to the State against any payments due the Contractor under any contract with the State.~~

21. Suspension of Work. The Customer may in its sole discretion suspend any or all activities under the Contract or purchase order, at any time, when in the best interests of the State to do so. The Customer shall provide the Contractor written notice outlining the particulars of suspension. Examples of the reason for suspension include, but are not limited to, budgetary constraints, declaration of emergency, or other such circumstances. After receiving a suspension notice, the Contractor shall comply with the notice and shall not accept any purchase orders. Within ninety days, or any longer period agreed to by the Contractor, the Customer shall either (1) issue a notice authorizing resumption of work, at which time activity shall resume, or (2) terminate the Contract or purchase order. Suspension of work shall not entitle the Contractor to

any additional compensation.

~~**22. Termination for Convenience.** The Customer, by written notice to the Contractor, may terminate the Contract in whole or in part when the Customer determines in its sole discretion that it is in the State's interest to do so. The Contractor shall not furnish any product after it receives the notice of termination, except as necessary to complete the continued portion of the Contract, if any. The Contractor shall not be entitled to recover any cancellation charges or lost profits.~~

~~**23. Termination for Cause.** The Customer may terminate the Contract if the Contractor fails to (1) deliver the product within the time specified in the Contract or any extension, (2) maintain adequate progress, thus endangering performance of the Contract, (3) honor any term of the Contract, or (4) abide by any statutory, regulatory, or licensing requirement. Rule 60A-1.006(3), F.A.C., governs the procedure and consequences of default. The Contractor shall continue work on any work not terminated. Except for defaults of subcontractors at any tier, the Contractor shall not be liable for any excess costs if the failure to perform the Contract arises from events completely beyond the control, and without the fault or negligence, of the Contractor. If the failure to perform is caused by the default of a subcontractor at any tier, and if the cause of the default is completely beyond the control of both the Contractor and the subcontractor, and without the fault or negligence of either, the Contractor shall not be liable for any excess costs for failure to perform, unless the subcontracted products were obtainable from other sources in sufficient time for the Contractor to meet the required delivery schedule. If, after termination, it is determined that the Contractor was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the Customer. The rights and remedies of the Customer in this clause are in addition to any other rights and remedies provided by law or under the Contract.~~

24. Force Majeure, Notice of Delay, and No Damages for Delay. The Contractor shall not be responsible for delay resulting from its failure to perform if neither the fault nor the negligence of the Contractor or its employees or agents contributed to the delay and the delay is due directly to acts of God, wars, acts of public enemies, strikes, fires, floods, or other similar cause wholly beyond the Contractor's control, or for any of the foregoing that affect subcontractors or suppliers if no alternate source of supply is available to the Contractor. In case of any delay the Contractor believes is excusable, the Contractor shall notify the Customer in writing of the delay or potential delay and describe the cause of the delay either (1) within ten (10) days after the cause that creates or will create the delay first arose, if the Contractor could reasonably foresee that a delay could occur as a result, or (2) if delay is not reasonably foreseeable, within five (5) days after the date the Contractor first had reason to believe that a delay could result. **THE FOREGOING SHALL CONSTITUTE THE CONTRACTOR'S SOLE REMEDY OR EXCUSE WITH RESPECT TO DELAY.** Providing notice in strict accordance with this paragraph is a condition precedent to such remedy. No claim for damages, other than for an extension of time, shall be asserted against the Customer. The Contractor shall not be entitled to an increase in the Contract price or payment of any kind from the Customer for direct, indirect, consequential, impact or other costs, expenses or damages, including but not limited to costs of acceleration or inefficiency, arising because of delay, disruption, interference, or hindrance from any cause whatsoever. If performance is suspended or delayed, in whole or in part, due to any of the causes described in this paragraph, after the causes have ceased to exist the Contractor shall perform at no increased cost, unless the Customer determines, in its sole discretion, that the delay will significantly impair the value of the Contract to the State or to Customers, in which case the Customer may (1) accept allocated performance or deliveries from the Contractor, provided that the Contractor grants preferential treatment to Customers with respect to products subjected to allocation, or (2) purchase from other sources (without recourse to and by the Contractor for the related costs and expenses) to replace all or part of the products that are the subject of the delay, which purchases may be deducted from the Contract quantity, or (3) terminate the Contract in whole or in part.

~~**25. Changes.** The Customer may unilaterally require, by written order, changes altering, adding to, or deducting from the Contract specifications, provided that such changes are within the~~

~~general scope of the Contract. The Customer may make an equitable adjustment in the Contract price or delivery date if the change affects the cost or time of performance. Such equitable adjustments require the written consent of the Contractor, which shall not be unreasonably withheld. If unusual quantity requirements arise, the Customer may solicit separate bids to satisfy them.~~

~~**26. Renewal.** Upon mutual agreement, the Customer and the Contractor may renew the Contract, in whole or in part, for a period that may not exceed 3 years or the term of the contract, whichever period is longer. Any renewal shall specify the renewal price, as set forth in the solicitation response. The renewal must be in writing and signed by both parties, and is contingent upon satisfactory performance evaluations and subject to availability of funds.~~

~~**27. Purchase Order Duration.** Purchase orders issued pursuant to a state term or agency contract must be received by the Contractor no later than close of business on the last day of the contract's term to be considered timely. The Contractor is obliged to fill those orders in accordance with the contract's terms and conditions. Purchase orders received by the contractor after close of business on the last day of the state term or agency contract's term shall be considered void.~~

~~Purchase orders for a one-time delivery of commodities or performance of contractual services shall be valid through the performance by the Contractor, and all terms and conditions of the state term or agency contract shall apply to the single delivery/performance, and shall survive the termination of the Contract.~~

~~Contractors are required to accept purchase orders specifying delivery schedules exceeding the contracted schedule even when such extended delivery will occur after expiration of the state term or agency contract. For example, if a state term contract calls for delivery 30 days after receipt of order (ARO), and an order specifies delivery will occur both in excess of 30 days ARO and after expiration of the state term contract, the Contractor will accept the order. However, if the Contractor expressly and in writing notifies the ordering office within ten (10) calendar days of receipt of the purchase order that Contractor will not accept the extended delivery terms beyond the expiration of the state term contract, then the purchase order will either be amended in writing by the ordering entity within ten (10) calendar days of receipt of the contractor's notice to reflect the state term contract delivery schedule, or it shall be considered withdrawn.~~

~~The duration of purchase orders for recurring deliveries of commodities or performance of services shall not exceed the expiration of the state term or agency contract by more than twelve months. However, if an extended pricing plan offered in the state term or agency contract is selected by the ordering entity, the contract terms on pricing plans and renewals shall govern the maximum duration of purchase orders reflecting such pricing plans and renewals.~~

~~Timely purchase orders shall be valid through their specified term and performance by the Contractor, and all terms and conditions of the state term or agency contract shall apply to the recurring delivery/performance as provided herein, and shall survive the termination of the Contract.~~

~~Ordering offices shall not renew a purchase order issued pursuant to a state term or agency contract if the underlying contract expires prior to the effective date of the renewal.~~

28. Advertising. Subject to Chapter 119, Florida Statutes, the Contractor shall not publicly disseminate any information concerning the Contract without prior written approval from the Customer, including, but not limited to mentioning the Contract in a press release or other promotional material, identifying the Customer or the State as a reference, or otherwise linking the Contractor's name and either a description of the Contract or the name of the State or the Customer in any material published, either in print or electronically, to any entity that is not a party to Contract, except potential or actual authorized distributors, dealers, resellers, or service

representative.

~~**29. Assignment.** The Contractor shall not sell, assign or transfer any of its rights, duties or obligations under the Contract, or under any purchase order issued pursuant to the Contract, without the prior written consent of the Customer. In the event of any assignment, the Contractor remains secondarily liable for performance of the contract, unless the Customer expressly waives such secondary liability. The Customer may assign the Contract with prior written notice to Contractor of its intent to do so.~~

30. Antitrust Assignment. The Contractor and the State of Florida recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the State of Florida. Therefore, the contractor hereby assigns to the State of Florida any and all claims for such overcharges as to goods, materials or services purchased in connection with the Contract.

~~**31. Dispute Resolution.** Any dispute concerning performance of the Contract shall be decided by the Customer's designated contract manager, who shall reduce the decision to writing and serve a copy on the Contractor. The decision shall be final and conclusive unless within twenty one (21) days from the date of receipt, the Contractor files with the Customer a petition for administrative hearing. The Customer's decision on the petition shall be final, subject to the Contractor's right to review pursuant to Chapter 120 of the Florida Statutes. Exhaustion of administrative remedies is an absolute condition precedent to the Contractor's ability to pursue any other form of dispute resolution; provided, however, that the parties may employ the alternative dispute resolution procedures outlined in Chapter 120.~~

~~Without limiting the foregoing, the exclusive venue of any legal or equitable action that arises out of or relates to the Contract shall be the appropriate state court in Leon County, Florida; in any such action, Florida law shall apply and the parties waive any right to jury trial.~~

32. Employees, Subcontractors, and Agents. All Contractor employees, subcontractors, or agents performing work under the Contract shall be properly trained technicians who meet or exceed any specified training qualifications. Upon request, Contractor shall furnish a copy of technical certification or other proof of qualification. All employees, subcontractors, or agents performing work under the Contract must comply with all security and administrative requirements of the Customer and shall comply with all controlling laws and regulations relevant to the services they are providing under the Contract. The State may conduct, and the Contractor shall cooperate in, a security background check or otherwise assess any employee, subcontractor, or agent furnished by the Contractor. The State may refuse access to, or require replacement of, any personnel for cause, including, but not limited to, technical or training qualifications, quality of work, change in security status, or non-compliance with a Customer's security or other requirements. Such approval shall not relieve the Contractor of its obligation to perform all work in compliance with the Contract. The State may reject and bar from any facility for cause any of the Contractor's employees, subcontractors, or agents.

33. Security and Confidentiality. The Contractor shall comply fully with all security procedures of the United States, State of Florida and Customer in performance of the Contract. The Contractor shall not divulge to third parties any confidential information obtained by the Contractor or its agents, distributors, resellers, subcontractors, officers or employees in the course of performing Contract work, including, but not limited to, security procedures, business operations information, or commercial proprietary information in the possession of the State or Customer. The Contractor shall not be required to keep confidential information or material that is publicly available through no fault of the Contractor, material that the Contractor developed independently without relying on the State's or Customer's confidential information, or material that is otherwise obtainable under State law as a public record. To insure confidentiality, the Contractor shall take appropriate steps as to its personnel, agents, and subcontractors. The warranties of this paragraph shall survive the Contract.

34.Contractor Employees, Subcontractors, and Other Agents. The Customer and the State shall take all actions necessary to ensure that Contractor's employees, subcontractors and other agents are not employees of the State of Florida. Such actions include, but are not limited to, ensuring that Contractor's employees, subcontractors, and other agents receive benefits and necessary insurance (health, workers' compensations, and unemployment) from an employer other than the State of Florida.

~~**35. Insurance Requirements.** During the Contract term, the Contractor at its sole expense shall provide commercial insurance of such a type and with such terms and limits as may be reasonably associated with the Contract. Providing and maintaining adequate insurance coverage is a material obligation of the Contractor. Upon request, the Contractor shall provide certificate of insurance. The limits of coverage under each policy maintained by the Contractor shall not be interpreted as limiting the Contractor's liability and obligations under the Contract. All insurance policies shall be through insurers authorized or eligible to write policies in Florida.~~

36. Warranty of Authority. Each person signing the Contract warrants that he or she is duly authorized to do so and to bind the respective party to the Contract.

37. Warranty of Ability to Perform. The Contractor warrants that, to the best of its knowledge, there is no pending or threatened action, proceeding, or investigation, or any other legal or financial condition, that would in any way prohibit, restrain, or diminish the Contractor's ability to satisfy its Contract obligations. The Contractor warrants that neither it nor any affiliate is currently on the convicted vendor list maintained pursuant to section 287.133 of the Florida Statutes, or on any similar list maintained by any other state or the federal government. The Contractor shall immediately notify the Customer in writing if its ability to perform is compromised in any manner during the term of the Contract.

38. Notices. All notices required under the Contract shall be delivered by certified mail, return receipt requested, by reputable air courier service, or by personal delivery to the agency designee identified in the original solicitation, or as otherwise identified by the Customer. Notices to the Contractor shall be delivered to the person who signs the Contract. Either designated recipient may notify the other, in writing, if someone else is designated to receive notice.

39. Leases and Installment Purchases. Prior approval of the Chief Financial Officer (as defined in Section 17.001, F.S.) is required for State agencies to enter into or to extend any lease or installment-purchase agreement in excess of the Category Two amount established by section 287.017 of the Florida Statutes.

~~**40. Prison Rehabilitative Industries and Diversified Enterprises, Inc. (PRIDE).** Section 946.515(2), F.S. requires the following statement to be included in the solicitation: "It is expressly understood and agreed that any articles which are the subject of, or required to carry out, the Contract shall be purchased from the corporation identified under Chapter 946 of the Florida Statutes (PRIDE) in the same manner and under the same procedures set forth in section 946.515(2) and (4) of the Florida Statutes; and for purposes of the Contract the person, firm, or other business entity carrying out the provisions of the Contract shall be deemed to be substituted for the agency insofar as dealings with such corporation are concerned." Additional information about PRIDE and the products it offers is available at http://www.pridefl.com.~~

~~**41. Products Available from the Blind or Other Handicapped.** Section 413.036(3), F.S. requires the following statement to be included in the solicitation: "It is expressly understood and agreed that any articles that are the subject of, or required to carry out, this contract shall be purchased from a nonprofit agency for the Blind or for the Severely Handicapped that is qualified pursuant to Chapter 413, Florida Statutes, in the same manner and under the same procedures set forth in section 413.036(1) and (2), Florida Statutes; and for purposes of this contract the person, firm, or other business entity carrying out the provisions of this contract shall be deemed~~

~~to be substituted for the State agency insofar as dealings with such qualified nonprofit agency are concerned." Additional information about the designated nonprofit agency and the products it offers is available at http://www.respectofflorida.org.~~

~~**42. Modification of Terms.** The Contract contains all the terms and conditions agreed upon by the parties, which terms and conditions shall govern all transactions between the Customer and the Contractor. The Contract may only be modified or amended upon mutual written agreement of the Customer and the Contractor. No oral agreements or representations shall be valid or binding upon the Customer or the Contractor. No alteration or modification of the Contract terms, including substitution of product, shall be valid or binding against the Customer. The Contractor may not unilaterally modify the terms of the Contract by affixing additional terms to product upon delivery (e.g., attachment or inclusion of standard preprinted forms, product literature, "shrink wrap" terms accompanying or affixed to a product, whether written or electronic) or by incorporating such terms onto the Contractor's order or fiscal forms or other documents forwarded by the Contractor for payment. The Customer's acceptance of product or processing of documentation on forms furnished by the Contractor for approval or payment shall not constitute acceptance of the proposed modification to terms and conditions.~~

43. Cooperative Purchasing. Pursuant to their own governing laws, and subject to the agreement of the Contractor, other entities may be permitted to make purchases at the terms and conditions contained herein. Non-Customer purchases are independent of the agreement between Customer and Contractor, and Customer shall not be a party to any transaction between the Contractor and any other purchaser.
State agencies wishing to make purchases from this agreement are required to follow the provisions of s. 287.042(16)(a), F.S. This statute requires the Department of Management Services to determine that the requestor's use of the contract is cost-effective and in the best interest of the State.

44. Waiver. The delay or failure by the Customer to exercise or enforce any of its rights under this Contract shall not constitute or be deemed a waiver of the Customer's right thereafter to enforce those rights, nor shall any single or partial exercise of any such right preclude any other or further exercise thereof or the exercise of any other right.

45. Annual Appropriations. The State's performance and obligation to pay under this contract are contingent upon an annual appropriation by the Legislature.

46. Execution in Counterparts. The Contract may be executed in counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

47. Severability. If a court deems any provision of the Contract void or unenforceable, that provision shall be enforced only to the extent that it is not in violation of law or is not otherwise unenforceable and all other provisions shall remain in full force and effect.

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EXHIBIT "B"
District Five Road Ranger Patrol Services for Interstates 75 (I-75) and 95 (I-95)
METHOD OF COMPENSATION
BE690

1.0 PURPOSE

This Exhibit defines the limits of compensation to be made to the contractor for the services set forth in Exhibit "A" and the method by which payments shall be made.

2.0 COMPENSATION

For the satisfactory performance of services detailed in Exhibit "A", the Vendor shall be paid the lump sum monthly price of $_109,944.00__ in Table 1 below. If any additional hours are requested by the Department for events that are considered national disasters, the Thanksgiving holiday, or for events such as the Daytona 500, the Department will request additional service hours from the Vendor/Contractor and will be paid an hourly rate of $_45.81 in Table 2 below. A Maximum Limiting amount of $_6,653,902.00 will be paid for services provided on this contract for the contract term, as approved by the Department. Funding for the current Fiscal Year for authorized services under this contract is approved in the amount of $__659,664.00. Funding for services will be authorized annually in the amounts shown in Table 3 below. At such time as the funding for future years become available, a “Letter of Authorization” will be issued authorizing those funds.

Table 1	**Item**	**Unit**	**Unit Price**	**# of Months**	**Minimum Monthly Hours**
1	Road Ranger Service Patrol Normal Service	(Lump Sum) Monthly	$109,944.00	12	2,400

Table 2	**Item**	**Unit**	**Unit Price**
2	Road Ranger Service Patrol Extended Service	(Per Hour)	45.81

Table 3, Fiscal Year Funding				
Fiscal Year		Months	Annual Amounts	
FY 2018-2019		6	$659,664.00	
FY 2019-2020		12	$1,330,780.50	
FY 2020-2021		12	$1,330,780.50	
FY 2021-2022		12	$1,330,780.50	
FY 2022-2023		12	$1,330,780.50	
FY 2023-2024		6	$671,116.00	
Contract Total Funding			$6,653,902.00	

At the Department's sole discretion additional funding may be added to the contract by issuing a Letter of Authorization (LOA). The Vendor shall not provide services that exceed the authorized amount(s) without approval from the Department.

Day trips for local training and to attend District Five meetings shall be paid for by the Contractor and will not be reimbursed by the Department.

2.1 ACTUAL EXPENDITURES

Limiting Amount Only

At the Departments sole discretion, the Vendor may be reimbursed at the actual cost for expenses necessary to successfully complete the services required under this contract. These expenses are beyond the services detailed in Exhibit “A”, Scope of Services, and will be reimbursed when invoiced with the proper receipt and must be approved by the Department. These expenses, if any, shall be agreed to in advance by the Department.

3.0 INVOICING PROCEDURE

Invoices will be prepared by the Vendor in a format prescribed of the Department. The invoices will be supported by such information as may be required by Department procedures to substantiate the charges being invoiced. The Vendor will maintain for this purpose a job cost accounting system that is acceptable to the Department.

If requested by the Department, the final invoice for this agreement will be accompanied by a certified job cost summary report generated by the accounting system. The report will include at a minimum the total number of hours and salary cost actually charged to the project.

The Department will render a decision on the acceptability of services within 5 working days of receipt of either the services or invoice, whichever is later. The Department reserves the right to withhold payments for work not completed, or work completed unsatisfactorily, or work that is deemed inadequate or untimely by the Department. Any payment withheld will be paid to the Vendor on the next invoice submitted for that work after the work is subsequently completed satisfactorily and adequately.

Invoices shall be submitted to: Florida Department of Transportation
Project Manager, Traffic Operations
Mail Station #562
719 South Woodland Blvd
Deland, Florida 32720-6834

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4.0 PROJECT CLOSEOUT

If requested, the Vendor will permit the Department to perform or have performed an audit of the records of the Vendor and any or all sub-vendors to support the compensation paid the Vendor. The audit will be performed as soon as practical after completion and acceptance of the contracted services. In the event funds paid to the Vendor under this Agreement are subsequently properly disallowed by the Department because of accounting errors or charges not in conformity with this Agreement, the Vendor agrees that such disallowed costs are due to the Department upon demand. Further, the Department will have the right to deduct from any payment due the Vendor under any other contract any amount due the Department.

5.0 TANGIBLE PERSONAL PROPERTY

This contract does not involve the purchase of Tangible Personal Property, as defined in Chapter 273, F.S.

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State of Florida
Department of Transportation

Attachment 1
Davis-Bacon Wage Rates

for

District Five Road Ranger Patrol Services for Interstates 75 (I-75) and 95 (I-95)

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

General Decision Number: FL180234 01/05/2018 FL234

Superseded General Decision Number: FL20170234

State: Florida

Construction Type: Highway

County: Volusia County in Florida.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* ELEC0915-004 12/01/2017

	Rates	Fringes
ELECTRICIAN	$ 28.18	38%+0.35

SUFL2013-052 08/19/2013

	Rates	Fringes
CARPENTER	$ 15.68	0.00
CEMENT MASON/CONCRETE		

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

FINISHER, Includes Form Work.....$ 13.97 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Striping Machine).....$ 15.57 0.00

HIGHWAY/PARKING LOT STRIPING:
Painter.....$ 12.13 0.00

IRONWORKER, ORNAMENTAL.....$ 13.48 0.00

IRONWORKER, REINFORCING.....$ 15.38 0.00

IRONWORKER, STRUCTURAL.....$ 16.42 0.00

LABORER (Traffic Control
Specialist).....$ 11.36 0.00

LABORER: Asphalt, Includes
Raker, Shoveler, Spreader and
Distributor.....$ 14.05 0.00

LABORER: Common or General.....$ 10.55 0.00

LABORER: Flagger.....$ 13.09 0.00

LABORER: Grade Checker.....$ 14.66 0.00

LABORER: Mason Tender -
Cement/Concrete.....$ 12.58 0.00

LABORER: Pipelayer.....$ 13.46 0.00

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 14.96 0.00

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 12.88 0.00

OPERATOR: Broom/Sweeper.....$ 12.91 0.00

OPERATOR: Bulldozer.....$ 15.23 0.00

OPERATOR: Concrete Finishing
Machine.....$ 15.44 0.00

OPERATOR: Crane.....$ 22.04 0.00

OPERATOR: Curb Machine.....$ 18.45 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

OPERATOR: Drill.....$ 13.04 0.00

OPERATOR: Forklift.....$ 10.43 0.00

OPERATOR: Gradall.....$ 14.71 0.00

OPERATOR: Grader/Blade.....$ 18.20 0.00

OPERATOR: Loader.....$ 14.01 0.00

OPERATOR: Mechanic.....$ 17.52 0.00

OPERATOR: Milling Machine.....$ 15.63 0.00

OPERATOR: Oiler.....$ 16.67 0.00

OPERATOR: Paver (Asphalt,
Aggregate, and Concrete).....$ 14.88 0.00

OPERATOR: Piledriver.....$ 17.23 0.00

OPERATOR: Post Driver
(Guardrail/Fences).....$ 15.97 0.00

OPERATOR: Roller.....$ 13.01 0.00

OPERATOR: Scraper.....$ 12.21 0.00

OPERATOR: Screed.....$ 14.66 0.00

OPERATOR: Trencher.....$ 14.25 0.00

PAINTER: Spray.....$ 19.57 0.00

TRAFFIC SIGNALIZATION:
Traffic Signal Installation.....$ 14.25 0.00

TRUCK DRIVER: Dump Truck.....$ 12.28 0.00

TRUCK DRIVER: Flatbed Truck.....$ 14.28 0.00

TRUCK DRIVER: Lowboy Truck.....$ 16.25 0.00

TRUCK DRIVER: Slurry Truck.....$ 11.96 0.00

TRUCK DRIVER: Water Truck.....$ 13.57 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example:

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current

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negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage

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payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

General Decision Number: FL180231 01/05/2018 FL231

Superseded General Decision Number: FL20170231

State: Florida

Construction Type: Highway

County: Seminole County in Florida.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* ELEC0915-004 12/01/2017

	Rates	Fringes
ELECTRICIAN.....	$ 28.18	38%+0.35

SUFL2013-049 08/19/2013

	Rates	Fringes
CARPENTER, Includes Form Work....	$ 14.55	0.00
CEMENT MASON/CONCRETE FINISHER...	$ 13.97	0.00

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FENCE ERECTOR.....$ 10.23 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Striping Machine).....$ 15.88 0.00

HIGHWAY/PARKING LOT STRIPING:
Painter.....$ 12.13 0.00

IRONWORKER, ORNAMENTAL.....$ 13.48 0.00

IRONWORKER, REINFORCING.....$ 16.28 0.00

IRONWORKER, STRUCTURAL.....$ 16.42 0.00

LABORER (Traffic Control
Specialist).....$ 11.61 0.00

LABORER: Asphalt, Includes
Raker, Shoveler, Spreader and
Distributor.....$ 14.05 0.00

LABORER: Common or General.....$ 10.68 0.00

LABORER: Flagger.....$ 13.09 0.00

LABORER: Grade Checker.....$ 15.25 0.00

LABORER: Mason Tender -
Cement/Concrete.....$ 12.58 0.00

LABORER: Pipelayer.....$ 13.56 0.00

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 15.18 0.00

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 12.88 0.00

OPERATOR: Broom/Sweeper.....$ 12.91 0.00

OPERATOR: Bulldozer.....$ 15.22 0.00

OPERATOR: Concrete Finishing
Machine.....$ 15.44 0.00

OPERATOR: Crane.....$ 23.11 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

OPERATOR: Curb Machine.....$ 18.45 0.00

OPERATOR: Drill.....$ 13.04 0.00

OPERATOR: Forklift.....$ 10.43 0.00

OPERATOR: Gradall.....$ 14.71 0.00

OPERATOR: Grader/Blade.....$ 18.20 0.00

OPERATOR: Loader.....$ 13.21 0.00

OPERATOR: Mechanic.....$ 18.05 0.00

OPERATOR: Milling Machine.....$ 14.79 0.00

OPERATOR: Oiler.....$ 16.67 0.00

OPERATOR: Paver (Asphalt,
Aggregate, and Concrete).....$ 14.91 0.00

OPERATOR: Piledriver.....$ 17.23 0.00

OPERATOR: Post Driver
(Guardrail/Fences).....$ 15.97 0.00

OPERATOR: Roller.....$ 13.50 0.00

OPERATOR: Scraper.....$ 12.21 0.00

OPERATOR: Screed.....$ 14.24 0.00

OPERATOR: Trencher.....$ 14.25 0.00

PAINTER: Spray.....$ 19.57 0.00

TRAFFIC SIGNALIZATION:
Traffic Signal Installation.....$ 16.08 0.00

TRUCK DRIVER: Dump Truck.....$ 14.51 0.00

TRUCK DRIVER: Flatbed Truck.....$ 14.28 0.00

TRUCK DRIVER: Lowboy Truck.....$ 15.89 0.00

TRUCK DRIVER: Slurry Truck.....$ 11.96 0.00

TRUCK DRIVER: Water Truck.....$ 13.29 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

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Survey Rate Identifiers

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Survey wage rates are not updated and remain in effect until a new survey is conducted.

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Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

General Decision Number: FL180224 01/05/2018 FL224

Superseded General Decision Number: FL20170224

State: Florida

Construction Type: Highway

County: Osceola County in Florida.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* ELEC0915-004 12/01/2017

	Rates	Fringes
ELECTRICIAN.....	$ 28.18	38%+0.35

SUFL2013-042 08/19/2013

	Rates	Fringes
CARPENTER, Includes Form Work....	$ 14.10	0.00
CEMENT MASON/CONCRETE FINISHER...	$ 13.00	0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

FENCE ERECTOR.....$ 10.23 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Striping Machine).....$ 15.88 0.00

HIGHWAY/PARKING LOT STRIPING:
Painter.....$ 12.13 0.00

IRONWORKER, ORNAMENTAL.....$ 13.48 0.00

IRONWORKER, REINFORCING.....$ 16.28 0.00

IRONWORKER, STRUCTURAL.....$ 16.42 0.00

LABORER (Traffic Control
Specialist).....$ 11.61 0.00

LABORER: Asphalt, Includes
Raker, Shoveler, Spreader and
Distributor.....$ 14.05 0.00

LABORER: Common or General.....$ 10.89 0.00

LABORER: Flagger.....$ 13.09 0.00

LABORER: Grade Checker.....$ 15.25 0.00

LABORER: Mason Tender -
Cement/Concrete.....$ 12.58 0.00

LABORER: Pipelayer.....$ 13.70 0.00

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 15.18 0.00

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 12.88 0.00

OPERATOR: Broom/Sweeper.....$ 12.91 0.00

OPERATOR: Bulldozer.....$ 15.22 0.00

OPERATOR: Concrete Finishing
Machine.....$ 15.44 0.00

OPERATOR: Crane.....$ 23.11 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

OPERATOR: Curb Machine.....$ 18.45 0.00

OPERATOR: Drill.....$ 13.04 0.00

OPERATOR: Forklift.....$ 10.43 0.00

OPERATOR: Gradall.....$ 14.71 0.00

OPERATOR: Grader/Blade.....$ 18.20 0.00

OPERATOR: Loader.....$ 13.93 0.00

OPERATOR: Mechanic.....$ 18.05 0.00

OPERATOR: Milling Machine.....$ 14.79 0.00

OPERATOR: Oiler.....$ 16.67 0.00

OPERATOR: Paver (Asphalt,
Aggregate, and Concrete).....$ 14.91 0.00

OPERATOR: Piledriver.....$ 17.23 0.00

OPERATOR: Post Driver
(Guardrail/Fences).....$ 15.97 0.00

OPERATOR: Roller.....$ 13.50 0.00

OPERATOR: Scraper.....$ 12.21 0.00

OPERATOR: Screed.....$ 14.24 0.00

OPERATOR: Trencher.....$ 14.25 0.00

PAINTER: Spray.....$ 19.57 0.00

TRAFFIC SIGNALIZATION:
Traffic Signal Installation.....$ 16.08 0.00

TRUCK DRIVER: Dump Truck.....$ 12.78 0.00

TRUCK DRIVER: Flatbed Truck.....$ 14.28 0.00

TRUCK DRIVER: Lowboy Truck.....$ 15.89 0.00

TRUCK DRIVER: Slurry Truck.....$ 11.96 0.00

TRUCK DRIVER: Water Truck.....$ 13.29 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were

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prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of

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each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
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With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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U.S. Department of Labor
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Washington, DC 20210

The request should be accompanied by a full statement of the

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interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

General Decision Number: FL180223 01/05/2018 FL223

Superseded General Decision Number: FL20170223

State: Florida

Construction Type: Highway

County: Orange County in Florida.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* ELEC0915-004 12/01/2017

	Rates	Fringes
ELECTRICIAN.....	$ 28.18	38%+0.35

SUFL2013-041 08/19/2013

	Rates	Fringes
CARPENTER, Includes Form Work....	$ 15.73	0.00
CEMENT MASON/CONCRETE FINISHER...	$ 12.95	0.31

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FENCE ERECTOR.....$ 10.23 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Striping Machine).....$ 15.45 0.00

HIGHWAY/PARKING LOT STRIPING:
Painter.....$ 12.13 0.00

IRONWORKER, ORNAMENTAL.....$ 13.48 0.00

IRONWORKER, REINFORCING.....$ 16.28 0.00

IRONWORKER, STRUCTURAL.....$ 16.42 0.00

LABORER (Traffic Control
Specialist).....$ 11.61 0.00

LABORER: Asphalt, Includes
Raker, Shoveler, Spreader and
Distributor.....$ 14.05 0.00

LABORER: Common or General.....$ 10.95 0.00

LABORER: Flagger.....$ 13.09 0.00

LABORER: Grade Checker.....$ 15.25 0.00

LABORER: Mason Tender -
Cement/Concrete.....$ 12.58 0.00

LABORER: Pipelayer.....$ 14.12 0.00

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 18.33 0.00

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 12.88 0.00

OPERATOR: Broom/Sweeper.....$ 12.91 0.00

OPERATOR: Bulldozer.....$ 15.22 0.00

OPERATOR: Concrete Finishing
Machine.....$ 15.44 0.00

OPERATOR: Crane.....$ 23.11 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

OPERATOR: Curb Machine.....$ 18.45 0.00

OPERATOR: Drill.....$ 13.04 0.00

OPERATOR: Forklift.....$ 10.43 0.00

OPERATOR: Gradall.....$ 14.71 0.00

OPERATOR: Grader/Blade.....$ 18.20 0.00

OPERATOR: Loader.....$ 14.64 0.00

OPERATOR: Mechanic.....$ 18.05 0.00

OPERATOR: Milling Machine.....$ 14.79 0.00

OPERATOR: Oiler.....$ 16.67 0.00

OPERATOR: Paver (Asphalt,
Aggregate, and Concrete).....$ 14.91 0.00

OPERATOR: Piledriver.....$ 17.23 0.00

OPERATOR: Post Driver
(Guardrail/Fences).....$ 15.97 0.00

OPERATOR: Roller.....$ 13.50 0.00

OPERATOR: Scraper.....$ 12.21 0.00

OPERATOR: Screed.....$ 14.24 0.00

OPERATOR: Trencher.....$ 14.25 0.00

PAINTER: Spray.....$ 19.57 0.00

TRAFFIC SIGNALIZATION:
Traffic Signal Installation.....$ 17.23 0.00

TRUCK DRIVER: Dump Truck.....$ 13.82 0.00

TRUCK DRIVER: Flatbed Truck.....$ 14.28 0.00

TRUCK DRIVER: Lowboy Truck.....$ 15.89 0.00

TRUCK DRIVER: Slurry Truck.....$ 11.96 0.00

TRUCK DRIVER: Water Truck.....$ 13.29 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were

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prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

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Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

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Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of

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each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the

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interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

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Administrative Review Board
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Washington, DC 20210

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END OF GENERAL DECISION

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

General Decision Number: FL180219 01/05/2018 FL219

Superseded General Decision Number: FL20170219

State: Florida

Construction Type: Highway

County: Marion County in Florida.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* SUFL2013-037 08/19/2013

	Rates	Fringes
CARPENTER, Includes Form Work....	$ 12.15	0.00
CEMENT MASON/CONCRETE FINISHER...	$ 13.79	0.00
ELECTRICIAN.....	$ 22.11	0.00
HIGHWAY/PARKING LOT STRIPING:		
Operator (Striping Machine).....	$ 12.68	0.32

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HIGHWAY/PARKING LOT STRIPING:
Painter.....$ 12.13 0.00

IRONWORKER, ORNAMENTAL.....$ 13.48 0.00

IRONWORKER, REINFORCING.....$ 15.82 0.00

IRONWORKER, STRUCTURAL.....$ 17.50 0.00

LABORER (Traffic Control
Specialist).....$ 10.95 0.00

LABORER: Asphalt, Includes
Raker, Shoveler, Spreader and
Distributor.....$ 13.11 0.00

LABORER: Common or General.....$ 9.63 0.00

LABORER: Flagger.....$ 12.02 0.00

LABORER: Grade Checker.....$ 13.52 0.00

LABORER: Mason Tender -
Cement/Concrete.....$ 12.81 0.00

LABORER: Pipelayer.....$ 13.94 0.00

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 14.00 0.00

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 12.70 0.00

OPERATOR: Broom/Sweeper.....$ 11.38 0.00

OPERATOR: Bulldozer.....$ 15.74 0.00

OPERATOR: Concrete Finishing
Machine.....$ 15.44 0.00

OPERATOR: Crane.....$ 20.38 0.00

OPERATOR: Curb Machine.....$ 19.21 0.00

OPERATOR: Distributor.....$ 14.13 0.00

OPERATOR: Drill.....$ 14.71 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

OPERATOR: Forklift.....$ 11.63 0.00

OPERATOR: Gradall.....$ 14.71 0.00

OPERATOR: Grader/Blade.....$ 21.50 0.00

OPERATOR: Loader.....$ 12.00 0.00

OPERATOR: Mechanic.....$ 16.68 0.00

OPERATOR: Milling Machine.....$ 14.06 0.00

OPERATOR: Oiler.....$ 14.92 0.00

OPERATOR: Paver (Asphalt,
Aggregate, and Concrete).....$ 13.90 0.00

OPERATOR: Piledriver.....$ 17.23 0.00

OPERATOR: Post Driver
(Guardrail/Fences).....$ 20.22 0.00

OPERATOR: Roller.....$ 10.94 0.00

OPERATOR: Scraper.....$ 12.01 0.00

OPERATOR: Screed.....$ 13.76 0.00

OPERATOR: Tractor.....$ 9.52 0.00

OPERATOR: Trencher.....$ 19.99 0.00

PAINTER: Spray.....$ 19.57 0.00

TRAFFIC SIGNALIZATION:
Traffic Signal Installation.....$ 16.32 0.00

TRUCK DRIVER: Dump Truck.....$ 11.32 0.00

TRUCK DRIVER: Flatbed Truck.....$ 14.28 0.00

TRUCK DRIVER: Lowboy Truck.....$ 15.64 0.00

TRUCK DRIVER: Slurry Truck.....$ 11.96 0.00

TRUCK DRIVER: Water Truck.....$ 12.42 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

FL219
WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
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U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

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Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material,

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etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

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END OF GENERAL DECISION

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

General Decision Number: FL180202 01/05/2018 FL202

Superseded General Decision Number: FL20170202

State: Florida

Construction Type: Highway

County: Brevard County in Florida.

Does not include Cape Canaveral Air Force Station, Patrick Air Force Base, Kennedy Space Flight Center and Malabar Radar Site.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* ELEC0915-004 12/01/2017

	Rates	Fringes
ELECTRICIAN.....	$ 28.18	38%+0.35

SUFL2013-020 08/19/2013

	Rates	Fringes

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

CARPENTER.....$ 16.68 0.00

CEMENT MASON/CONCRETE
FINISHER, Includes Form Work.....$ 15.50 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Striping Machine).....$ 14.69 0.00

HIGHWAY/PARKING LOT STRIPING:
Painter.....$ 12.13 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Spray Nozzleman).....$ 11.94 4.02

INSTALLER - GUARDRAIL.....$ 12.94 0.00

IRONWORKER, ORNAMENTAL.....$ 13.48 0.00

IRONWORKER, REINFORCING.....$ 15.38 0.00

IRONWORKER, STRUCTURAL.....$ 16.42 0.00

LABORER (Traffic Control
Specialist).....$ 11.94 0.00

LABORER: Asphalt, Includes
Raker, Shoveler, Spreader and
Distributor.....$ 14.05 0.00

LABORER: Common or General.....$ 10.70 0.00

LABORER: Flagger.....$ 13.09 0.00

LABORER: Grade Checker.....$ 14.66 0.00

LABORER: Landscape &
Irrigation.....$ 11.04 0.00

LABORER: Mason Tender -
Cement/Concrete.....$ 12.58 0.00

LABORER: Pipelayer.....$ 13.46 0.00

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 15.07 0.00

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 12.88 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

OPERATOR: Broom/Sweeper.....$ 12.91 0.00

OPERATOR: Bulldozer.....$ 14.98 0.00

OPERATOR: Concrete Finishing
Machine.....$ 15.44 0.00

OPERATOR: Crane.....$ 22.04 0.00

OPERATOR: Curb Machine.....$ 18.45 0.00

OPERATOR: Drill.....$ 13.04 0.00

OPERATOR: Forklift.....$ 10.43 0.00

OPERATOR: Gradall.....$ 14.71 0.00

OPERATOR: Grader/Blade.....$ 18.56 0.00

OPERATOR: Loader.....$ 13.72 0.00

OPERATOR: Mechanic.....$ 17.52 0.00

OPERATOR: Milling Machine.....$ 18.56 0.00

OPERATOR: Oiler.....$ 16.67 0.00

OPERATOR: Paver (Asphalt,
Aggregate, and Concrete).....$ 14.19 0.00

OPERATOR: Piledriver.....$ 17.23 0.00

OPERATOR: Post Driver
(Guardrail/Fences).....$ 15.97 0.00

OPERATOR: Roller.....$ 12.75 0.00

OPERATOR: Scraper.....$ 12.21 0.00

OPERATOR: Screed.....$ 14.87 0.00

OPERATOR: Tractor.....$ 13.41 0.00

OPERATOR: Trencher.....$ 14.25 0.00

PAINTER: Spray.....$ 19.57 0.00

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TRAFFIC SIGNALIZATION:
Traffic Signal Installation.....$ 15.93 0.00

TRUCK DRIVER: Dump Truck.....$ 12.09 0.00

TRUCK DRIVER: Flatbed Truck.....$ 14.28 0.00

TRUCK DRIVER: Lowboy Truck.....$ 16.25 0.00

TRUCK DRIVER: Slurry Truck.....$ 11.96 0.00

TRUCK DRIVER: Water Truck.....$ 13.57 0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

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2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

General Decision Number: FL180215 01/05/2018 FL215

Superseded General Decision Number: FL20170215

State: Florida

Construction Type: Highway

County: Lake County in Florida.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* ELEC0915-004 12/01/2017

	Rates	Fringes
ELECTRICIAN.....	$ 28.18	38%+0.35

SUFL2013-033 08/19/2013

	Rates	Fringes
CARPENTER, Includes Form Work....	$ 14.10	0.00
CEMENT MASON/CONCRETE FINISHER...	$ 13.00	0.00

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FENCE ERECTOR.....$ 10.23 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Striping Machine).....$ 15.88 0.00

HIGHWAY/PARKING LOT STRIPING:
Painter.....$ 12.13 0.00

IRONWORKER, ORNAMENTAL.....$ 13.48 0.00

IRONWORKER, REINFORCING.....$ 16.28 0.00

IRONWORKER, STRUCTURAL.....$ 16.42 0.00

LABORER (Traffic Control
Specialist).....$ 11.61 0.00

LABORER: Asphalt, Includes
Raker, Shoveler, Spreader and
Distributor.....$ 14.05 0.00

LABORER: Common or General.....$ 10.07 0.00

LABORER: Flagger.....$ 13.09 0.00

LABORER: Grade Checker.....$ 15.25 0.00

LABORER: Mason Tender -
Cement/Concrete.....$ 12.58 0.00

LABORER: Pipelayer.....$ 13.70 0.00

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 12.92 0.00

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 12.88 0.00

OPERATOR: Broom/Sweeper.....$ 12.91 0.00

OPERATOR: Bulldozer.....$ 15.22 0.00

OPERATOR: Concrete Finishing
Machine.....$ 15.44 0.00

OPERATOR: Crane.....$ 23.11 0.00

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OPERATOR: Curb Machine.....$ 18.45 0.00

OPERATOR: Drill.....$ 13.04 0.00

OPERATOR: Forklift.....$ 10.43 0.00

OPERATOR: Gradall.....$ 14.71 0.00

OPERATOR: Grader/Blade.....$ 18.20 0.00

OPERATOR: Loader.....$ 13.16 0.30

OPERATOR: Mechanic.....$ 18.05 0.00

OPERATOR: Milling Machine.....$ 12.94 0.00

OPERATOR: Oiler.....$ 16.67 0.00

OPERATOR: Paver (Asphalt,
Aggregate, and Concrete).....$ 14.91 0.00

OPERATOR: Piledriver.....$ 17.23 0.00

OPERATOR: Post Driver
(Guardrail/Fences).....$ 15.97 0.00

OPERATOR: Roller.....$ 12.21 0.00

OPERATOR: Scraper.....$ 12.21 0.00

OPERATOR: Screed.....$ 14.24 0.00

OPERATOR: Trencher.....$ 14.25 0.00

PAINTER: Spray.....$ 19.57 0.00

TRAFFIC SIGNALIZATION:
Traffic Signal Installation.....$ 16.08 0.00

TRUCK DRIVER: Dump Truck.....$ 12.35 0.00

TRUCK DRIVER: Flatbed Truck.....$ 14.28 0.00

TRUCK DRIVER: Lowboy Truck.....$ 15.89 0.00

TRUCK DRIVER: Slurry Truck.....$ 11.96 0.00

TRUCK DRIVER: Water Truck.....$ 13.29 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were

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prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of

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each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the

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interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

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U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

General Decision Number: FL180196 03/16/2018 FL196

Superseded General Decision Number: FL20170196

State: Florida

Construction Type: Highway

Counties: Bradford, Citrus, Dixie, Flagler, Hamilton, Taylor and Union Counties in Florida.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018
1	02/23/2018
2	03/16/2018

* ELEC0349-002 03/05/2018

	Rates	Fringes
ELECTRICIAN.....	$ 33.11	12.31

SUFL2013-014 08/19/2013

	Rates	Fringes

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FL196

CARPENTER, Includes Form Work....$ 12.63 0.00

CEMENT MASON/CONCRETE FINISHER...$ 13.19 0.00

FENCE ERECTOR.....$ 11.32 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Striping Machine).....$ 12.63 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Spray Nozzleman).....$ 10.02 0.00

INSTALLER - GUARDRAIL.....$ 14.74 0.00

IRONWORKER, REINFORCING.....$ 13.67 0.00

LABORER (Traffic Control
Specialist).....$ 10.60 0.00

LABORER: Asphalt, Includes
Raker, Shoveler, Spreader and
Distributor.....$ 10.23 0.00

LABORER: Common or General.....$ 9.35 0.00

LABORER: Flagger.....$ 9.41 0.00

LABORER: Grade Checker.....$ 10.97 0.00

LABORER: Landscape &
Irrigation.....$ 8.35 0.00

LABORER: Pipelayer.....$ 13.34 0.00

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 12.21 0.00

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 11.61 0.00

OPERATOR: Broom/Sweeper.....$ 10.89 0.00

OPERATOR: Bulldozer.....$ 14.26 0.00

OPERATOR: Crane.....$ 17.83 0.00

OPERATOR: Forklift.....$ 10.75 0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

OPERATOR: Grader/Blade.....$ 13.17 0.00

OPERATOR: Loader.....$ 11.86 0.00

OPERATOR: Mechanic.....$ 12.37 0.00

OPERATOR: Milling Machine.....$ 13.57 0.00

OPERATOR: Oiler.....$ 11.38 0.00

OPERATOR: Paver (Asphalt,
Aggregate, and Concrete).....$ 13.65 0.00

OPERATOR: Post Driver
(Guardrail/Fences).....$ 16.00 0.00

OPERATOR: Roller.....$ 10.11 0.00

OPERATOR: Screed.....$ 13.73 0.00

OPERATOR: Tractor.....$ 9.73 0.00

OPERATOR: Trencher.....$ 16.00 0.00

SIGN ERECTOR.....$ 13.15 0.00

TRAFFIC SIGNALIZATION:
Traffic Signal Installation.....$ 16.73 0.00

TRUCK DRIVER: Dump Truck.....$ 10.71 0.00

TRUCK DRIVER: Lowboy Truck.....$ 15.24 0.00

TRUCK DRIVER: Water Truck.....$ 12.04 0.00

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year.

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Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

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Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

General Decision Number: FL180192 03/16/2018 FL192

Superseded General Decision Number: FL20170192

State: Florida

Construction Type: Highway

County: Sumter County in Florida.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018
1	02/23/2018
2	03/16/2018

* ELEC0349-002 03/05/2018

	Rates	Fringes
ELECTRICIAN.....	$ 33.11	12.31

SUFL2013-010 08/19/2013

	Rates	Fringes
CARPENTER, Includes Form Work....	$ 12.63	0.00

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

CEMENT MASON/CONCRETE FINISHER...$ 13.19 0.00

FENCE ERECTOR.....$ 11.98 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Striping Machine).....$ 12.63 0.00

HIGHWAY/PARKING LOT STRIPING:
Operator (Spray Nozzleman).....$ 10.02 0.00

INSTALLER - GUARDRAIL.....$ 14.74 0.00

IRONWORKER, REINFORCING.....$ 13.67 0.00

LABORER (Traffic Control
Specialist).....$ 10.60 0.00

LABORER: Asphalt, Includes
Raker, Shoveler, Spreader and
Distributor.....$ 10.23 0.00

LABORER: Common or General.....$ 8.59 0.00

LABORER: Flagger.....$ 9.41 0.00

LABORER: Grade Checker.....$ 10.97 0.00

LABORER: Landscape &
Irrigation.....$ 8.35 0.00

LABORER: Pipelayer.....$ 13.34 0.00

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 12.21 0.00

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 11.61 0.00

OPERATOR: Broom/Sweeper.....$ 10.89 0.00

OPERATOR: Bulldozer.....$ 14.26 0.00

OPERATOR: Crane.....$ 17.83 0.00

OPERATOR: Forklift.....$ 10.75 0.00

OPERATOR: Grader/Blade.....$ 13.17 0.00

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OPERATOR: Loader.....$ 11.86 0.00

OPERATOR: Mechanic.....$ 12.37 0.00

OPERATOR: Milling Machine.....$ 13.57 0.00

OPERATOR: Oiler.....$ 11.38 0.00

OPERATOR: Paver (Asphalt,
Aggregate, and Concrete).....$ 13.65 0.00

OPERATOR: Post Driver
(Guardrail/Fences).....$ 16.00 0.00

OPERATOR: Roller.....$ 10.11 0.00

OPERATOR: Screed.....$ 13.73 0.00

OPERATOR: Tractor.....$ 9.73 0.00

OPERATOR: Trencher.....$ 16.00 0.00

SIGN ERECTOR.....$ 13.15 0.00

TRAFFIC SIGNALIZATION:
Traffic Signal Installation.....$ 16.73 0.00

TRUCK DRIVER: Dump Truck.....$ 10.71 0.00

TRUCK DRIVER: Lowboy Truck.....$ 15.24 0.00

TRUCK DRIVER: Water Truck.....$ 12.04 0.00

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including

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preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

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Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on

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a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

To: Tamara.Hodgkins@dot.state.fl.us

FLORIDA DEPARTMENT OF TRANSPORTATION
FUNDS APPROVAL

BE690

12/21/2018

CONTRACT INFORMATION

Contract:	BE690
Contract Type:	B1 - OTHER CONTRACTUAL SERVICE (OTHER CS)
Method of Procurement:	B - REQUEST FOR PROPOSAL (287.057,F.S.)
Vendor Name:	AUTOBASE INC.
Vendor ID:	F113538017001
Beginning Date of This Agreement:	01/01/2019
Ending Date of This Agreement:	12/31/2023
Contract Total/Budgetary Ceiling:	bc = $6,653,902.00
Description:	District Five Road Ranger Patrol Services for Interstates 75(I-75) and 95 (I-95)

FUNDS APPROVAL INFORMATION

FUNDS APPROVED/REVIEWED FOR ROBIN M. NAITOVE, CPA, COMPTROLLER ON 12/21/2018

Action:	Original
Reviewed or Approved:	APPROVED
Organization Code:	55054030511
Expansion Option:	AF
Object Code:	139900
Amount:	$659,664.00
Financial Project:	41095717208
Work Activity (FCT):	309
CFDA:	
Fiscal Year:	2019
Budget Entity:	55150200
Category/Category Year:	088712/19
Amendment ID:	O001
Sequence:	00
User Assigned ID:	
Enc Line (6s)/Status:	0001/04

Total Amount: $659,664.00

To: Tamara.Hodgkins@dot.state.fl.us

FLORIDA DEPARTMENT OF TRANSPORTATION
FUNDS APPROVAL

BE690

12/20/2018

CONTRACT INFORMATION

Contract:	BE690
Contract Type:	B1 - OTHER CONTRACTUAL SERVICE (OTHER CS)
Method of Procurement:	B - REQUEST FOR PROPOSAL (287.057,F.S.)
Vendor Name:	AUTOBASE INC.
Vendor ID:	F113538017001
Beginning Date of This Agreement:	01/01/2019
Ending Date of This Agreement:	12/31/2023
Contract Total/Budgetary Ceiling:	bc = $6,653,902.00
Description:	District Five Road Ranger Patrol Services for Interstates 75(I-75) and 95 (I-95)

FUNDS APPROVAL INFORMATION

FUNDS APPROVED/REVIEWED FOR ROBIN M. NAITOVE, CPA, COMPTROLLER ON 12/20/2018

Action:	Future Year	Future Year	Future Year
Reviewed or Approved:	*REVIEWED	*REVIEWED	*REVIEWED
Organization Code:	55054030511	55054030511	55054030511
Expansion Option:	AH	AH	AH
Object Code:	139900	139900	139900
Amount:	$1,330,780.50	$1,330,780.50	$1,330,780.50
Financial Project:	41095718202	41095718202	41095718202
Work Activity (FCT):	683	683	683
CFDA:			
Fiscal Year:	2020	2021	2022
Budget Entity:	55150200	55150200	55150200
Category/Category Year:	088866/20	088866/21	088866/22
Amendment ID:	A001	A001	A001
Sequence:	00	01	02
User Assigned ID:			
Enc Line (6s)/Status:	/04	/04	/04

Total Amount: $3,992,341.50

***Reviewed Funds Approval and encumbrance processing is contingent upon Annual Legislative appropriation.**

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Detail by Entity Name

Foreign Profit Corporation
AUTOBASE INC.

Filing Information

Document Number	F15000002942
FEI/EIN Number	11-3538017
Date Filed	07/06/2015
State	NY
Status	ACTIVE

Principal Address

104 MORRIS LANE
MASSAPAEQUA PARK, NY 11762

Mailing Address

104 MORRIS LANE
MASSAPAEQUA PARK, NY 11762

Registered Agent Name & Address

WILKES, JONATHAN
1077 SUNDAY ROAD
CHIPLEY, FL 32428

Address Changed: 03/02/2016

Officer/Director Detail

Name & Address

Title PC

LABELLA, DONNA
104 MORRIS LANE
MASSAPAEQUA PARK, NY 11762

Title VPVC

SCOTTI, PETER
162 N. DETROIT AVENUE
MASSAPEQUA, NY 11758

Title Secretary

LaBella, Joseph

DocuSign Envelope ID: B1F57843-1C38-435D-BA2E-1DC214466B9C

104 MORRIS LANE
MASSAPEQUA PARK, NY 11762

Annual Reports

Report Year	Filed Date
2016	03/02/2016
2017	01/14/2017
2018	01/18/2018

Document Images

01/18/2018 -- ANNUAL REPORT	View image in PDF format
01/14/2017 -- ANNUAL REPORT	View image in PDF format
03/02/2016 -- ANNUAL REPORT	View image in PDF format
01/04/2016 -- Reg. Agent Change	View image in PDF format
07/06/2015 -- Foreign Profit	View image in PDF format

AUTOB-1 OP ID: KF

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 12/21/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Central Insurance Agency, Inc.
93 East Main Street
Smithtown, NY 11787
George Gavaris

CONTACT NAME: Central Insurance Agency
PHONE (A/C, No, Ext): 877-242-9600 FAX (A/C, No): 877-243-8995
E-MAIL ADDRESS: certificates@ciainsures.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : United Specialty Insurance	12537
INSURER B : FWCJUA	80179
INSURER C : St. Paul Fire & Marine Ins.Co.	24767
INSURER D : Gemini Insurance Company	10833
INSURER E :	
INSURER F :	

INSURED
AutoBase, Inc.
326 Bayview Ave
Amityville, NY 11701

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
D	X COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE / X OCCUR	Y		VCGP082315	11/27/2018	11/27/2019	DAMAGE TO RENTED PREMISES (Ea occurrence)	$
	X Professional Liab			VCGP082315	11/27/2018	11/27/2019	MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	X POLICY / PRO-JECT / LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS / NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
C	X UMBRELLA LIAB / X OCCUR						EACH OCCURRENCE	$ 10,000,000
	EXCESS LIAB / CLAIMS-MADE			ZUP-91M4701A-18-NF	12/01/2018	12/01/2019	AGGREGATE	$ 10,000,000
	DED / X RETENTION $ 10,000							$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						X PER STATUTE / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N	N / A		UB-7D77163-3-18	11/07/2018	11/07/2019	E.L. EACH ACCIDENT	$ 1,000,000
	(Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
A	Garage Keepers			USA-4203191	01/12/2018	01/12/2019	Veh Limit	100,000
A	Garage Liability			USA-4203191	01/12/2018	01/12/2019	Occ/Agg	1mil/3mil

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Florida Department of Transportation is included as an additional insured as required by Contract #BE690

CERTIFICATE HOLDER

FLORIDA

Florida Dept of Transportation
719 South Woodland Blvd
DeLand, FL 32720

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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Cancellation Notice: Should any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will mail 30 days written notice to the certificate holder named to the left.

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ID	1306
Advertisement Date	10/22/2018
Vendor Name	AutoBase, Inc.
Contract Manager	Miller, Ron
Contract Category	Contractual Services
Advertisement Type	RFP
Advertisement Number	RFP-DOT-18-19-5005-RDRG
District	D5
County	DISTRICTWIDE
Description	Road Ranger Services for I-75 and I-95 within District Five to provide motorist aid
Scope	District Five is seeking qualified proposers to provide Road Ranger services on Interstates 75 (I-75) and 95 (I-95) within District Five to provide motorist aid during the specified time listed in the Scope of Services
Estimated Contract Start Date	1/1/2019
Estimated Contract End Date	12/31/2024
Estimated Contract Amount	$6,596,640.00
Approved By Executive Office	Yes

Version: 3.0
Created at 10/26/2018 11:35 AM by Hodgkins, Tamara
Last modified at 12/17/2018 3:22 PM by Carpenter, Amanda

Close

Enhanced with DFFS

Appendix H

District 5
I-4 Concessionaire Road Ranger Contract

All leaking pipe shall be repaired and/or replaced at Concessionaire's expense. Concessionaire shall submit all repair procedures to FDOT for review and approval.

3 OPERATIONS REQUIREMENTS

Concessionaire shall be responsible for operating the Project with the main objectives of maximizing safety, reliability and roadway availability. Concessionaire shall be responsible for operating the Project within the applicable O&M Limits. Concessionaire shall provide and maintain the appropriate number of properly trained operations staff to perform the operating duties.

3.1 Regional Traffic Management Center Operations

3.1.1 RTMC Control Room Personnel

Concessionaire shall ensure that staff wears a picture ID when stationed at the RTMC and maintains a professional demeanor and appearance at all times. Service Patrol and RTMC staff shall attend semi-annual joint RTMC Operator/Road Ranger training provided by FDOT.

3.1.2 RTMC Control Room Hours of Operation

FDOT will provide Concessionaire a station in the RTMC for two control room personnel. The station will be available at all times (24 hours per day seven days a week, every day of the year) and utilized at Concessionaire's discretion.

3.2 Data and Video Sharing

FDOT will share with Concessionaire all live streaming video within the Project Limits provided Concessionaire establishes a network connection.

Concessionaire shall not record video obtained through the use of ITS cameras without prior written permission from FDOT. Concessionaire shall comply with FDOT CCTV Agreement Procedure No. 750-040-005.

Concessionaire shall not provide data or live video feeds to any person, organization or entity without prior written permission from FDOT.

3.3 Open Roads Policy

Concessionaire shall comply with the State of Florida "Open Roads Policy", an agreement between the Florida Highway Patrol (FHP) and FDOT to provide traffic control to expedite the removal of vehicles, cargo, and debris from roadways on the State Highway System and to restore in an URGENT MANNER the safe and orderly flow of traffic following a motor vehicle crash or incident on Florida's roadways.

3.4 Traffic Incident Management (TIM)

TIM is the planned and coordinated program to detect, respond to, and clear traffic incidents, thereby restoring traffic capacity as safely and as quickly as possible. Concessionaire has important roles and responsibilities in the event of a traffic incident. These are detailed in the Traffic Incident Management Recommended Operational Guidelines included in the Reference Documents along with the roles and responsibilities for other regional participants. Coordination of the actions and

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resources for all participants is vital to the success of TIM. Concessionaire shall be part of the Tri-County TIM Team beginning at NTP 2 and through the remainder of the Term. This coordinated process involves a number of public and private sector partners, including the following agencies and services:

a. Law enforcement

b. Fire and rescue

c. Emergency medical services

d. Hazardous material concessionaires

e. Towing and recovery

f. Transportation agencies

g. Traffic information media

h. Emergency management

Concessionaire shall install 511 signage, Move-Over signs, and Call *FHP for Service Patrol signs to facilitate the TIM activities within the O&M Limits. Signs shall be per the requirements of FDOT's Traffic Engineering Manual. Concessionaire will also be required to provide a TIM Plan consistent with the Open Roads Policy to include minor and major incidents within the Project Limits. This plan shall describe resources and arrangements for TIM within the Project.

3.5 Service Patrol Program

Concessionaire shall provide a Service Patrol Program for the Project. The Service Patrol shall be free of charge to the public. The purpose of the Service Patrol Program is to patrol the Project Limits for fault detections, clearing disabled vehicles from travel lanes, changing flat tires, jump-starting batteries, minor mechanical repairs, removing minor non-hazardous spills and debris from the highway and assisting the Florida Highway Patrol and local law enforcement during incidents. Service Patrol vehicles shall conform to statewide standards in services provided, paint scheme, markings and equipment load-out. From the date of NTP 2 and for the duration of the Term, Concessionaire shall operate the Service Patrol Program within the Service Patrol Limits as shown in Volume III – Additional Mandatory Standards.

Concessionaire shall be responsible for developing a set of Standard Operating Guidelines for the Service Patrol Program ("Service Patrol SOG") and submit it as part of the O&M Plan detailed in Section 4-1.3 of the Technical Requirements. The current District 5 Road Ranger Service Patrol Contract and FDOT Road Ranger Program Procedure No. 750-030-015 are included in the Reference Documents.

3.5.1 Services to Be Provided by Concessionaire

Concessionaire shall furnish all personnel, supervision, expertise, vehicles, equipment, materials, parts, licenses, supplies and incidentals necessary to provide the Service Patrol Program described herein.

Concessionaire shall be responsible for assisting FDOT and the RTMC with providing immediate first-hand information on incidents involving fatalities, hazardous spills, etc. In addition, when directed by FDOT, Concessionaire shall provide this type of information to other government agencies, private companies or individuals.

3.5.1.1 Concessionaire's Service Patrol Project Manager

Concessionaire shall appoint a project manager ("Service Patrol Project Manager") to be responsible for the Service Patrol Program. This person shall be thoroughly knowledgeable and experienced in relation to all the aspects of the services required herein, and shall have the administrative authority to deal with any situation in relation to the personnel and service patrol operation. This person shall be available to FDOT 24 hours a day, seven days a week through a reliable, toll free or local area code phone number. The Service Patrol Project Manager is to act as the incident response coordinator and report real time incident conditions to the RTMC.

3.5.1.1.1 Service Patrol Project Manager Staffing Certifications

Concessionaire shall be responsible for ensuring that the Service Patrol Project Manager is trained and qualified, prior to the start of service, with the following certifications, at a minimum:

a. National Incident Management System (NIMS) Incident Management and Command

- National Incident Management System-Introduction
- Introduction to Incident Command System

b. FDOT Advanced Maintenance of Traffic

3.5.1.2 Service Patrol Coverage Limits

Service Patrol Program will be provided by Concessionaire to patrol, respond and assist motorists and law enforcement agencies, as directed by FDOT and the RTMC, within the Service Patrol Limits as shown in Service Patrol Limits Map, included in Volume III – Additional Mandatory Standards.

3.5.1.3 Incident Data Collection

Concessionaire shall maintain an incident report which shall be completed and submitted to FDOT within 24 hours after the incident was cleared. The incident report shall reflect, at a minimum, the following data:

a. The month, day and year of the incident occurrence.
b. The Service Patrol operator name and truck number.
c. The time when the Service Patrol operator was notified of a given incident
d. The time Service Patrol vehicle starts in-route to the incident scene.
e. If a decision was made not to respond, the name of the decision maker and reasons.

f. The time of arrival of the Service Patrol at a given incident.

g. The time of departure of the Service Patrol from the scene of a given incident.

h. Lane closure time, by each lane.

i. Lane open time, by each lane

j. The nature of each incident, such as debris removal, stalled vehicle and crash.

k. A list of the equipment and quantity used.

l. Where applicable, the following information regarding on scene contacts shall be recorded:

1. FHP
2. FHP incident commander
3. FHP incident case number
4. Investigation trooper
5. Number of troopers on scene
6. Duties of troopers
7. Other law enforcement assistance
8. Fire & rescue
9. Service Patrol
10. Medical examiner's office
11. Tow company
12. Environmental clean-up agency
13. Other pertinent information or comments.

3.5.1.4 Disposal of Debris

Debris gathered during the patrolling rounds and generated during incidents, shall be disposed of by Concessionaire. Concessionaire shall use appropriate containers to store materials collected from travel lanes or at the incident sites during clean up. Service Patrol Operators shall not dispose of collected material at any roadside and shall only dispose of the collected material at official collection sites.

3.5.1.5 Minimum Number of Service Patrol Vehicles Required

Assuring Service Patrol availability for the Project is the responsibility of Concessionaire. Concessionaire shall provide the appropriate number of Service Patrol vehicles needed and shall meet the requirements of the Contract Documents.

3.5.1.6 Service Patrol Vehicle Inspections

All Service Patrol vehicles and their associated equipment, accessories and parts shall be subject to periodic inspection by FDOT to identify potentially unsafe, poorly maintained or improperly

equipped vehicles. FDOT may order such vehicle(s) removed from service and that they be immediately replaced with acceptable service vehicles at Concessionaire's cost.

3.5.1.7 Customer Satisfaction Survey

Upon the completion of assisting a motorist the Service Patrol operator shall provide the motorist with a FDOT provided postage paid comment card. Comment cards returned by motorists will be collected and evaluated by FDOT on a quarterly basis.

3.5.2 Service Patrol Vehicle and Equipment Requirements

All Service Patrol vehicles, vehicle markings and equipment shall be consistent with procedure 750-030-015. FDOT shall review and approve the design of all vehicles and equipment.

3.5.3 Communication Equipment Requirements

Concessionaire is to develop the Service Patrol vehicle communications equipment to be consistent with Procedure 750-030-015. Equipment specifications and requirements should be included the Service Patrol SOG.

3.5.3.1 Automatic Vehicle Location and Service Patrol Mobile Software

a. Concessionaire shall install, operate, and maintain a tablet PC or equivalent electronic device mounted in each vehicle to support the Automatic Vehicle Location (AVL) system and the Road Ranger Mobile Application (RRMA) to be provided by FDOT.

b. Concessionaire shall mount the tablet PC's or equivalent electronic device in a fixed bracket in each vehicle with a power connection and any necessary antennae to improve the wireless data connection and GPS reception.

c. All GPS receivers must capture location packets for the AVL system 99% of the time. Defective GPS receivers shall be replaced promptly.

d. Concessionaire shall purchase tablet PC's or equivalent electronic device with GPS capability and wireless data connectivity to the RTMC for each vehicle, including backup vehicles. The Service Patrol SOG should detail the tablet PC or equivalent electronic device specifications.

e. Concessionaire shall pay all costs related to the hardware and software in the vehicles, including equipment costs, installation, software licenses, and network services.

f. Concessionaire's staff (Service Patrol Project Manager and patrol vehicle operators) shall complete training provided for the RRMA system and demonstrate competence and ability to operate the RRMA system.

g. Concessionaire shall be responsible for protecting the hardware and software system components installed in the vehicles.

h. The data generated by the AVL and RRMA systems shall be recorded and stored for a minimum of seven years. Real-time AVL data will be provided to FDOT as well as access to historical AVL data for reporting, analysis, and auditing purposes.

3.5.4 Service Patrol Vehicle Operators Duties and Responsibilities

The Service Patrol SOG should detail the patrol operators' duties and responsibilities, and how all regulations and safety rules will be followed. The Service Patrol SOG should detail the requirements for Service Patrol operator resumes, background checks and driver's license checks. It is Concessionaire's responsibility to ensure the Service Patrol operators are sufficiently qualified and trained before performing their duties and responsibilities.

If a particular Service Patrol operator, in the opinion of FDOT, has behaved inappropriately based on any of the requirements, regulations, rules, or guidelines set forth in the Service Patrol SOG, FDOT reserves the right to restrict the operator from performing the duties and responsibilities of a Service Patrol operator, and also from interfacing with any external partner, agency, media, or member of the general public within the scope of this project, for a period of time to be determined at FDOT's discretion, with no upper limit.

3.6 Emergency Access Gates

Concessionaire shall test, inspect, and maintain the operations of the emergency access gates located in the barrier wall between the Express Lanes and the General Use Lanes to (1) provide emergency responders with strategic accessibility between the Express Lanes and the General Use Lanes and (2) to provide egress points for motorists stranded in the Express Lanes following major incidents.

3.7 Emergency Management

3.7.1 General

FDOT categorizes Emergency management into two classifications: "Governor Declared Emergencies" and "Other Emergencies." Governor Declared Emergencies will most commonly be major hurricanes or other natural disasters, but can include smaller natural disasters/events/storms, collisions with structures and related components, and incidents/events resulting from human interactions. Other Emergencies are incidents/events that do not prompt the Governor of Florida to declare a state of Emergency in response to the incident/event. Other Emergencies will most commonly be traffic crashes, guardrail hits, severe potholes, debris within travel lanes, crash cushion hits, roadway shoulder wash-outs, roadway cave-ins and downed light poles but can include natural disasters/events/storms and incidents/events resulting from human interactions.

For any Emergency, Concessionaire shall perform all aspects of responding to the incident/event, including pre-event preparation, post-event initial response to protect the traveling public from hazards created by the Emergency, and post-event cleanup and repair, in each case as directed by FDOT. Concessionaire shall perform the following three (3) activities before every foreseeable Emergency management incident/event:

a. Develop a complete up-to-date list of equipment resources and staging locations and of all stockpiled materials and their locations.

b. Secure and lockdown all structures covered under the Contract Documents.

c. In preparation for high winds, rains, and other impending elements, secure all existing worksites associated with the Project.

Unless otherwise noted in the Contract Documents, FDOT will not provide additional compensation to Concessionaire through the Contract Documents for any Emergency management activities, including the three activities described above.

For all Emergency management activities, FDOT reserves the right to take control of the incident and/or perform recovery work with its own or other contracted forces when FDOT determines it is in FDOT's best interest to do so.

3.7.2 Emergency Management Plan

Concessionaire shall know the applicable District Comprehensive Emergency Management Plan as well as the FHWA and FEMA guidelines for federal reimbursement. Concessionaire shall ensure compliance with all State and Federal Emergency management requirements. Concessionaire shall administer all response and recovery efforts in accordance with these documents. Concessionaire shall develop and submit it as part of the O&M Plan detailed in Section 4-1.3 of the Technical Requirements, an Emergency Management Plan that contains all elements of the District's Comprehensive Emergency Management Plan. Concessionaire shall include details in the Emergency Management Plan including, at a minimum:

- Procedures for incident/event management
- Agency and public notifications
- Assurance of motorist safety
- Handling of hazardous waste
- Coordination with law enforcement and other appropriate agencies
- Traffic control
- Coordination with FDOT and other agencies to establish or implement pre-established detour routes
- Maintenance of detour routes
- Making emergency repairs
- Debris removal
- Evacuation/ response
- Submission of incident/event reports
- Plan for compliance with the Open Roads Policy
- Detailed organizational structure with the functions, qualifications, experience level, and contact information of staff assigned to respond to incidents/events

Concessionaire shall update the Emergency Management Plan in April of each year by engaging in an iterative process of discussion between FDOT and Concessionaire whereby lessons learned from past experience can be implemented for future use. Prior to the occurrence of any incidents/events,

Concessionaire shall ensure that an approved Emergency Management Plan is in effect and shall be prepared to act upon that plan.

3.7.3 Specific Concessionaire Responsibilities for Governor Declared Emergencies

Governor Declared Emergencies are incidents/events that prompt the Governor of Florida to declare a state of Emergency in response to the incident/event. Concessionaire shall perform the following post-event activities:

a. Search roadways within the O&M Limits for hazards (roadway washouts/cave-ins, downed electrical lines, non-traversable bridges, etc.). This may include clearing some debris from the roadway in order to access these hazardous areas. Concessionaire shall immediately respond to perform traffic control, set up safety devices, and lay out established or improvised detour routes in order to protect the traveling public from hazards created by the incident/event. When detour routes are required due to an incident/event occurring within the O&M Limits, Concessionaire shall manage and maintain the entire detour route, even if the route extends onto roadways outside the O&M Limits. Concessionaire shall coordinate all detours with the District maintenance office and other agencies including incidents/events not in the Project Limits or the O&M Limits but with detours extending into the Project Limits or O&M limits.

b. Notify FDOT's designated contact person immediately upon occurrence of all major incidents/events and immediately upon road closure for all roadway closures. Concessionaire shall notify FDOT upon roadway reopening.

c. Inspect and perform any minor repairs.

d. Perform damage assessment reviews as per *Bridge, Overhead Sign Structures and High Mast Light Poles Damage Assessment Review Guidelines.*

e. Concessionaire shall not perform debris removal, cleanup, or federally reimbursable repair work necessitated by a Governor Declared Emergency incident/event unless otherwise directed by FDOT.

3.7.4 Specific Concessionaire Responsibilities for Other Emergencies

Concessionaire shall respond and deploy resources according to the goals established in the Open Roads Policy and as detailed in this Section. Concessionaire shall arrive onsite, prepared to take necessary action with necessary manpower and emergency response equipment to safely secure the site and shall provide temporary traffic control as well as relieving Law Enforcement personnel of traffic control functions (if applicable) within the time periods detailed in Table 4.1 and 4.3.

Concessionaire shall manage all aspects of traffic control related to an incident/event, including coordination with governmental agencies when incidents/events spill over onto roadways and/or structures not included in the construction Project Limits or the O&M Limits. When detour routes are required due to an incident/event occurring on a roadway and/or structure, Concessionaire shall manage and maintain the entire detour route including

roadways and/or structures extending beyond the construction Project Limits or O&M Limits. Concessionaire shall be responsible for notifying the RTMC immediately upon occurrence of all major incidents/events and immediately upon road closure for all roadway and/or structure closures. Concessionaire shall notify FDOT upon roadway and/or structure reopening. Communications with the RTMC shall be maintained on 15 minute intervals during the incident/event.

3.8 Interagency Participation

Concessionaire shall participate in, and adhere to all guidelines set forth by interagency organizations as directed by FDOT.

3.9 Traffic Operations

FDOT will be responsible for monitoring safety and operations issues on the Project. Concessionaire shall conduct awareness meetings with traffic operations staff every 3 months (quarterly) to review any safety or operations issues on the Project, unless otherwise prompted by urgent traffic operations issues. FDOT will conduct traffic safety studies, review crash data annually and identify crash patterns. Concessionaire shall develop countermeasures for FDOT's review and approval, in its reasonable discretion, and implement as necessary, excluding signal re-timing.

Concessionaire shall coordinate with FDOT on the following traffic operations issues:

a. Speed limit changes to the ramps within the Project;

b. Signing and pavement marking improvements;

c. Modifications to regulatory, overhead and ground mounted signs;

d. Interchange modifications;

e. Ramp congestion;

f. Experimentation with new products

g. Special event approval / coordination; and

h. Safety studies.

Concessionaire shall request approval from FDOT for revisions and modifications to:

a. Speed limits within the Operating Period O&M Limits.

b. Modification to any interchanges within the Project.

3.9.1 Portable Traffic Monitoring Sites (PTMS)

Throughout the Operating Period, Concessionaire shall collect traffic classification / volume counts at each of FDOT's existing PTMS sites within the Project Limits. Data collection shall be in accordance with FDOT Traffic Monitoring Handbook. Traffic classification / volume counts shall be collected once annually for a single continuous 48 hour period between the dates of January 15 and April 15 of each calendar year. Proposed dates for data collection shall be submitted and approved by FDOT prior to collection of any data. All data shall be submitted in a format that can be processed with FDOT software. Any data not determined acceptable by the FDOT District 5 Data Collection Manager shall be recounted / resubmitted for approval.

3.9.2 Telemetered Traffic Monitoring Site (TTMS)

Throughout the Operating Period, Concessionaire shall maintain the data collection ability provided by FDOT's existing Telemetered Traffic Monitoring Sites (TTMS) at the following locations:

- Site 750196 located just east of Kaley Avenue (mile point 16.408)
- Site 770343 located 400' west of EE Williamson overpass (mile point 5.135)

Refer to FDOT Roadway and Traffic Design Standards for TTMS installation requirements.

All work associated with the TTMS sites shall be coordinated with FDOT. Concessionaire shall contact FDOT ten days prior to any roadwork performed in the vicinity of the existing TTMS sites and ten days prior to installation of any new or replacement site.

3.10 Customer Relations Unit

Concessionaire shall provide a Customer Relations Unit that distributes general information regarding the Project to the public. Concessionaire shall not be responsible for SunPass customer support or tolls related questions. Concessionaire shall forward these SunPass customer support or tolls related questions to the FTE SunPass customer service center. The Customer Relations Unit shall maintain a telephone line dedicated to handling incoming calls and distributing information to callers, a customer service rating program, a complaint tracking system, and a corrective action program. The Customer Relations Unit shall handle complaints and requests from the general public, FDOT, RTMC and other governmental entities that are received via telephone, email or in person. Concessionaire shall report safety related complaints to FDOT within one day. Other complaints shall be reported and documented in Concessionaire's O&M Monthly Report. Concessionaire shall respond to valid complaints or requests to the extent that the complaints or requests cover issues addressed herein. Concessionaire shall convey any requests for services that are beyond those detailed herein to FDOT for further direction. The O&M Monthly Report shall identify the time and date of the complaint, the nature of the complaint, location of the complaint, identification and contact information of the individual making the complaint, the date that the complaint response was issued and the completion date of any work or services performed to resolve the complaint. Concessionaire shall meet the minimum performance requirements for response and resolution of incoming complaints and requests. As part of the O&M Plan, Concessionaire shall submit a detailed approach to the management and operations of the Customer Relations Unit.

3.11 Permits Coordination and Inspection

Concessionaire shall inspect all construction activities resulting from approved permits issued by FDOT within the O&M Limits. In the O&M Plan, Concessionaire shall include a Permit Coordination and Inspection Plan which details the coordination and inspection process for permits approved by FDOT. Concessionaire is responsible for assisting in the review of permit requests submitted to FDOT, such as access management permits, drainage connection permits, and utility and general use permits that fall within the limits of the Project. Concessionaire shall review and provide comments to FDOT within 14 days of the time FDOT receives the submittal.

Concessionaire shall demonstrate knowledge and understanding of the F.A.C. Rules and provide the necessary personnel to provide permit inspection for the following permits including, at a minimum:

a. 14-20 Bus Stops, Shelters, and Benches

b. 14-40 Highway Beautification and Landscape Management

c. 14-43 Regulation of Encroachments Over State Rights of Way

d. 14-46 Utility Installation or Adjustment

e. 14-63 Building Moving Permit Regulations

f. 14-65 Temporary Closing and Special Use of State Roads

g. 14-86 Drainage Connections

h. 14-96 State Highway System Connection Permits

i. 14-97 State Highway System Access Management Classification System and Standards

j. General Use Permits

Concessionaire shall coordinate with FDOT any Permitted Closures that are required as part of the work associated with the general use permits. Concessionaire shall maintain inspection records for all activities related to the inspections of permit work assigned by FDOT. These inspection records shall be included in the O&M Monthly Report. Concessionaire shall also obtain access to FDOT's Permit Information Tracking System (PITS) or applicable permit tracking system, update the permit inspection information and close out permits.

3.12 Roadway Characteristics Inventory (RCI)

FDOT will be responsible for maintaining the Roadway Characteristic Inventory (RCI) for the Project. Concessionaire shall be responsible for developing and maintaining an independent inventory of assets. Modifications or addition of assets within the Project Limits shall be updated in Concessionaire's maintained inventory.

3.13 Maintenance Management System (MMS)

Concessionaire shall be responsible for providing FDOT with the necessary data for FDOT's update of Maintenance Management System (MMS) on a monthly basis. This shall be accomplished in accordance with the procedures for reporting maintenance contract production in the then current issue of the MMS User's Manual or applicable system as referenced by the ***Maintenance Management System, Procedure No. 325-010-001***.

4 MINIMUM REQUIREMENTS SUBJECT TO CONSTRUCTION O&M VIOLATIONS

Construction O&M Violations are instances in which the performance of systems, equipment, and/or personnel is below the applicable minimum requirements specified herein. The description of each performance category set forth in Table 4.2 includes (i) required tasks, (ii) minimum performance requirement, and (iii) the related cure period (if any). Concessionaire shall develop and detail in the O&M Plans the approach to be used in order to achieve and meet the minimum performance.

Appendix I

District 5
Disaster Recovery Plan

Technical Memorandum

Florida Department of Transportation

Disaster Recovery Plan

Version 2.0

February 14, 2020

Prepared for:

Florida Department of Transportation, District 5
Intelligent Transportation Systems Program
719 S. Woodland Blvd., M.S. 562
Deland, Florida 32751
(386) 943-5310

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	Name	Date
Created By:	Demetrius Lewis, Atkins (v1.0)	12/04/2013
Reviewed By:	Scott Agans, Atkins (v1.0)	12/05/2013
	Joe Perri, Atkins (v1.0)	12/05/2013
	Keith DeLuca, Atkins (v1.0)	12/10/2013
	Jeremy Dilmore, FDOT (v1.0)	12/11/2013
	Shannon Watterson, HNTB (v1.0)	12/12/2013
	Steve Johnson, FDOT (v1.0)	12/12/2013
	Josh Sibley, FDOT (v1.0)	12/12/2013
	Corey Quinn, CFX (v1.0)	12/13/2013
	Tushar Patel, FDOT (v2.0)	**1/14/2020**
	Jeremy Dilmore, FDOT (v2.0)	**1/14/2020**
	Demetrius Lewis, Metric (v2.0)	**1/16/2020**
Modified By:	Demetrius Lewis, Atkins (v1.0)	12/06/2013
	Demetrius Lewis, Atkins (v1.0)	12/12/2013
	Demetrius Lewis, Atkins (v1.0)	12/13/2013
	Nathan Mozeleski, Atkins (v2.0)	**1/15/2020**
Completed By:	Demetrius Lewis, Atkins (v1.0)	12/13/2013

	Name	Date
	Jeremy Dilmore, FDOT (v2.0)	2/14/2020
Last Updated By:	Demetrius Lewis, Atkins (v1.0)	01/23/2014
	Nathan Mozeleski, Atkins (v2.0)	2/11/2020

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List of Acronyms and Abbreviations

ADMIN ..... Administration Group
BIA ..... Business Impact Analysis
CCTV ..... Closed Circuit Television
D5 ..... Florida Department of Transportation District 5
DHCP ..... Dynamic Host Configuration Protocol
DMS ..... Dynamic Message Sign
DNS ..... Dynamic Name System
DRC ..... Disaster Recovery Coordinator
DRP ..... Disaster Recovery Plan
DTOE ..... District Transportation Operations Engineer
EOC ..... Emergency Operation Center
FACL ..... Facilities Team
FDOT ..... Florida Department of Transportation
HA ..... High Availability
HARD ..... Hardware Group
ITS ..... Intelligent Transportation Systems
LAN ..... Local Area Network
MGMT ..... Management Team
NET ..... Network Group
NIST ..... National Institute of Standards and Technology
CFX ..... Orlando Orange County Expressway Authority
OPS ..... Operations Team
PR ..... Public Relations Team
PIO ..... Public Information Officer
RPO ..... Recovery Point Objective
RTMC ..... Regional Traffic Management Center
RTO ..... Recovery Time Objective
SAN ..... Storage Area Network
SOFT ..... Software Group

SUP ..... RTMC Supervisor

TECH ..... Technical Support Team

1 Introduction

1.1 Document Identification

This document serves as the Disaster Recovery Plan (DRP) for the Florida Department of Transportation (FDOT) Intelligent Transportation System (ITS) Regional Traffic Management Center (RTMC). This plan details the action plan the RTMC staff will implement in the event of a natural and/or man-made disaster. A disaster is defined as an occurrence inflicting significant destruction or distress upon the FDOT RTMC's daily operations, employees, ITS computer systems and/or infrastructure.

1.2 Document Purpose

The purpose and benefit of having a Disaster Recovery Plan in place is to:

- Minimize the potential for extended delays of key business processes and major business impacts.
- Prevent or minimize the loss of critical information and/or data.
- Provide a systematic approach to decision making in order to minimize disorganization, miscommunication or extemporaneous decisions at the RTMC during a disaster.
- Provide a sense of security and awareness to the employees through preparation, education and planning.
- Ensures critical resources and people are in place during and after a disaster
- Ensure the RTMC is capable of resuming normal business operations after a disaster event has occurred.

2 Disaster Recovery Plan Overview

Provided below is a high level overview of the layout of the DRP. This DRP serves as a guiding document from disaster to recovery and assumes the worst case scenario for disaster events. In most cases this will require moving resources to an alternate location, however; it does not include all situations that can occur. Less severe incidents will be controlled at the appropriate management level.

The focus of this document is to provide a plan to respond to a disaster that could potentially destroy or significantly cripple the RTMC business operations. A top-level view of the elements of this plan is shown below:

- Section 1 – Introduction
- Section 2 – Disaster Recovery Plan Overview
- Section 3 – Current System
- Section 4 – Disaster Recovery Team
- Section 5 – Disaster Events Overview

- Section 6 – Disaster Recovery Activities
- Section 7 – Disaster Recovery Plan Testing and Training
- Section 8 – Disaster Recovery Plan Maintenance
- Section 9 – Emergency Contact Information

This Disaster Recovery Plan was developed in accordance with the guidelines developed by the National Institute for Standards and Technology (NIST), which can be found at the following link: http://www.nist.gov

In order for the recovery plan to be effective, the plan must be organized around a team concept with each team possessing specific duties and responsibilities once the disaster recovery plan is activated. The plan is to be a "living" document and will be kept current through updates, testing, reviews and recommendations made from test results and staff. As recommendations are completed or as new areas of concern arise, the plan will be revised to reflect such changes.

2.1 Disaster Recovery Plan Objectives

The overall objectives of this plan are to protect the District Five's (D5) computer networking system resources and employees, to safeguard critical data and information that is provided by the RTMC, and to guarantee the continued availability of services offered to the general public.

2.1.1 Recovery Time Objective (RTO)

As a part of the Business Impact Analysis, RTO's were developed for each critical business process as shown in Section 3.3 and is also assign to each critical resource that each process is dependent upon. The RTO is a time defined by management in which a business process must be restored after a major incident has occurred; in order to avoid unacceptable consequences associated with a break in business continuity.

2.1.2 Recovery Point Objective (RPO)

The RPO is the age of the files or data in backup storage (i.e. tape backup, offsite Storage Area Network (SAN)) required to restore a computer system or network to normal operations after a major incident. It is expressed backward in time. Backward in time is defined, from the instant at which an incident occurs and can be specified in seconds, minutes, hours or days. The Recovery Point Objective is the maximum acceptable amount of data loss measured in time. Each critical resource has been assigned a RPO which is listed in the profile documentation for each system listed in Section 6 of this plan.

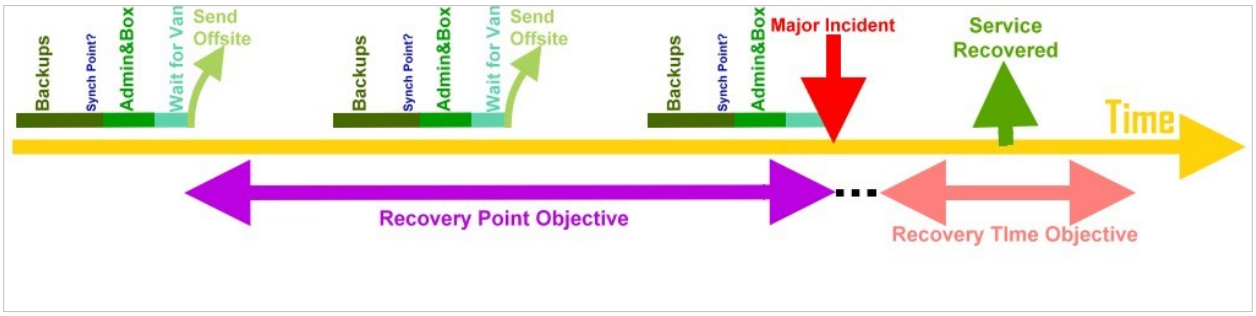

Figure 2.1 – DR Plan illustrating the RPO and the RTO with respect to the Incident

2.2 Disaster Recovery Plan Activation

The DRP will be activated in response to internal and external threats to any and all business functions and processes carried out by the District 5 RTMC. Such threats could include fire, bomb threats, power failure, network communication failure, building damage, severe weather or any other incident that negatively impacts the employees or ITS infrastructure.

Once the threat has resolved, equipment has been repaired, replaced or restored, or a new facility has been constructed and prepared for operations, the management staff will declare the End State of the disaster along with the resumption of normal business operations.

2.3 Disaster Declaration

The following is a list of management staff members that are authorized to raise the level of an incident from major to disaster thus activating the DRP and also has the authority to declare an End State to resume normal business operations:

- Jeremy Dilmore, P.E., ITS Manager, FDOT District 5 Traffic Operations, Jeremy.dilmore@dot.state.fl.us, 386-943-5360
- Jim Stroz, P.E., FDOT District 5 Traffic Operations Engineer, jim.stroz@dot.state.fl.us, 386-943-5309
- Alan Hyman, P.E., Director of Transportation Operations, FDOT District 5 alan.hyman@dot.state.fl.us, 386-943-5475

2.4 Disaster Impact Levels Overview

Once an incident occurs at the District 5 RTMC, the disaster assessment phase will be initiated and the incident will be classified in a disaster category based on the negative business impact to the operations of RTMC.

- Category 1 (Low) – Minor Impact
- Category 2 (Medium) – Major Impact
- Category 3 (High) – Disaster (requires DRP activation)
- Category 4 (Extreme) – Catastrophic (requires DRP activation)

2.5 Disaster Event Overview

This section briefly lists the type of events that could lead to the activation of the DR Plan.

Event	Action
RTMC inaccessible for longer than 24 hrs	Activate DRP and alternative site
Complete power failure at the RTMC	Activate DRP and alternative site
Network outage at RTMC longer than 8 hrs	Activate DRP and alternative site
RTMC becomes unsafe (e.g. structurally or environmentally)	Activate DRP and alternative site
RTMC destroyed	Activate DRP and alternative site
Network communication failure of over 50% of field devices due to power or communication failure	Activate DRP

3 Current System

3.1 RTMC Overview

The current operational procedures that are in place to respond to critical events (e.g. power system failures, network continuity, human resources, etc.) at the RTMC are described in the sections below.

3.1.1 Operations Staff

Currently RTMC operations staff consists of twenty-seven (27) Operators including two (2) Supervisors and the RTMC Project Manger onsite at the RTMC. The RTMC is a 24/7 operating facility, in which the operators work in three (3) shifts. The first shift is from 6am to 2pm, second shift from 2pm to 10pm and third shift is from 10pm to 6am. In the event that RTMC staff becomes unavailable during a particular shift, the RTMC Project Manager will make arrangements for operators from a different shift to cover that shift. If another operator is not available, the RTMC Manager will cover that shift. During a disaster event, a minimum of three (3) operators including a supervisor, per shift, will be present at the RTMC.

Additionally, the RTMC is responsible for operating the ITS System maintained by the Central Florida Expressway (CFX) Authority. In the event that the RTMC becomes unavailable or unsafe for operations during a disaster event, one of the operators would relocate to the District Five Office in DeLand, FL to continue operations of the CFX ITS system.

3.1.2 Vital Records Retention

A digital copy of all vital records and documentation are stored on a redundant Storage Area Network (SAN) drive to ensure availability at the primary and alternative site. All confidential documentation is stored in a locked file cabinet at the primary site and digitals copies are kept on the file server in a secure folder.

3.2 Preventive Measures

Preventive measures have already been put in place (e.g. computer and server backup images, service level agreements for equipment repair & replacement times, routine maintenance, firmware upgrades, etc.) to minimize the impact of a major incident and/or disaster to the core business functions of the RTMC.

3.2.1 Hardware

3.2.1.1 Local Area Network (LAN)

Currently all network configuration files of any network equipment that is vital to the operations of the RTMC is backed up daily to a server. FDOT ITS staff has completed the relocation of backup files from the server to the SAN. Backup files located on the SAN will continue to automatically synchronize daily with the alternate site. In the event that a network device (e.g. core router, switch, firewall, etc.) malfunctions resulting in the devices being replaced or being reset to factory default, the configuration file for said device can be retrieved from a configuration server and restored to the device within two (2) hours. Additionally, all network devices are reviewed periodically to ensure that each has the latest firmware updates and security patches to prevent or limit vulnerabilities.

The LAN has been configured on a redundant 10 Gigabit ring to prevent outages typically caused by construction activities or network equipment failures. In the event an incident occurs such as a fiber cut on the backbone fiber optical cable, the network equipment would automatically failover to the redundant link without any loss of data or disruption to operations.

Additionally, smaller areas within the LAN have been configured in a ring topology allowing redundancy for each area to mitigate issues that arise from construction activities or devices failures.

3.2.1.2 Workstations, Servers and Peripherals

All workstations are consistently updated to have the most current antivirus and virus definitions to prevent or limit vulnerabilities from malicious software or unauthorized computer access. Backup images of all existing workstations have been created. Images are updated anytime a permanent major configuration change is made to the existing workstations. Images are kept on the Storage Area Network and are synchronized daily to the alternative site (District Office). Spare workstations with the current image are stored at the District Office and will be transferred to the RTMC when necessary. In the event of a disaster, workstations at the RTMC can be completely formatted and restored and ready for operations within two (2) hours and if necessary a spare can be delivered to the RTMC and operational within one hour.

All critical servers are hosted virtually, using specialized proprietary software, on a physical server appliance that is configured to operate in conjunction with the SAN. A complete

duplicate system is also functioning at the District Office which is configured to run as a real time, fully synchronized High Availability (HA) system. In the event that a disaster occurs, deeming any or all critical servers (e.g. SunGuide®, Domain Name Server (DNS), Dynamic Host Configuration Proxy (DHCP), SunGuide® Database Server, etc.) inoperable at the RTMC, the District Office automatically becomes available as a redundant failover to the operators. The Operators could access the redundant system either from the RTMC (if no damage occurs to the building or the LAN itself) or from the District Office in which the operators would have to relocate. If a virtual server crashes and/or becomes unavailable, the virtual server will be deleted by ITS staff and a duplicate of that virtual server will be created through the use of the virtual software and fully operational within a matter of minutes. These measures were established to ensure operations will continue in the event of a major disaster.

Additional monitors and peripherals are available at the District Office and will be delivered to the RTMC when necessary.

3.2.2 Software

3.2.2.1 Software Applications

Software that is critical to the operations of the RTMC (e.g. SunGuide®, SQL, etc.) is continually updated with security patches and software upgrades. A resident expert has been assigned to each of the critical software packages. Additionally a service level agreement was purchased for additional support from each software vendor. All critical software is installed on a virtually hosted server which is redundantly synchronized with a duplicate server at the District Office.

3.2.2.2 Operating Systems and Application

The ITS Technical Support Team maintains a digital copy of all operating systems and software applications. Digital copies are maintained on the SAN. Each copy is accompanied with the appropriate activation code and/or software license keys.

3.2.3 Alternate Location (District Office)

The FDOT District 5 utilizes the District Office facility located approximately 17 miles from the RTMC as an alternative site. This facility is a fully operational alternative site with a data center equipped with a High Availability (HA) duplicate computer system, networking equipment and available space to fully accommodate the Operations Team.

In the event that the RTMC results in complete building failure, all business functions will be automatically transferred to the District Office. Operators will be notified by the RTMC Project Manager to report to the District Office and are expected to arrive within two (2) hours of notification. A minimum of three (3) operators will report to the District Office. The FDOT training lab or a large conference room will be configured as a temporary workspace for the

operators. Preparations at the District Office will be made by the Technical Support Team upon notification of impending disaster occurrences, such as hurricane landfall, a minimum of two (2) business days in advance.

The critical computer system and network equipment at the District Office are all connected to the building UPS and generator for redundant power.

3.3 Business Impact Analysis Summarization

The FDOT District 5 Operations, Management and Technical Staff completed a Business Impact Analysis to identify the most critical business processes performed by the D5 RTMC. Within this exercise, each process performed by the RTMC was scored subjectively based on its level of impact to the RTMC's goals, objectives and expectations. Each critical process was then linked to its critical resources (e.g. staff, computer systems and other critical processes) that it is dependant on to be successful as well as other agencies that depend on the RTMC to execute the process. Management then defined a time frame in which each process needs to be restored, if impeded, as not to disrupt the RTMC's ability to function. The timeframe defined is the Recovery Time Objective. An example of the processes identified during this exercise is shown below in Table 3.3. For the full list of processes see Exhibit A.

	Primary Business Function	**Parent Process**	**Criticality Scale (1 - 5)**	**RTO** (days or hours)	**Hardware, Software and Applications** (direct dependencies only)	**Critical People**	**Upstream Dependencies**	**Downstream Dependencies**
1	Center Secure Area Surveillance	**1 -** The RTMC remotely monitors and controls video images and detectors in secure areas such as transportation infrastructure (e.g. bridges) and reports alert notifications to appropriate agencies.	5	1d	Bridge security cameras Server/DVR FON Field Switches/Router Workstation	Operators Maintenance Contractor	none	Law Enforcement Homeland Security

Table 3.3 – Business Impact Analysis Summary Report

3.4 Risk Assessment Summarization

A Risk Assessment exercise was also completed by the FDOT District 5 Operations, Management and Technical Staff to identify the most serious threats (e.g. fire, human error, power failure, and system or software failure) and vulnerabilities (e.g. lack of backup power, out-of-date copies of database) to the RTMC. Based on the risk assessment, a list of disaster events and responses were developed to help expedite the operators in making the appropriate decisions for varies events as shown in Section 5 of this plan. For the full list of threats see Exhibit B.

4 Disaster Recovery Team

4.1 Roles and Responsibilities

The key teams and personnel involve in the execution of the District 5 RTMC disaster recovery are plan shown below as Title (TEAM/GROUP or TITLE Abbreviation):

- Disaster Recovery Coordinator (MGMT/DRC)
- RTMC Manager (OPS/MGMT)
- RTMC Shift and Lead Operator (OPS/SUPP)
- RTMC Operator (OPS/OPS)
- FDOT ITS Technical Staff (TECH/HARD/SOFT/NET)
- FDOT Consultant ITS Technical Staff (TECH/SOFT)
- CFX Technical Staff (TECH/HARD)
- CFX Director of Expressway Operations (OPS/MGMT)
- FDOT ITS Operations Manager (MGMT/MGMT)
- FDOT ITS System Manager (MGMT/MGMT)
- FDOT Maintenance Contractor (TECH/HARD)
- FDOT Public Information Officer (MGMT/PR)
- FDOT Facilities Manager (FACL/MGMT)

The responsibilities of the key teams and personnel are as follows:

Management Team (MGMT) - This team is responsible for assessing the magnitude of the failure or incident based on the information received from the Operations and/or Technical Support Teams. The Mgmt Team can then elevate an event to a Category 3 or 4 disaster and activate the disaster recovery team to begin recovery procedures. This team consists of:

- **Disaster Recovery Coordinator (DRC):** This role facilitates communication between technical and non-technical staff and acts as a project manager during a disaster event by coordinating all activities with the operations, technical and management staff, vendors, contractors and any other personnel as needed. The coordinator is also responsible for maintaining the disaster recovery plan and ensuring it is always in a state of readiness. The coordinator assumes the lead position in the ongoing life of the plan and is responsible for distributing, testing, evaluating and updating the DRP as well as training the disaster recovery team members.
- **ITS Manager (MGMT):** Along with the Disaster Recovery Coordinator, the ITS Manager is responsible for the overall management, coordinating and planning related to the disaster event. The ITS Manager will also notify the FDOT District Transportation Operations Engineer (DTOE) and higher authorities when appropriate and is responsible for the overall coordination of the disaster recovery process from an ITS perspective.
- **FDOT Traffic Operations DTOE (MGMT):** Assumes the role of the ITS System Manager when the ITS System Manager is not present.
- **FDOT Contract Administrator (ADMIN):** This role is responsible for coordinating the procurement of equipment with Vendors and the Maintenance Contractor after a disaster event.

- **CFX Director of Expressway Operations (MGMT):** This role is the first point of contact for CFX once an event has been elevated to a disaster event. Responsible for coordinating with the CFX Maintenance Staff and IT staff to make accommodations for the FDOT District 5 RTMC Operator in the event the operator has to relocate to the CFX Headquarters.

Operations Team (OPS) – This team is comprised of the RTMC Shift and Lead Operators, Supervisors and RTMC Manager. This team is responsible for system operations and monitoring of the District 5 RTMC and is typically the first to notice any system failures.

- ***RTMC Shift and Lead Operators (OPS)* –** Responsible for notifying the Supervisor if a failure is detected.
- ***The RTMC Supervisor* (SUPP)** – Responsible for gathering the essential information regarding the failure and reporting the issue to the RTMC Manager.
- ***The RTMC Manager* (MGMT)** – Responsible for assessing the magnitude of the failure or incident based on the information received from the Operators. The RTMC Manager can then invoke a Category 1 or 2 event and will be handled utilizing normal operation resolution procedures. If the RTMC Manager determines the issue to be a Category 3 or 4 disaster, the RTMC Manager will report the issue to the Management or Technical Support Team. If Management declares a Category 3 or 4 disaster, the RTMC Manager is responsible for coordinating all efforts to relocate the Operations Team members to the District Office when necessary.

Technical Support Team (TECH) – This team is responsible for the District 5 RTMC computer network and communications system, field equipment, all hardware and software repair and support. During a Category 3 or 4 disaster, this team will contact the maintenance contractor, conduct a damage assessment review, report to the Management Team and procure replacement parts as needed. This team is divided into 3 groups and will work in conjunction with the Operations Team:

- **The Hardware Group (HARD) –** Acquires, configures and installs servers and workstations for the Operations team. After damage assessment, reports any Category 3 or 4 disasters to the MGMT Team for DR declaration. If the MGMT Team declares a Category 3 or 4 disaster this team will prepare the alternative site to fully accommodate the Operations Team.
    - This group is comprised of the ITS Server Administrator and Maintenance Contractor. The Maintenance Contractor is primarily responsible for field repairs and assessments.
- **The Software Support Group (SOFT) –** Maintains the system software at the RTMC and Hot Site. After damage assessment, reports any Category 3 or 4 disasters to the MGMT Team for DR declaration. If the MGMT Team declares a Category 3 or 4 disaster this team will reconfigure the system software to prepare for the Operations Team to work at the Hot Site and likewise the RTMC upon returning after the disaster has ended.
    - This group consists of the ITS Software Administrator and Consultant Database Administrator.
- **The Network Group (NET) –** Responsible for monitoring, assessing and resolving any network communications issues. After damage assessment, reports any Category 3 or 4

disasters to the MGMT Team for DR declaration. If the MGMT Team declares a Category 3 or 4 disaster this team will prepare network communications (if damaged or disrupted) to the Hot Site and restore any network communications at the RTMC once the disaster has ended and is safe to return.

- This group consists of the ITS Network Administrator and Maintenance Contractor.

Facilities Team (FACL) - This team is responsible for building maintenance and repairs and securing access to the Hot Site and RTMC. This team is also responsible for minimizing the damage at the RTMC and working with the insurance company for settlement of all claims pertaining to building and equipment damage.

Public Relations Team (PR) - The public relations team will be lead by the FDOT Public Information Office (PIO) and will pass appropriate information about the disaster and associated recovery process to the public and to employees.

5 Disaster Event Overview

5.1.1 Decision Tree

Below is a list of disaster events that may occur at the RTMC. This list is designed to guide the RTMC Operations team in making quick decision during a disaster event at the initial failure.

Table 5.2 – Decision Making Tree for Operators

Situation	Operators Initial Responses	Notify DR Team	Team Primary Responses	DRP
Sprinkler Activation in RTMC Beyond Dry Agent	1) If no present danger, Press emergency power shut off switch for comm. room located in UPS closet 2) Evacuate building until situation contained 3) Notify appropriate DR Teams 4) Await an update from TECH or MGMT 5) Report to District Office if determined by MGMT	FACL TECH MGMT	FACL– Ensure safety of all personnel, Investigate issue and/or notify emergency response. Give DR Coordinator periodic updates MGMT – Activate DRP. Notify DR Coordinator TECH – Activate District Office.	Y
Complete power failure including UPS & Generator	1) Notify appropriate DR Team 2) Await an update from TECH or MGMT 3) Report to District Office if determined by MGMT	FACL TECH MGMT	FACL – Investigate power issue and notify power company. MGMT – Notify DR Coordinator Determine estimated outage time Activate DRP if outage time unacceptable. TECH – Ensure critical systems failover to District Office. Activate District Office if determined by MGMT.	Y/N
Complete network disruption from RTMC	1) Notify appropriate DR Team 2) Await an update from TECH or MGMT 3) Report to District Office if determined by MGMT	TECH MGMT	TECH – Determine issue and estimated outage time, report to MGMT Be prepared to active District Office if outage time unacceptable to MGMT.	Y/N

Situation	Operators Initial Responses	Notify DR Team	Team Primary Responses	DRP
			Begin working to resolve issue. MGMT – Based on TECH report, determine DRP activation. Notify DR Coordinator if activated.	
Computer virus affecting all workstations	1) Notify appropriate DR Team 2) Disconnect workstations from network 3) Await an update from TECH or MGMT	TECH	TECH – Determine virus type, severity and infection level. Notify MGMT. If contained in workstations only, prepare and transport spare workstation to RTMC for temporary use until primary workstations are clean. If widespread, update MGMT and begin disaster recovery steps.	Y/N
RTMC experiences significant structural damage	1) If no present danger, Press emergency power shut off switch for comm. room located in UPS closet 2) Evacuate building until situation contained 3) Notify appropriate DR Teams 4) Await an update from TECH or MGMT 5) Report to District Office if determined by MGMT	FACL TECH MGMT	FACL– Ensure safety of all personnel, Notify emergency response. Give DR Coordinator periodic updates MGMT – Ensure Operations staff safety. Activate DRP. Notify DR Coordinator TECH – Activate District Office.	Y
Operations staff badly injured or death occurs	1) Notify emergency response 2) Ensure the safety of other RTMC Staff 3) Notify appropriate DR Teams	FACL MGMT	FACL – Coordinate with emergency response personnel upon arrival. MGMT – Notify DR Coordinator Ensure the safety and well being of other RTMC staff. Provide counselling to staff as requested.	Y
SunGuide® malfunctions or becomes completely unavailable	1) Notify appropriate DR Teams 2) Await an update from TECH or MGMT 3) Report to hot site if determined by MGMT	TECH	TECH – Determine issue and outage time. Notify MGMT. If outage time unacceptable to MGMT, prepare to activate District Office. If acceptable, begin working to resolve issue	Y/N
Fiber cut resulting in communication loss of up to 50% or field devices	1) Notify appropriate DR Teams 2) Await an update from TECH or MGMT	TECH	TECH - Determine issue and outage time. Notify MGMT. Begin working to resolve outage.	N
511 Service disrupted (e.g. website or phone service)	1) Notify appropriate DR Teams 2) Await an update from TECH or MGMT	TECH MGMT	TECH – Determine issue. Contact support group. Notify MGMT. Coordinate with support group until issue is resolved.	N
Ransomware	1) Notify appropriate DR Team 2) Disconnect workstations from network 3) Await an update from TECH or MGMT	TECH	TECH – Determine ransomware type, severity and infection level. Notify MGMT. If contained in workstations only, prepare and transport spare workstation to RTMC for temporary use until primary workstations are clean. If widespread, update MGMT and begin disaster recovery steps.	Y/N

6 Disaster Recovery Activities

6.1 Initial Failure

In most circumstances, initial failures will be noticed by the FDOT District 5 Operations Team. Depending on the time period the failure is discovered, the Operations Team will initiate one of the following actions:

- Normal Operating Hours – During normal business hours, the FDOT District 5 RTMC Operators will notify the RTMC Supervisor. The RTMC Supervisor will verify the issue and perform preliminary troubleshooting procedures. If the issue is not resolved, it will be escalated to the RTMC Project Manager and then to the FDOT Technical Staff.

- Non-Business Hours – During non-business hours, the FDOT District 5 RTMC Operators will notify the RTMC Supervisor. The RTMC Supervisor will verify the issue and perform preliminary troubleshooting procedures. If the issue is not resolved, it will be escalated to the On-Call FDOT Technical Staff.

6.1.1 Disaster Recovery Plan Initiation

6.1.1.1 Declaration

The declaration of an event being escalated to a disaster lies only with the authority of the MGMT Team. Once notification and assessment information from the DR Coordinator, Operations Team or Tech Support Team has been given to the MGMT Team, they will determine based on the report provided whether an event should be raised to a Category 3 or 4. If the MGMT Team determines the event is Category 3 or 4 worthy, someone from the MGMT Team will verbally notify the Disaster Recovery Coordinator.

6.1.1.2 Activation

Upon notification to the Disaster Recovery Coordinator from the MGMT Team that a Category 3 or 4 event has been declared the DRP will be initiated. The DR Coordinator will begin the Disaster Recovery Procedures by first coordinating with the Disaster Recovery Team.

6.1.1.3 End State

Formal verbal notice of the end of a disaster state shall be given by a member of the MGMT Team to the DR Coordinator. Depending on the characteristics and duration of the disaster, this notification may not entail a complete return to normal operations. This notification shall signal the end of specific disaster operations.

6.2 Disaster Impact Levels

The District 5 RTMC Operation, Technical Support and Management Teams determined the Categories of impact based on the Business Impact Analysis and Risk Assessment of the RTMC daily operations and critical resources. Below is an explanation of each impact category.

6.2.1 Category 1– Minor Impact

This category is defined as an event occurring that has no significant impact on the District 5 RTMC Operations. An event such as a single device failure (e.g. Closed Circuit Television (CCTV) camera, Dynamic Message Sign (DMS) or video wall cube/controller malfunction) will be handled utilizing normal operation resolution procedures.

6.2.2 Category 2– Major Impact (requires mitigation)

This category is defined as an event occurring that has a moderate impact on the District 5 RTMC daily operations. Events that result in multiple field device outages or a subsystem failure (e.g. fiber cuts, power outage or network communication outage due to equipment failure) which usually have mitigation strategies in place to lessen the impact on the daily operation. These issues will typically be handled by utilizing the maintenance contractors to repair and restore these services.

6.2.3 Category 3– Disaster (requires mitigation and recovery steps)

A category 3 event is defined as an event occurring that has a highly significant impact on the FDOT District 5 RTMC daily operations and crippling operations for a short-term period of up to forty-eight (48) hours. Events in this category are those that result in complete disruption of business processes, failure or destruction of critical resources and/or serious injury to staff (e.g. water or fire damage in comm. room destroying all equipment, RTMC inaccessible for over forty-eight (48) hours, network-wide computer virus, complete failure of primary and backup power or Operations staff hospitalized due to injury at the RTMC). Under these circumstances, the Disaster Recovery Plan will be activated, the Operations staff will report to the Hot Site which is the FDOT District 5 District Office and resume operations at the Hot Site until the disaster has ended and the operational services at the RTMC has been restored and available for use.

6.2.4 Category 4– Catastrophic (requires mitigation and recovery steps)

A category 4 event is defined as an event occurring that has an extreme or significant impact on the District 5 RTMC daily operations and crippling operations for time periods exceeding forty-eight (48) hours. Events in this nature are those which result in the need to completely reconstruct the FDOT District 5 RTMC or that deem the RTMC unsafe for Operations staff. Under these circumstances, the Disaster Recovery Plan will be activated, the Operations staff will report to the Hot Site (District 5 District Office) and resume operations until the disaster has ended and the operational services at the RTMC have been restored and available for use.

6.3 Key Recovery Activities

This section provides details on key tasks to be performed during a disaster. The list is provided as a recommendation as some tasks could change or be performed in a different order.

A summary of key activities to focus on once a disaster is declared:

1. Activating the recovery plan
2. Notifying DR Coordinator
3. Notifying key management contacts
4. Failing over computer system to an alternate location
5. Relocating Operations Team to alternate location
6. Ordering and configuring replacement equipment
7. Reconfiguring the network
8. Reinstalling software and data
9. Keeping management informed
10. Keeping users informed
11. Keeping the public informed (if necessary)

6.3.1 Four Phased Approach

This section provides sequential list of tasks within four phases, to be performed during a disaster event that requires the activation of the District Office. Again, the list is provided as a recommendation as some tasks could change or be performed in a different order. The Phases are listed below:

- Disaster Assessment Phase
- Disaster Recovery Phase
- Alternative Site (District Office) Operations Phase
- Return Home (Primary Site) Phase

The sections below present a sequential list of tasks to be performed during the four (4) phases of a disaster. The tasks are number as follows. Tasks for phase one begins with an “A”, phase two (2) with a “B” and so on. Task numbers are sequenced by ten (10). The team column, lists the primary team with the sub-team, group or title abbreviation that is responsible for the task. Once a task is completed, place an “X” in that column.

6.3.1.1 Disaster Assessment Phase

The disaster assessment phase lasts from the inception of the disaster until it is under control and the extent of the damage can be assessed. Below is a task list developed to guide personnel thorough the disaster assessment phase:

Task Number	Prior Task	Description	Teams/ Sub-Teams	X
A010		Operators reports disaster event to Shift Supervisor	OPS/OPS	
A020	A010	Shift supervisors verifies event (troubleshoot if possible) and report to RTMC Manager	OPS/SUPP	
A030	A010	Make arrangements with Police Fire Rescue have to secure staff and/or damaged area (if necessary)	OPS/MGMT	
A040	A020	Categorized event base on info collected from Sup, If Category 3 or 4, report to FDOT Operations Mgr. and/or Tech Support Team for disaster declaration	OPS/MGMT	
A050	A040	Assess damage of building and equipment to determine length of outage. If Category 3 or 4, report to Mgmt	TECH/HARD TECH/SOFT MGMT/SUPV FACL/MGMT	
A060	A050	MGMT declares event as Category 3 or 4 disaster, based on FDOT Ops Mgr and/or Tech Support Team finding.	MGMT/MGMT	
A070	A060	Disaster Recovery Coordinator receives notification	MGMT/MGMT	
A080	A070	Ensure that those affected by event receive emergency care (if necessary)	MGMT/DRC	
A090	A070	Ensure arrangements with Police Fire Rescue have been made to secure damaged area (if necessary)	MGMT/DRC	

6.3.1.2 Disaster Recovery Phase

This phase begins once the MGMT Team elevates an event to a Category 3 or 4. The DR Coordinator will assemble the DR Team and distribute assignments. The sole purpose of this phase is to fully restore operations at the District Office and resume normal operations. Once normal operations are established at the District Office, this phase is complete. Below is a task list developed to guide personnel thorough the disaster recovery phase.

Task Number	Prior Task	Description	Teams/ Sub-Teams	X
B010	A070	Assemble the Disaster Recovery Team	MGMT/DRC	
B020	B010	Begin Preparation of the District Office	TECH/HARD TECH/SOFT	
B030	B010	Begin assessment of salvageable equipment and supplies at primary site	TECH/HARD	
B040	B010	Determine hardware & software replacements needs	TECH/HARD TECH/SOFT	
B050	B030	Create insurance claim for building damage	FACL/MGMT	
B060	B030	Create insurance claim for computer equipment	TECH/HARD	
B070	B040	Create Purchase Order for Software & Hardware Replacements	MGMT/ADMIN	
B080	B070	Reassess the situation	MGMT/DRC	
B090	B080	Notify Operators to report to District Office	MGMT/DRC	
B100	B090	Organize Car pools	OPS/MGMT	
B110	B100	Bring off-site supplies to the District Office	OPS/MGMT	
B120	B020	Determine recovery points for each critical system based on RPO developed	TECH/HARD TECH/SOFT	
B130	B120	Notify Key users of where the recovery point will be	TECH/SOFT	
B140	B130	Restore data that did not automatically synchronize to alternative site	TECH/HARD TECH/SOFT	
B150	B140	Make any necessary software modifications	TECH/SOFT	
B160	B020	Establish or ensure network connectivity	TECH/NET	
B170	B160	Test software functionality and network connectivity	TECH/SOFT	
B180	B170	Reassess the situation	MGMT/DRC	
B190	B140	Stage Operators work area	TECH/HARD	
B200	B190	Prepare Operator workstations at District Office	TECH/HARD	
B210	B110	Receive Operators into the District Office & direct to work area	FACL/MGMT	
B220	B210	Notify users of system availability	TECH/SOFT	
B230	B210	Verify users systems capability	TECH/HARD TECH/SOFT	
B240	B230	Begin Operations from District Office	OPS/MGMT	
B250	B040	Take inventory of damaged equipment a primary site	TECH/HARD	

6.3.1.3 Alternative Site (District Office) Operations Phase

This phase involves continuing operations at the District Office and the preliminary steps to prepare the RTMC for operations. Below is a task list developed to guide personnel thorough the Alternative Site phase.

Task Number	Prior Task	Description	Teams/ Sub-Teams	X
C010	B240	Establish Operators schedule	MGMT/MGMT OPS/MGMT	
C020	B200	Establish system and application backup procedures	TECH/HARD TECH/SOFT	
C030	C020	Arrange for an offsite storage facility to ensure safety of District Office data	MGMT/MGMT TECH/HARD TECH/SOFT	
C040	B250	Determine if primary site is reusable or if a new primary site will be required	MGMT/MGMT MGMT/DRC	
C050	C040	Construct or repair primary site	FACL/MGMT	
C060	C050	Coordinate with facilities to determine primary site availability	MGMT/DRC FACL/MGMT	
C070	C060	Coordinate with Vendors to have replacement equipment delivered to primary site when site is available	MGMT/DRC MGMT/ADMIN	

6.3.1.4 Return Home (Primary Site) Phase

This phase involves the reactivation of the RTMC at either the original or possibly new location. Once normal operations are established at the RTMC, this phase is complete. At the completion of this phase, a thorough review of the disaster recovery process will be conducted and corrections made to any areas of deficiency within the plan. The plan should be updated with any changes. Below is a task list developed to guide personnel thorough the return home phase.

Task Number	Prior Task	Description	Teams/ Sub-Teams	X
D010	C060	Determine appropriate date to begin installing equipment at primary site	MGMT/DRC TECH/HARD	
D020	D010	Install equipment as it arrives	TECH/HARD TECH/NET	
D030	D020	Configure network communications	TECH/NET	
D040	D030	Test network communications	TECH/HARD TECH/NET	
D050	D040	Install necessary server application and/or software	TECH/SOFT	
D060	D050	Synchronize backup date with District Office	TECH/HARD	
D070	D060	Restore from backup any data that does not sync automatically	TECH/HARD	
D080	D070	Make any necessary software modifications	TECH/SOFT	
D090	D080	Test software	TECH/SOFT	
D100	D090	Install workstations and needed software	TECH/HARD TECH/SOFT	
D110	D100	Test workstations capabilities	TECH/HARD TECH/SOFT	
D120	D110	Notify user of next shift to report to primary site	OPS/MGMT	
D130	D120	Switch communications back to primary site at operators shift change	TECH/HARD TECH/SOFT	
D140	D130	Have users test operation capabilities at primary site	TECH/HARD TECH/SOFT	
D150	D140	Resume operations at primary site	OPS/MGMT	
D160	D150	Reassess situation	MGMT/DRC	
D170	D160	Declare end state	MGMT/MGMT	
D180	D170	Review Disaster Recovery Plan and update if necessary	MGMT/DRC	
D190	D180	Prepare statement to the media (if necessary)	MGMT/PIO	

6.3.2 Hardware Recovery

This section details the prioritization for recovery for critical hardware to include network, servers and computers.

6.3.2.1 Network Recovery

The network diagram below is a graphical depiction of the Local Area Network critical Ethernet transmission links at both the RTMC and District Office. During a catastrophic event, these diagrams shall be used as guidance in order to restore the network back to full operations. This diagram also gives a visual illustration of the redundant system in place.

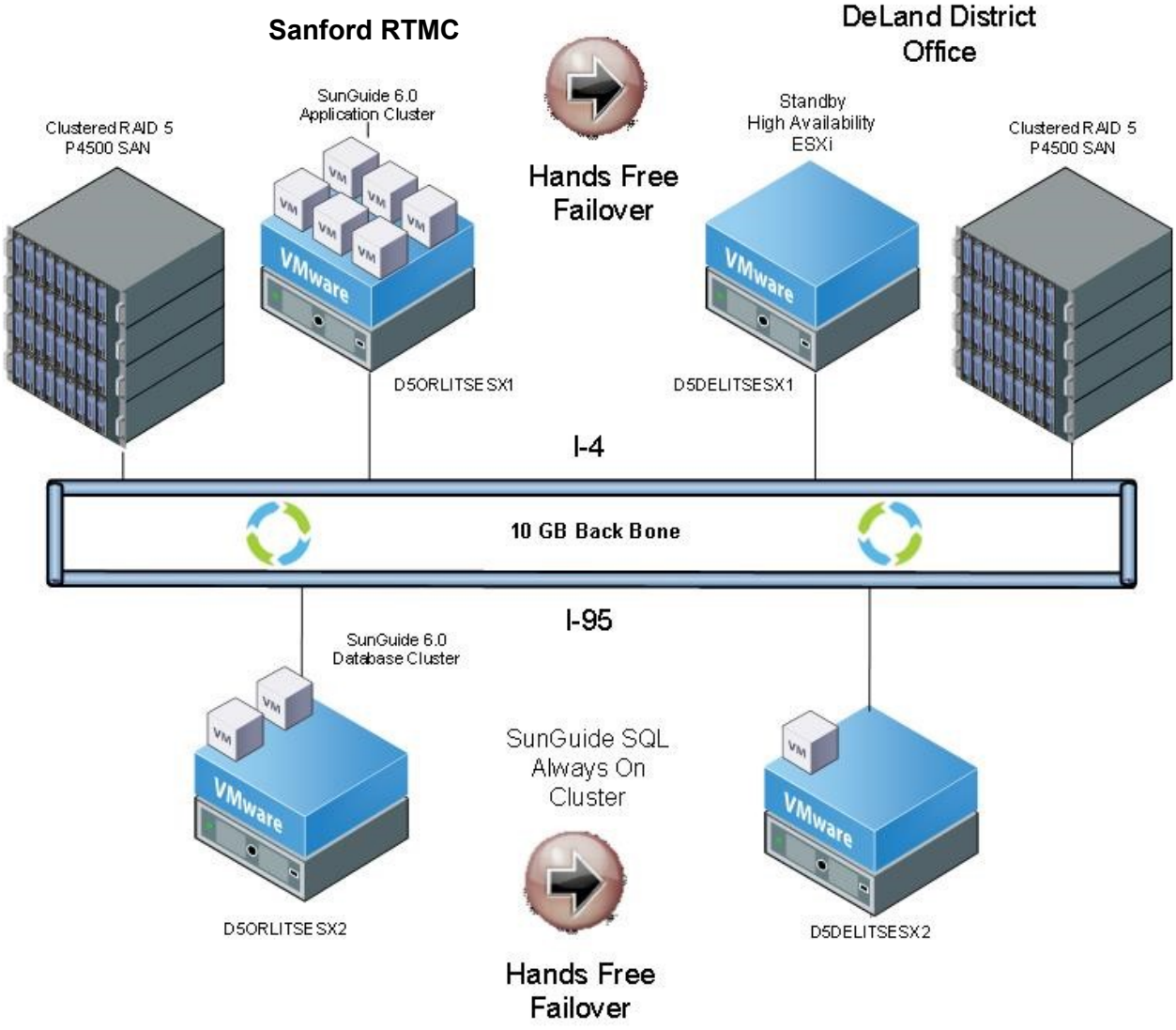

Figure 6.3 – Network Layout of Primary and Alternative Site

6.3.2.2 Network Equipment Priorities

This section prioritizes by the most critical network devices and equipment to be restored and or repaired after a disaster event. (Assumes fiber optic cable to RTMC has been repaired.)

Priority	Network Equipment	Configuration File Location	Recovery Time (Post Delivery)
1	RTMC Core Router	Solar Winds Server	0-4 hrs
2	Glimmer Glass Fiber Optic Network Switch	SAN	0-2 hrs
3	Layer 2 Switch for Workstations (Caliber 1)	Solar Winds Server	0-2 hrs
4	Layer 2 Switch for Servers (Caliber 2)	Solar Winds Server	0-2hrs
5a	Juniper SRX5600 Firewall 1	Solar Winds Server	2-4 hrs
5b	Juniper SRX5600 Firewall 2	Solar Winds Server	2-4 hrs
6	Video Wall Switch	Solar Winds Server	0-2 hrs
7	Internet Cable Modem	Third Party Vendor	0-4 hrs
8	Web Filter (Proxy Appliance)	Solar Winds Server	0-2 hrs
9	511 Room Switch	Solar Winds Server	0-2 hrs
10	TV Media Demarcation Switch	Solar Winds Server	0-2 hrs
11	Juniper SRX3400 Firewall TV Media	Solar Winds Server	0-2 hrs
12	Juniper VPN Firewall	Solar Winds Server	0-2 hrs

6.3.2.3 Server Recovery Priorities

A detailed list of servers to be replaced after a catastrophic event are listed below in the prioritized order in which they should be restored based on criticality to the RTMC operations. Additionally a diagram is provided below to assist with the installation and identification of each server.

Priority	Server	Image Location	Recovery Time (Post Delivery)
1	Orlando ESX 1	SAN (Veeam Data Store)	0-1hr
2	Orlando ESX 2	SAN (Veeam Data Store)	0-1hr
3	Orlando ESX 3	SAN (Veeam Data Store)	0-1hr
4	Domain Controller	SAN (Veeam Data Store)	0-1hr
5	DHCP Server	SAN (Veeam Data Store)	0-1hr
6	File share Print	SAN (Veeam Data Store)	0-1hr
7	Certificate	SAN (Veeam Data Store)	0-1hr
8a	SunGuide SQL 1	SAN (Veeam Data Store)	0-1hr
8b	SunGuide SQL 2	SAN (Veeam Data Store)	0-1hr
8c	SunGuide SQL 3	SAN (Veeam Data Store)	0-1hr
9	Snapper I-95	SAN (Veeam Data Store)	0-1hr
9a	Snapper I-4	SAN (Veeam Data Store)	0-1hr
10	Cyber Key	SAN (Veeam Data Store)	0-1hr

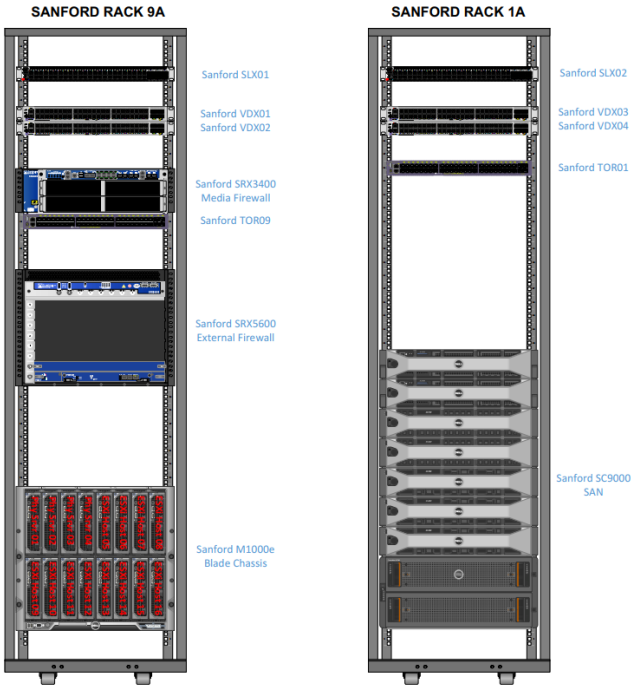

Figure 6.4 – Server Rack Layout Primary Site

6.3.2.4 Server Recovery Tasks

This section is a tasks list for restoring servers after a disaster.

Task Number	Task Description	Completed
S010	Assess the damage	
S020	Review server priority recovery form	
S030	Order replacements for damaged equipment from vendors	
S040	Order incidental cables, wires, racks and network devices	
S050	Upon arrive configure hardware and install in proper racks	
S060	Install network cables	
S070	Install appropriate operating system; refer to server profile	
S080	Install appropriate software/application and licenses	
S090	Connect the server to the network and domain	
S100	Synchronize data from hot site or restore backup data from off-site	
S110	Make any manual software configurations if needed	
S120	Start application and verify proper configuration	
S130	Verify user access to network and application	
S140	Contact user and verify proper operations	
S150	Resume normal operations	

6.3.2.5 Server Profile

This section details the standard specifications for ITS servers.

Date	
Hardware Name	
Owner (e.g., Dept, Business Unit, Center, Professor, etc.)	
Description	
Hardware Make/Model (e.g., Dell PowerEdge R200)	
Hardware Type	
Data Classification	
Criticality	
Recovery Time Objective (RTO)	
Date of Last Business Impact Analysis (BIA)	
Location (e.g., building & room)	
Rack ID (if applicable)	
Asset Tag	
Serial Number	
Model Number	
Vendor	
Warranty Expires	
Maintenance Contact	
BTU (cooling requirements)	
KVA (power consumption rate)	
Processor (# and type)	
Processor Speed	
Memory	
Storage Capacity	
RAID Level	
NIC(s)	
IP Address	
DNS Name	
Backup Location	
Replication Details	
Supporting Documentation Location	
Applications Hosted	
Services Hosted	
Virtual Servers Hosted	
Business Processes	
Hardware/applications/services dependent on this resource:	
Hardware/applications/services this resource is dependent on:	

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RECORDS WILL BE MADE AVAILABLE UPON REQUEST TO APPROPRIATE PERSONNEL

6.3.2.6 Workstation Profile

This section details the standard specifications for ITS computers.

Date	
Hardware Name	
Owner (e.g., Dept, Business Unit, Center, Professor, etc.)	
Description	
Hardware Make/Model (e.g., Dell PowerEdge R200)	
Hardware Type	
Criticality	
Recovery Time Objective (RTO)	
Date of Last Business Impact Analysis (BIA)	
Location (e.g., building & room)	
Asset Tag	
Serial Number	CONFIDENTIAL INFORMATION
Model Number	
Vendor	
Warranty Expires	PROFILES FOR EACH WORKSTATION ARE ON FILE AND ARE NOT APART OF THIS DOCUMENT DUE TO CONFIDENTIALITY RESTRICTIONS
Maintenance Contact	
Monitor Quantity	
Monitor Make and Model	
Processor (# and type)	
Processor Speed	
Memory	RECORDS WILL BE MADE AVAILABLE UPON REQUEST TO APPROPRIATE PERSONNEL
Storage Capacity	
Video Graphics Card	
NIC(s)	
IP Address	
DNS Name	
Backup Location	
Generation of Last Image Created (e.g. Current, Previous, 2 Generations Back)	
Supporting Documentation Location	
Software Installed	
Business Processes	
Hardware/applications/services dependent on this resource:	
Hardware/applications/services this resource is dependent on:	

6.3.3 Application and Software Recovery

6.3.3.1 Application and Software Recovery Priorities

This section details the prioritization for recovery of critical applications and software.

Tier 1 Applications	Data Backup Storage Location	Disaster Recovery Restore Method
VM Ware	Storage on SAN at District Office	Synchronize with District Office
DC, DNS, DHCP	Storage on SAN at District Office	Synchronize with District Office
SQL	Storage on SAN at District Office	Synchronize with District Office
SunGuide®	Storage on SAN at District Office	Synchronize with District Office
Fileshare Print	Storage on SAN at District Office	Synchronize with District Office

Tier 2 Applications	Data Backup Storage Location	Disaster Recovery Restore Method
Non-Critical VM Servers	Storage on SAN at District Office	Synchronize with District Office
Cyberlock	Storage on SAN at District Office	Synchronize with District Office
SolarWinds	Storage on SAN at District Office	Synchronize with District Office
MIMS	Storage on SAN at District Office	Synchronize with District Office
File Server	Storage on SAN at District Office	Synchronize with District Office
Print Server	Storage on SAN at District Office	Synchronize with District Office
vSphere Manager	Storage on SAN at District Office	Synchronize with District Office

Tier 3 Applications	Data Backup Storage Location	Disaster Recovery Restore Method
Firetide	Storage on SAN at District Office	Synchronize with District Office
IVEDDS	Storage on SAN at District Office	Synchronize with District Office

6.3.3.2 Application and Software Profile

This section is a description of the specifications for any critical applications and software.

Date Updated	CONFIDENTIAL INFORMATION PROFILES FOR ALL SOFTWARE APPLICATIONS ARE ON FILE AND ARE NOT APART OF THIS DOCUMENT DUE TO CONFIDENTIALITY RESTRICTIONS RECORDS WILL BE MADE AVAILABLE UPON REQUEST TO APPROPRIATE PERSONNEL
Software/Application Name	
Owner (e.g., Dept, Business Unit, Center, Professor, etc.)	
Description	
Business Function	
Data Classification	
Criticality	
Date of Last Business Impact Analysis (BIA)	
Operating System	
Asset Tag	
Serial Number	
Licensing Information	
Vendor (or, internally developed)	
Maintenance Contract Expires	
Software Support Contact	
Program Language(s)	
Internet Accessible	
Requires own server	
Desktop Data Storage (e.g., what files/configuration is required if app allows or requires storage of data on desktops)	
External File Requirements	
Domain Information	
Service Account(s) (e.g. software domain user name)	
Storage Requirements	
Seats/Units	
Load Balancing	
License Requirements	
Protocol Requirements	
Port Requirements	
Network Requirements	
IP Address/Range	
Minimum Client Requirements	
Encryption Requirements	
Third Party Requirements (e.g., applications or software required)	

Code Libraries	CONFIDENTIAL INFORMATION PROFILES FOR ALL SOFTWARE APPLICATIONS ARE ON FILE AND ARE NOT APART OF THIS DOCUMENT DUE TO CONFIDENTIALITY RESTRICTIONS RECORDS WILL BE MADE AVAILABLE UPON REQUEST TO APPROPRIATE PERSONNEL
Known Bottlenecks	
Batch Processing Details (e.g., scheduled tasks, duration, subtasks, etc.)	
Backup Software	
Backup Type	
Backup Frequency/Schedule	
Media	
Offsite Storage Location	
Generations Offsite	
Source Code Backed Up?	
Additional Details	
Maintenance Window Details	
Vendor /Internal contact information	
Recovery Point Objective (RPO)	
Recovery Time Objective (RTO)	
Priority	
Additional Details	
Supporting Documentation Location	
Additional Details	
Application is dependent on the following hardware resources:	
Business Processes dependent on this application:	
Applications/services dependent on this resource:	
Applications/services this resource is dependent on:	

6.3.3.3 Software License Keys/Activation Codes

Below is a list of all software licenses and activation codes for the RTMC's critical systems.

Software	License or Activation Key	Notes
Microsoft Windows 10		
SQL 2016 ENT 64-bit		
Microsoft Windows Server 2012 R2 64-bit		
Microsoft Windows Server 2016 64-bit		
Microsoft Windows Server 2019 64-bit		
VMWare Horizon		
VMWare vCenter 6.7.0		
ESXi 6.7U3		
Veeam		
BlueMAC		
CyberLock		
SolarWinds Suite		
Activu		
Office 2016 Pro Plus		
Office 365 (OIS)		
Brocade Network Advisor		
ArcGIS		
Netwrix		
Websense		
Tableau		
Wowza		

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6.3.4 Phone System Recovery

The phone system at the RTMC is maintained by the Office of Information Systems (OIS) department within the FDOT organization. In the event of a disaster event, the RTMC Project Manager will notify the OIS helpdesk to notify them of the issue. Alternatively, the Operators will use their consultant provided mobile phones to make emergency phone calls, if necessary, until the phone system is restored.

6.3.5 External Agency Coordination Efforts

This section describes the coordination efforts that will need to take place between third parties.

6.3.5.1 Coordination with Other FDOT TMC's and other Local Agencies

During a declared disaster event, a general notification will be communicated manually and by e-mail message, by the RTMC Manager, Shift Supervisor or DR Coordinator to the TMC community. These notifications should be a simple statement that the FDOT District 5 RTMC is experiencing a system outage, along with the estimated duration of the system outage, if known. A status update will be provided to the TMC community at each transitional phase of the recovery process (e.g. relocating to the alternative site, relocating back to the RTMC).

6.3.5.2 Coordination with CFX

During a declared disaster event, a general notification will be communicated manually and by e-mail message by the RTMC Manager, Shift Supervisor or DR Coordinator to the CFX Director of Express Operations. This notification state that the FDOT District 5 RTMC is experiencing a system outage, along with the estimated duration of the system outage, (if known) and that the designated operator will be relocating to CFX Headquarters. The FDOT will send an RTMC Operator to the CFX headquarters located at 4974 ORL Tower Road, Orlando, FL 32807, one mile from the RTMC, to operate the CFX ITS System. The Operator will have 24/7 building access via a unique security photo ID cards and personal building alarm code. Operator will have access and report to the LA Griffin Control Room located on the third floor. Once inside, the Operator will have local login privileges to the CFX ITS workstation, SunGuide®, Control Point (video wall software) and Cameleon (CCTV control) software. The Operator will be provided emergency contact phone numbers in the event that any technical or operational issues arise. A status update will be provided to the CFX Director of Expressway Operations at each transitional phase of the recovery process (e.g. relocating to the alternative site, relocating back to the RTMC).

6.3.5.2.1 CFX Requirements

At the sole discretion of CFX, two (2) FDOT D5 Operators will be give building access to the CFX Headquarters. FDOT will notify CFX of any staff changes (e.g. employee terminations or additions) that may affect the security of CFX so that they may take appropriate actions to delete or add accounts. The security details will be reviewed quarterly as a part of the DRP Test Plan to

ensure the designated Operators know how to navigate through the CFX's building, understand their role, and know the security codes and login information for CFX workstations.

6.3.5.3 Media Coordination

All press releases and media interviews about any disaster events, its impact on the operations of the FDOT District 5 RTMC, related recovery procedures, the current status of recovery, estimates of damage, and the outlook for future operations shall be conducted through the FDOT District 5 Public Information Officer (PIO).

Operations staff shall NOT offer any comments about any disaster events to reporters or other media representatives. This includes requested comments about publicly known aspects and details of a disaster. Any approaches or questions from the media should be directed to the FDOT District 5 Public Information Officer which allows for accurate representation and control of information disseminated to the media, protects the institutionally sanctioned perspective, and minimizes unwarranted speculation and sensationalism.

In the event that the media arrives at the FDOT District 5 RTMC unannounced, the RTMC Manager or supervisor should be contacted and the Operations staff should follow the procedures given in the RTMC SOG document.

7 DR Plan Testing and Training

7.1 Training

7.1.1 Recommended Training

A very important part of having a Disaster Recovery Plan is to ensure that each employee receives proper training to understand the plan. While training serves many purposes the primary focus should be to increase employee awareness of how to deal with potential threats by becoming familiar with and utilizing the Disaster Recovery Plan. Training should also acquaint key employees that are expected to execute any segment of the plan with the strategies, expectations, procedures and actions outlined in the plan during emergency conditions. The DR Team members should all receive training that is specifically geared towards achieving an understanding of the expectations of each member's role on the DR Team when a disaster is declared.

The Disaster Recovery Plan training should consists of the following type of activities:

- DRP Overview during New Hire Training
- Quarterly Plan Review with the DR Team Members and Management
- Crisis Training

7.1.2 Training Log

The training log below is designed to track the type of training each staff member has completed to ensure all staff member have seen and understand the Disaster Recovery Plan.

Name	Name of Training	Date Completed

7.2 Testing the DR Plan

The Disaster Recovery Coordinator is responsible for testing the DRP annually. Special testing may be conducted in the event of a major revision to the DRP or a significant change in personnel, software or hardware.

The objectives of testing the DRP are as follows:

- Simulate the conditions of an actual recovery situation
- Identify deficiencies in the existing procedures
- Train members of the Disaster Recovery Team
- Ensure the plan is practical

7.2.1 Test Plans & Forms

Test plans will need to be developed on a case-by-case basis to ensure all objectives of the DRP are met. Below is an example of a test plan agenda items.

- Test date and type
- List resources (e.g. equipment, personnel & software) affected by the test
- Purpose of the test
- List test objectives
- How will you measure test objectives
- Determine test participants
- End test and evaluate (use Evaluation Form below)

7.2.2 Test Evaluation & Recommendations

Test evaluations should be conducted directly after an actual disaster has ended or after testing the Disaster Recovery Plan. The evaluation should be completed by each member of the Disaster Recovery Team and should present a thorough review of the effectiveness and practicality of the plan. Once the evaluation is complete, each member evaluating shall make any necessary recommendations to increase the effectiveness of the plan. Below is an example of a Test Evaluation Form.

7.2.2.1 Sample Test Evaluation Form

Test Date: _____ Scenario Replication: _____

The Disaster Recovery Coordinator is responsible for coordinating the review and analysis of the test results and updating the plan accordingly.

The test participants should document the test results immediately after the plan test. The Disaster Recovery Coordinator reviews the test results with the teams during a postmortem meeting to discuss weaknesses and resolve problem areas. The Disaster Recovery Coordinator makes changes and updates to the plan accordingly.

1. Were the test objectives met?

_____
_____
_____
_____

2. What problems were encountered?

_____
_____
_____
_____

3. During the test, were there any deviations from the plan?

_____
_____
_____
_____
_____

4. Were all of the materials used during the test retrieved from an offsite source? If not, what items from the data center or on-site offices were used?

_____
_____
_____
_____
_____

5. Do any changes need to occur to ensure the successful completion of this test? If so, what needs to changes to meet the objects of this test?

_____
_____
_____
_____
_____

7.2.3 Test History Log

The history log below is designed to keep track of test dates and outcomes.

Date	Type of Test	Objective	Results

8 Disaster Recovery Plan Maintenance

8.1 DR Plan Recommended Maintenance

The DR Plan "living document" and should be re-evaluated and updated periodically. It is recommended that this document be maintained as follows:

Period	Action
Quarterly	Review all job changes and update plan with new personnel assignments
Quarterly	Ensure any software application changes or any new software implemented which will affect your ability to recover after a disaster is updated.
Quarterly	Ensure any hardware configuration changes or any new hardware installed which will affect your ability to recover after a disaster is updated.
Quarterly	Verify the Network Configuration Diagrams are updated
Quarterly	Ensure all team assignments are still valid
Quarterly	Ensure that all telephone lists are current
Quarterly	Test security codes and access to DeLand District Office and visit site if new Operations staff becomes the DeLand District Office Delegate Operator.
Semiannually	Test the plan and update it based on the results of the test
Annually	Review the insurance coverage of the RTMC

8.2 Update Log

Any updates or changes made to the Disaster Recovery Plan must be recorded within the Document Control Panel page of this document. The changes must be made by the Disaster Recovery Coordinator or a member of the MGMT Team and approved by a member of the MGMT Team. The individual that modifies the document must record their name and date under the "Modified by" section of the Document Control Panel and it must be review by a member of the Management Team. The individual reviewing the updates or changes must record their name and date under the "Reviewed by" section of the Document Control Panel.

8.3 DR Plan Distribution List

Below is the list of personnel or site locations that have received a printed copied either in part of in whole, of the Disaster Recovery Plan.

Name or Location	Entire Book or Sections Printed

9 Emergency Contact Information

9.1 Personnel List

Below is a list of all agency emergency and on-call personnel responsible for responding to disaster incidents.

Name	Address	Cell Phone	Home Phone	Team(s)
Steve Johnson				TECH
Jeremy Dilmore				MGMT
Jay Williams				OPS
Tricia LaBud				OPS
Patrick White				MAINT
Guil Serrano				FACIL
Dee Zinck				FACIL
Santina Calzarreta				FACIL
Edward Grant				OPS
Shannon Watterson				OPS
Sheryl Bradley				OPS
Shane Owens				TECH

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9.2 Vendor List

All Vendors that the FDOT has an existing service level agreement with to replace, repair or provide support for any critical hardware, software or infrastructure are listed below.

Company Name	Point of Contact	Phone Numbers	Email Address	Resource
Extreme	Dorian Perry	(919) 447-7293	--	L3 Switch/Router
	General Support	*(800) 998-2408*	--	
Arris / Ruckus	Larry Matthews	(813) 373-1434	larry.matthews@arris.com	L3 Switch/Router
	General Support	*(855) 782-5871*	--	
Solar Winds	*General Support*	*(866) 530-8040*	--	Orion Network Performance Monitor
Juniper	Chris Hale	(541) 280-6748	--	L3 Switch/Router
	General Support	*(888) 314-5822*	--	
Netwrix	*General Support*	*(949) 407-5125*	--	IT Security Software
Pulse Secure	Elaine Marcus	(480) 711-6845	emarcus@pulsesecure.net	VPN Mags
	Genera Support	(844) 751-7629	--	
Websense	Royce Murray	(858) 458-2940	--	Web Filter
Veeam	Lucinda Hollberg	(404) 443-1936	Lucinda.hollberg@veeam.com	Data Store
VMWare	*General Support*	*(877) 486-9273*	--	VM Software
Activu	Justin Gross	(973) 343-4916	justin.gross@activu.com	Video Wall Software
	General Support	*(888) 228-4883*	--	
Dell	Ali Moosavi	(512) 728-7136	ali.moosavi@dell.com	Dell Servers
Dell	Dennis Hayes	(612) 564-0272	dennis_hayes@dell.com	Dell Compellent Storage

9.3 Contractor List

All Contractors that have existing contracts with the FDOT to make repairs or replace any critical infrastructure pertaining to the RTMC and/or its field assets are listed below.

Company Name	Point of Contact	Phone Numbers	Email Address	Services Provided
Transcore	Corey Quinn	(407) 832-1301	corey.quinn@transcore.com	Maintenance Contractor
ACS	Dave Muniz	(407) 466-2040	d.muniz@acstraffic.net	Fiber Contractor
Kapsch (CFX)	Dave Emerick	(407) 914-2933	dave.emerick@kapsch.net	Maintenance Contractor

EXHIBIT A – BUSINESS IMPACT ANAYLSIS

	Primary Business Function	Description	Parent Process	Group	Criticality Scale (1 - 5)	RTO (days or hours)	Hardware, Software and Applications (direct dependencies only)	Critical People	Done w/o Copmuter	Data Loss	RPO (days or hours)	Upstream Dependencies	Downstream Dependencies
1	Center Secure Area Surveillance	This function monitors surveillance inputs from secure areas in the transportation system. The surveillance may be of secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. It provides both video and audio surveillance information to emergency personnel and automatically alerts emergency personnel of potential incidents. (i.e. Bridge Security)	**1** - The RTMC remotely monitors and controls secure ares sensors (video images and detectors) in secure areas such as transportation infrastructure (e.g. bridges, tunnels, interchanges, roadway infrastructure, and transit railways or guideways).	Operators	5	1	Bridge securiy camer Server/DVR FON Field Switches/Router Operators Computers	Operators Maint Contractor OIS	N	Y	0d	none	Law Enforment Homeland Security
			2 - The RTMC reports alert notifications from secure area sensors to appropriate agencies.	Operators									Law Enforment Homeland Security PIO
2	Collect Traffic Surveillance	This function remotely monitors and controls traffic sensors and surveillance (e.g., CCTV) equipment, and collects, processes and stores the collected traffic data. The collected information is provided to traffic operations personnel and made available to other centers.	**1** - The RTMC monitors, analyzes, and stores traffic sensor data (speed, volume, occupancy) collected from field elements under remote control of the center.	Sunguide Admin	4	3	Field Equipment MVDS, CCTV, FON, VM Server, Network Sunguide TSS,TVT, IDS, C2C, Sunguide essentials, CFX Network Equipment	Operators Maint Contractor Tech, Power, SWRI, Bright House, CFX Tech	N	Y	90 day	none	Public Universities First Responders RITIS
			2 - The RTMC monitors, analyzes, and distributes traffic images from CCTV systems owned and operated by FDOT D5.	Network Admin		1	Field Equipment CCTV, FON, VM Server, Network Sunguide TVT, C2C, Sunguide essentials, CFX Network Equipment, Computer,	Operators Maint Contractor Tech, Power, SWRI, Bright House, CFX Tech	N	N	n/a	none	Public Media FHP Local Agencies Traffic Land Other Districts Operation Centers EOC Police Fire
			3 - The RTMC distributes road network conditions data such as current and forecasted traffic information, road and weather conditions, traffic incident information, information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements) based on collected and analyzed traffic sensor and surveillance data to other centers.	Sunguide Admin/Operators	3	60							
			4 - The RTMC responds to control data (i.e. configurations or commands) from RTMC Operators regarding sensor and surveillance data collection, analysis, storage, and distribution.	Operators	5	1	Field Equipment CCTV, FON, VM Server, Network Sunguide CCTV, C2C, Videowall, Sunguide essentials, Computer, Video Wall, Software, Video Decoding	Operators Tech Mainteance	Y	N	n/a	none	Public Media FHP Local Agencies Traffic Land Other Districts Operation Centers EOC Police Fire
			5 - The RTMC maintains a database of surveillance and sensors and the freeways, surface street and rural roadways, e.g. where they are located, to which part(s) of the network their data applies, the type of data, and the ownership of each link (that is, the agency or entity responsible for collecting and storing surveillance of the link) in the network.	Sunguide Admin	5	1	Sundguide	Operators Tech	N	Y	1	none	none
3	Emergency Data Collection	This function collects and stores emergency information that is collected in the course of operations by the Emergency Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	**1** - The center shall collect emergency service data, emergency vehicle management data, emergency vehicle data, sensor and surveillance data, threat data, and incident data.	Sunguide Admin									
			2 - The RTMC receives and responds to requests from ITS Archives for either a catalog of the traffic or emergency management data or for the data itself.	Sunguide Admin									
4	Emergency Early Warning System	This function monitors alerting and advisory systems, information collected by ITS surveillance and sensors, and reports from other agencies and uses this information to identify potential, imminent, or in-progress major incidents or disasters. Notification is provided to other functions that provide the emergency response, including public notification using ITS traveler information systems, where appropriate.	**1** - The RTMC monitors information from Alerting and Advisory Systems such as the Information Sharing and Analysis Centers (ISACs), the National Infrastructure Protection Center (NIPC), the Homeland Security Advisory System (HSAS), etc. The information may include assessments (general incident and vulnerability awareness information), advisories (identification of threats or recommendations to increase preparedness levels), or alerts (information on imminent or in-progress emergencies).	Operators								Information Sharing and Analysis Centers (ISACs), the National Infrastructure Protection Center (NIPC), the Homeland Security Advisory System (HSAS)	
			2 - The RTMC broadcasts wide-area alerts and advisories for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Operators									TMC's CFX, Information Service Providers, Maintenance Centers, Transit
			3 - The RTMC exchanges incident information (notification of existence of incident and expected severity, location, time and nature of incident) with other transportation management centers.	Operators									
			4 - The center shall present the alert and advisory information and the status of the actions taken in response to the alert by the other centers to the emergency system operator as received from other system inputs.	Operators									
5	Emergency Evacuation Support	This function coordinates evacuation plans among allied agencies and manages evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety. The public is provided with real-time evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary. The evacuation and reentry status are monitored and used to refine the plan and resource allocations during the evacuation and subsequent reentry.	1 - The RTMC requests traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes.	Operators									
			2 - The RTMC provides traveler information systems with evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary and when it is safe to return.	Operators									
			3 - The RTMC monitors the progress or status of the evacuation once it begins and exchange tactical plans, prepared during the incident, with allied agencies.	Operators									
			4 - The RTMC monitors the progress of the reentry process after and evacuation event has ended.	Operators									
			5 - The RTMC submits evacuation information to toll administration centers along with requests for changes in the toll services or fee collection during an evacuation.	Operators									

6	Emergency Response Management	This function provides the strategic emergency response capabilities and broad inter-agency interfaces that are implemented for extraordinary incidents and disasters that require response from outside the local community. It provides the functional capabilities and interfaces commonly associated with Emergency Operations Centers. This function develops and stores emergency response plans and manages overall coordinated response to emergencies. It tracks the availability of resources and assists in the appropriate allocation of these resources for a particular emergency response. This function provides coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident.	1 - The RTMC manages coordinated inter-agency responses to and recovery from large-scale emergencies.	Operators									Traffic management Centers, Transit, maintenance and construction management, rail operations, Emergency management agencies.
			2 - The RTMC implements response plans and track progress throughout the incident. (by exchanging incident information (notification of existence of incident and expected severity, location, time and nature of incident) and distributing response status to allied agencies.)	Operators									
			3 - The RTMC develops, stores and coordinates emergency response plans with other agencies.	Operators									Neighboring Agencies and Emergency Centers
			4 - The RTMC tracks the availability of resources (including vehicles, roadway cleanup, etc.) and allocates the appropriate emergency services, resources vehicle (s) to respond to incidents, and request additional resources from traffic, maintenance, or other emergency centers if needed.	Operators									
7	Incident Command	The function provides tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders at or near the incident scene to support local management of an incident. The function supports communications with public safety, emergency management, transportation, and other allied response agency centers, tracks and maintains resource information, action plans, and the incident command organization itself. Information is shared with agency centers including resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency or maintenance personnel in the field to implement an effective, safe incident response. This function supports the functions and interfaces commonly supported by a mobile command center.	**1** - The RTMC provides tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident.	Operators									
			2 - The RTMC provides incident command communications and information with public safety, emergency management, transportation, and other allied response agency centers.	Operators									
			3 - The RTMC tracks and maintains resource information and action plans pertaining to the incident command.	Operators									
			4 - The RTMC assesses the status of responding emergency vehicles as part of an incident command.	Operators									
8	Service Patrol Management	This function supports dispatch and communication with roadway service patrol vehicles (Road Rangers) that monitor roads to aid motorists, offering rapid response to minor incidents.	**1** - The RTMC dispatches roadway service patrol vehicles (Road Rangers) to identified incident locations.	Operators									
			2 - The RTMC tracks the location and status of all service patrol vehicles available for dispatch and those that have been dispatched.	Operators									
			3 - The RTMC collects and shares incident information (notification of existence of incident and expected severity, location, time and nature of incident) collected by the service patrol with appropriate agencies.	Operators									traffic, maintenance and construction, and traveler information centers for incident management, incident notification to travelers, and incident cleanup.
9	TMC Evacuation Support	This function supports development, coordination, and execution of special traffic management strategies during evacuation and subsequent reentry of a population in the vicinity of a disaster or major emergency. A traffic management strategy is developed based on anticipated demand, the capacity of the road network including access to and from the evacuation routes, and existing and forecast conditions. The strategy supports efficient evacuation and also protects and optimizes movement of response vehicles and other resources that are responding to the emergency. This function coordinates the evacuation with the Traffic Management Subsystem (representing centers in other affected jurisdictions) and the Emergency Management Subsystem.	**1** - The RTMC manages inter-agency coordination, planning and the execution of and for evacuation - from initial planning activities such as establishing routes, areas to be evacuated, timing, etc, through the evacuation process and reentry.	Management									traffic, transit, maintenance and construction, rail operations, and other emergency management centers
			2 - The RTMC coordinates infomation and control of ITS devices with other traffic management centers (e.g. local agencies, CFX, etc.)	Operators									
10	TMC Freeway Management	This function provides center monitoring and control of freeway traffic control systems including ramp control, interchange control, and mainline lane control systems. Approaches covered include ramp metering, interchange connector metering, overhead lane control signals, freeway mainline metering, and variable speed control systems.	**1** - The RTMC remotely controls all field equipment used to manage FDOT D5 freeways such as VSL's, dynamic message signs, etc.	Operators									
			2 - The RTMC collects and operational status from lane controls (VSL's) and compare against the control information (response plans) sent by the RTMC for verification.	Operators									
			3 - The RTMC implements control strategies, under control of RTMC personnel, on some or all of the freeway network devices (e.g. VSL/lane controls).	Management			Detectors						
11	TMC Incident Detection	This function identifies and reports incidents to Traffic Operations Personnel. It remotely monitors and controls traffic sensor and surveillance systems that support incident detection and verification. It analyzes and reduces the collected sensor and surveillance data, external alerting and advisory and incident reporting systems, anticipated demand information from intermodal freight depots, special event information, and identifies and reports incidents and hazardous conditions	**1** - The RTMC controls video and traffic sensor field equipment to detect and verify incidents.	Operators									
			2 - The RTMC collects and stores traffic flow data (e.g. detectors) from the field equipment that is used to detect incidents.	Operators									
			3 - The RTMC receives inputs concerning upcoming events that would effect the traffic network.	Operators								Event promoters, traveler information service providers, media, rail operations centers and intermodal freight depots.	
			4 - The RTMC provides road network conditions such as current and forecasted traffic information, road and weather conditions, traffic incident information, information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements) and traffic images to the appropriate agencies to support the detection, verification, and classification of incidents.	Operators									Emergency Centers, TMC's
			5 - The RTMC receives inputs from the Alerting and Advisory System concerning the possibility or occurrence of severe weather, terrorist activity, or other major emergency, including information provided by the Emergency Alert System.	Operators									

12	TMC Incident Dispatch Coordination/Communication	This function formulates and manages an incident response that takes into account the incident potential, incident impacts, and/or resources required for incident management including proposing and facilitating the dispatch of emergency response and service vehicles as well as coordinating response with all appropriate cooperating agencies.	**1** - The RTMC exchanges alert information and status with emergency management centers including notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public.	Operators									
			2 - The RTMC coordinates planning for incidents with emergency management centers (county sheriff, fire, EOC, FHP, etc.) - including pre-planning activities for disaster response and recovery operations.	Operators								County EOC's, Local Agencies FDOT Districts,	County EOC's, Local Agencies FDOT Districts,
			3 - The RTMC coordinates incident response and reports with emergency management centers (county sheriff, fire, EOC, FHP, etc.)	Operators								County Sheriff Fire/EMS Agencies EOC, Local Police, FHP , Public Safery Agencies	County Sheriff Fire/EMS Agencies EOC, Local Police, FHP , Public Safery Agencies
			4 - The RTMC exchanges incident and threat information with appropriate agencies, including notification of existence of incident and expected severity, location, time and nature of incident.	Operators								emergency management, maintenance and construction centers	emergency management, maintenance and construction centers
			5 - The RTMC responds to requests from emergency management to provide traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc. This may also involve coordination with maintenance centers.	Operators									
			6 - The RTMC exchanges road network status assessment information with the appropriate agencies (including an assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.)	Operators									emergency management maintenance centers
13	TMC Probe Information Collection	This function collects, assimilates, and disseminates vehicle probe data collected from roadside beacons and centers controlling transit vehicles, emergency vehicles, toll collection points, and route-guided vehicles. It estimates traffic and road conditions based on the aggregated probe data and disseminates this information to other centers.	**1** - The RTMC collects and stores probe data including traffic and road conditions from vehicles via roadside beacon field elements (AVI Sites)	Operators									
			2 - The RTMC compares current and forecast traffic and road conditions based on collected probe data and disseminates travel time information.	Operators									
			3 - The RTMC collects traffic data from traveler information centers (INRIX) based on data from their subscriber vehicles (GPS);	Operators									
			4 - The RTMC collects road condition data from probe-equipped transit vehicles via transit management centers	Operators									Public Other TMC's
14	TMC Regional Traffic Control	This function supports coordination between traffic management centers in order to share traffic information between centers as well as control of traffic management field equipment. This coordination supports wide area optimization and regional coordination that spans jurisdictional boundaries; for example, coordinated signal control in a metropolitan area or coordination between freeway operations and arterial signal control within a corridor.	**1** - The RTMC exchanges traffic control information with other traffic management centers, includes remote monitoring and control of traffic management devices (e.g. signs, sensors, signals, cameras, etc.).	Operators									
15	TMC Traffic Information Dissemination	This function disseminates traffic and road conditions, closure and detour information, incident information, driver advisories, and other traffic-related data to other centers, the media, and driver information systems. It monitors and controls driver information system field equipment including dynamic message signs and highway advisory radio, managing dissemination of driver information through these systems.	**1** - The RTMC disseminates traveler information using information devices (i.e. DMS, websites, IVR, etc.) on freeways	Operators			Field Equipment (DMS) IVR, Website, Sunguide DMS Subsytem, VM Ware Application	Operators, Tech Staff					Public Other TMC's Local Agencies
			2 - The RTMC distributes traffic data (e.g. traffic and road conditions, closure and detour information, incident information and driver advisories) to appropriate agencies.	Operators									maintenance and construction centers, transit centers, emergency management centers, traveler information providers, TMC's, Media
16	TMC Traffic Network Performance Evaluation	This function predicts travel demand patterns to support traffic flow optimization, demand management, and incident management. This function collects traffic data from sensors and surveillance equipment as well as input from other traffic management centers, emissions management, transit operations, and event promoters. It collects route planning information from information service providers and integrates and uses this information to predict future traffic conditions. The planned control strategies can be passed back to the Information Service Provider so that the intended strategies can be reflected in future route planning.	**1** - The RTMC collects and store plans from event promoters for major future events possibly impacting traffic to support overall network performance evaluations.	Operators									
17	Traffic Data Collection	This function collects and stores traffic information that is collected in the course of traffic operations performed by the Traffic Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.	**1** - The RTMC collects and archives traffic management data (regional emergency and accident information, roadside count stations, traffic information from local agencies and TMC's, public information systems and transit)	Sunguide Admin									
			2 - RTMC coordinates with the Central Florida and ITS Regional data warehouse to provide the collected data.	Sunguide Admin									
18	Traffic Field Equipment Maintenance	This function monitors the operational status of field equipment and detects failures. It presents field equipment status to Traffic Operations Personnel and reports failures to the Maintenance and Construction Management Subsystem. The function tracks the repair or replacement of the failed equipment. The entire range of ITS field equipment may be monitored by this function including sensors (traffic, infrastructure, environmental, security, speed, etc.) and devices (highway advisory radio, dynamic message signs, automated	**1** - The RTMC collects and stores sensor (traffic, pedestrian, multimodal crossing) operational status.	Sunguide Admin									
			2 - The RTMC monitors and stores the operational status of all field equipment (CCTV, DMS, MVDS, etc.) and send to the maintenance center for repair as needed.	Sunguide Admin									
			3 - The RTMC exchanges information with maintenance centers concerning the reporting of faulty equipment and the schedule/status of their repair. Information exchanged includes details of new equipment faults, and clearances when the faults are cleared.	Network Admin									
19	FDOT District 5 VII Roadside Equipment/Roadway Intersection Collision Warning	This element represents the roadside equipment that performs VII (Vehicle Infrastructure Integration) data collection and dissemination. This element includes the VII message switch that is used to provide access to the roadside equipment from various centers. It includes field elements that determine the probability of a collision in an intersection by monitoring vehicles approaching the intersection. When a potential collision is detected, this function sends appropriate warnings and/or control actions to the approaching vehicles using a short-range interface. It also provides signal indication information to approaching vehicles to improve intersection safety. This function covers any signalized intersection equipped with intersection collision warning field equipment.	**1** - The field element shall utilize traffic sensor data to determine the probability that a vehicle collision will occur if no action is taken by the vehicle.	Network Admin									
			2 - The RTMC send traffic data and receive vehicle data as a part of the Vehicle Infrastucture Ingration (VII) initiative using FDOT D5 field equipment	Network Admin									
			3 - The field element shall provide collision avoidance data (intersection congestion, approaching vehicles, potential collision hazards, etc.) to vehicle(s) approaching an intersection or railroad grade crossing.	Network Admin									

EXHIBIT B – RISK ASSESSMENT

Risk Assessment

Determining the Level of Risk

This worksheet can be used to identify the level of risk and help to prioritize any interventions or control measures.

Step 1. Determine your "risk appetite" – establish your areas of consideration ("things you value") & your "acceptability" thresholds.

Consider the consequences and likelihood for each of the identified risks and use the matrix* below to establish a risk level.
This workbook will record the quality of your planning process - it will not ensure it.

Consequence Criteria
The "area of consideration" example used below is injury to people.
You should copy this template and adjust these criteria for each "thing you value".

	----------Severity---------->				
People	Minor injury or first aid treatment	Injury requiring treatment by medical practitioner and/or lost time from workplace.	Major injury / hospitalization or some staff unable to fullfill duties	Single death and/or multiple major injuries or multiple staff unable to fullfill duties	Multiple deaths or injuries or all assigned staff unable to fullfill duties
Information	Compromise of information otherwise available in the public domain.	Minor compromise of information sensitive to internal or sub-unit interests.	Compromise of information sensitive to the organizations operations.	Compromise of information sensitive to organizational interests.	Compromise of information with significant ongoing impact.
Property	Minor damage, vandalism or comm. loss to asset.	Minor damage or comm. Loss of <5% of total assets	Damage or comm. loss of <20% of total assets	Extensive damage or comm. Loss of <50% of total assets	Destruction or complete comm. loss of >50% of assets
Econonic	1% of budget (organizational, division or project budget as relevant)	2-5% of annual budget	5-10 % of annual budget	> 10% of budget	> 30% of project or organizational annual budget
Reputation	Local mention only. Quickly forgotten. Freedom to operate unaffected. Self-improvement review required	Scrutiny by Executive, internal committees or internal audit to prevent escalation Short term local media concern. Some impact on local level activities	Persistent national concern. Scrutiny required by external agencies. Long term 'brand' impact.	Persistent intense national public, political and media scrutiny. Long term 'brand' impact. Major operations severely restricted.	International concern, Governmental Inquiry or sustained adverse national/international media. 'Brand' significantly affects organizational abilities.
Capability	Minor skills impact. Minimal impact on non-core operations. The impact can be dealt with by routine operations.	Some impact on organizational capability in terms of delays, systems quality but able to be dealt with at operational level	Impact on the organization resulting in reduced performance such that targets are not met. Organizations existence is not threatened, but could be subject to significant review	Breakdown of key activities leading to reduction in performance (eg. service delays, revenue loss, client dissatisfaction, legislative breaches).	Protracted unavailability of critical skills/people. Critical failure(s) preventing core activities from being performed. Survival of the project/activity/organization is threatened.

----------Likelihood---------->	Chance	Frequency	Probability			1 Insignificant	2 Minor	3 Moderate	4 Major	5 Significant
	Is expected to occur in most circumstances	Has occurred more than 1 per year in our organization or circumstances are such that it will almost certainly happen	>95%	5	**Almost Certain**	5	10	15	20	25
	Will probably occur in most circumstances	Occurred more than 7 times over 10 years in this organization or in other similar organizations or circumstances are such that it is likely to happen in the next few years	>65%	4	**Likely**	4	8	12	16	20
	Could occur at some time and has happened to similar organizations	Has occurred in this organization more than 3 times in the past 10 years or occurs regularly in similar organizations or is considered to have a reasonable likelihood of occurring in the next few years	>35%	3	**Possible**	3	6	9	12	15
	Heard of it in the Industry but Rare	Has occurred 2 or 3 times over 10 years in this organization or similar organizations	<35%	2	**Unlikely**	2	4	6	8	10
	Never heard of this happening in our industry but its possible (Very Rare)	Has occurred or can reasonably be considered to occur only a few times in 100 years.	<5%	1	**Rare**	1	2	3	4	5

Extreme (E)	Unacceptable Risk, Immediate action needs to be take, recovery steps need to be in place.
High (H)	Acceptable Risk with Mitgation steps in place, recovery steps may need to be put in place.
Medium (M)	Acceptable Risk with Mitgation steps in place, no recovery steps needed.
Low (L)	Acceptable Risk, monitor and control as required, no mitigation necessary.

Note: circumstances are such = little to no currently mitigation in place.

2/13/2020

FDOT D5 RTMC Risk Assessment

Location	Identified Risks	Analysis & Evaluation					Existing controls described & evaluated		Further Actions
The area or resource in which the threat affects	**Risk Statement** (e.g. description of each specific risk scenario with regard to people, information, physical assets, finances, reputation, and any other **"things you value"**)	**Likelihood** (1, 2, 3, 4, or 5 - see Sheet 1)	**Severity** (1, 2, 3, 4 or 5 - see Sheet 1)	**Risk Value** (1 - 25 - see Sheet 1)	**Risk level** (L, M, H or E - see Sheet 1)	**Accept Risk** (Yes or No)	**What we are doing now to manage this risk.**	**Effectiveness of our strategies** (**N** = Not generally applied or only applied in isolated situations for example in less than 20% of cases; **P** = Partially applied, not usually documented or applied in less than 50% of cases; **L** = Largely applied, formally documented and largely repeatable or applied in up to 85% of cases; **F** = Fully applied, formally documented and fully repeatable or applied in more than 85% of cases.)	**Further Action Needed & Opportunities for improvement - Include milestone(s) & target date(s)**
Building (RTMC)	Sprinkler Activation/Water Damage to all equipment	1	5	5	M	Yes/Mit/Rec	Built new RTMC building w/ dry agent		None
Building (RTMC)	Utilitly Power Failure for 1 day	3	1	3	L	Yes	Building Genertor and UPS installed		None
Building (RTMC)	Utilitly Power Failure over 1 week	1	1	1	L	Yes	Building Genertor and UPS installed		None
Building (RTMC)	Complete Building Power Failure (UPS, Generator)	1	5	5	M	Yes/Mit	Automatic fallover of equipment		
Building (RTMC)	Structure Collapse	1	5	5	M	Yes/Mit	Built new RTMC building w/ better structural standards		
Building (RTMC)	Service Disruptions - Internet (1-2 days)	2	1	2	L	Yes	Installed redundant connections		
Building (RTMC)	Service Disruptions - Telephone (1-2 days)	2	1	2	L	Yes	Installed circuit for OIT to use DeLand		
Building (RTMC)	Service Disruptions - FHP Radio	3	2	6	M	Yes/Mit	Secondary Nextel		
Building (RTMC)	Service Disruptions - FHP Radio for CFX Radio	2	2	4	M	Yes/Mit	CFX Roadranger contractor FTS provides mobile phones as backups		None
Building (RTMC)	Core Network Switch/Router Malfunction causing comm. loss (i.e. router completely fails)	4	5	20	E	Yes/Mit/Rec	Topology change		Identify alternative vendor
Building (RTMC)	Building Fire	2	5	10	H	Yes/Mit/Rec	Automatic fallover of equipment, Operators will move to the hotsite		
Building (RTMC)	Flood	2	5	10	H	Yes/Mit/Rec	Automatic fallover of equipment, Operators will move to the hotsite		Need to discuss damage assessment, salvage property.
Building (RTMC)	Bomb Threat	1	4	4	L	Yes	None		None
Building (RTMC)	Theft/Vandalism	2	5	10	H	Yes/Mit/Rec	Mininum staff to access critical areas, accountability through badges		None
Building (RTMC)	Severe Weather (Hurricane, Tornado) causing mass structural damage unsafe for 1 - 4 weeks	1	5	5	M	Yes/Mit/Rec	Built new RTMC building w/ better structural standards		None
Building (RTMC)	Severe Weather (Hurricane, Tornado) causing facility to be inaccessble for 1 to 2 days	1	4	4	L	Yes/Mit/Rec	Built new RTMC building w/ better structural standards		None
People	RTMC Operators Personnel unavailable during a crisis that requires their services and/or expertise	1	5	5	M	Yes/Mit	Enough operators to be available		
People	Personnel unavailable during a crisis that requires their services and/or expertise	4	2	8	M	Yes/Mit	TBD		Looking for other software Vendors for a solution
People	Bright House Personnel unavailable during a crisis that requires their services and/or expertise	2	1	2	L	Yes	Automatically routed to Deland		
People	FHP Radio Personnel unavailable during a crisis that requires their services and/or expertise	2	1	2	L	Yes	Nothing		Get with FHP to determine who repairs or replaces the FHP Radio if needed.
People	Road Rangers Personnel unavailable during a crisis that requires their services and/or expertise	3	3	9	M	Yes/Mit	Contract written for the RR to be available at all times		None
People	D5 ITS Technicians Personnel unavailable during a crisis that requires their services and/or expertise	4	5	20	E	No/Mit/Rec	Cross trained employees		None
People	Maintenance Contractor unavailable during a crisis that requires their services and/or expertise	2	3	6	M	Yes/Mit	Contract written for the contractor to be available at all times		None
People	CFX Technicians unavailable during a crisis that requires their services and/or expertise	4	3	12	H	Yes/Mit	Contract written for the contractor to be available at all times otherwise contractor will be replaced		
People	Sunguide Support Personnel unavailable during a crisis that requires their services and/or expertise	2	5	10	H	Yes/Mit/Rec	Obligated through contract to respond with 1hr. If no response, escalate it up to Rober Heller		
People	OIS Personnel unavailable during a crisis that requires their services and/or expertise	2	2	4	L	Yes	Nothing		Use Cell phone as alternate
People	Serious Injury to critical staff requiring hospital attention occurs at RTMC	2	3	6	M	Yes/Mit	Nothing		A person in charge needs to be trainned handle this situation and it need to be part of the DRP
People	Death of critical staff occurs at RTMC	1	5	5	M	Yes/Mit	Nothing		A person in charge needs to be trainned handle this situation and it need to be part of the DRP
Workstation	Computer Virus/Malware infecting all machines	2	5	10	H	Yes/Mit/Rec	Antivirus in place, Quarentine. Spare workstation available with current images		

The area or resource in which the threat affects	**Risk Statement** (e.g. description of each specific risk scenario with regard to people, information, physical assets, finances, reputation, and any other **"things you value"**)	**Likelihood** (1, 2, 3, 4, or 5 - see Sheet 1)	**Severity** (1, 2, 3, 4 or 5 - see Sheet 1)	**Risk Value** (1 - 25 - see Sheet 1)	**Risk level** (L, M, H or E - see Sheet 1)	**Accept Risk** (Yes or No)	**What we are doing now to manage this risk.**	**Effectiveness of our strategies** (**N** = Not generally applied or only applied in isolated situations for example in less than 20% of cases; **P** = Partially applied, not usually documented or applied in less than 50% of cases; **L** = Largely applied, formally documented and largely repeatable or applied in up to 85% of cases; **F** = Fully applied, formally documented and fully repeatable or applied in more than 85% of cases.)	**Further Action Needed & Opportunities for improvement - Include milestone(s) & target date(s)**
Workstation	Inoperable (i.e. Blue Screen, Hardware or software failure preventing operations)	5	1	5	M	Yes/Mit	Antivirus in place, Quarentine. Spare workstation available with current images		None
Workstation	Unauthorized installation of software or hardware	2	1	2	L	Yes	Computer policies prevent this		None
Server	Disgruntal Employee deletes critical resources' configurations and databases	2	5	10	H	Yes/Mit/Rec	Nothing		Ensure software and backups are secure and unable to be erased and offsite
Server	Sunguide DB Corruption after hours	3	5	15	H	Yes/Mit/Rec	On-call staff, 10min response, HNTB available 24/7 not required to answer. Sunguide Support line		None
Server	Unauthorized installation of software or hardware on critical server	1	5	5	M	Yes/Mit	Backups of all servers available		None
Server	Software Bugs causing errors preventing some processes from running	3	3	9	M	Yes/Mit	Call support for Sunguide, Microsoft for SQL, HP support for VM Ware 1hr response, Solar Winds Support, MIMS IBI Support, Cyber lock Support		Investigate Win 2008 Srv support
Server	Sunguide Subsystem Malfunction/Inoperable (Databus or Status Logger)	3	5	15	H	Yes/Mit/Rec	Contact SWRI Support		
Server	Sunguide Subsystem Malfunction/Inoperable (any, one Individual subsystem)	4	4	16	H	Yes/Mit/Rec	Contact SWRI Support		
Server	Inoperable (i.e. Blue Screen, Hardware or software failure preventing operations) Server (HP ESX SRV, HP SAN) after hours	3	5	15	H	Yes/Mit/Rec	Installed new system		None
Server	Inoperable (i.e. Blue Screen, Hardware or software failure preventing operations) Server (Cameleon) after hours	3	4	12	H	Yes/Mit/Rec	Contact CFX Support. Maintenance contractor is responsible for repairing		Need to discuss further
Server	Inoperable (i.e. Blue Screen, Hardware or software failure preventing operations) Server (DHCP, DNS, DC) after hours	3	4	12	H	Yes/Mit/Rec	Fails over to Deland automatically or manual		None
Server	Inoperable (i.e. Blue Screen, Hardware or software failure preventing operations) Server (Bridge Security) after hours	2	5	10	H	No/Mit/Rec	Contact ITS on-call staff		Contact Homeland security to discuss replacement of equipment and funding
Server	Inoperable (i.e. Blue Screen, Hardware or software failure preventing operations) Server (Cyberlock) for 1 week	2	5	10	H	Yes/Mit/Rec	Backups are created, on SAN and fails over automatically		Look into check key pad manual override for entry
Server	Inoperable (i.e. Blue Screen, Hardware or software failure preventing operations) Server (SG DB SRV)	3	5	15	H	Yes/Mit/Rec	Data guard in place, 1 day of back up and fails over to Deland manually		Moving ot SQL DB, using HA, to have automatic failover.
Server	Computer Virus/Malware infecting all servers	2	5	10	H	Yes/Mit/Rec	All servers are backed up on the SAN		If SAN gets infected with the virus then a third party offsite backup is needed
Road Rangers	Trucks Inoperable (Mechanical Problems)	4	2	8	M	Yes/Mit	Contractually bound to be available at all times		Investigate Lynx has spare Trucks
Road Rangers	Service Disruptions - CFX Nextel	3	2	6	M	Yes/Mit	CFX Roadranger contractor FTS provides mobile phones as backups		FTS is currently procuring additional motorola phones as a tertiary backup
Road Rangers	Tablet infected by computer virus deeming it Inoperatble	3	2	6	M	Yes/Mit	Created offline backup process		None
Road Rangers	RR Software Malfunction (non operational) for 1 day	5	1	5	M	Yes/Mit	Created offline backup process		None
Road Rangers	RR Software Malfunction (non operational) for 1 week	3	2	6	M	Yes/Mit	Created offline backup process		None
Road Rangers	Loss of commincation to Sunguide	4	2	8	M	Yes/Mit	Created offline backup process		Look for alternative software solutions
Field Hub Site	LH Struct by Vehicle	5	1	5	M	Yes/Mit	Maintenance Contractor contacted, evaluatued and repaired. Replacement eqiupment is availble, Fiber contractor will be called if needed. All replacement eqiupment covered by insurance company.		None
Field Hub Site	MH Struct by Vehicle	3	3	9	M	Yes/Mit	Maintenance Contractor contacted, evaluatued and repaired. Replacement eqiupment is availble, Fiber contractor will be called if needed. All replacement eqiupment covered by insurance company.		None

The area or resource in which the threat affects	**Risk Statement** (e.g. description of each specific risk scenario with regard to people, information, physical assets, finances, reputation, and any other **"things you value"**)	**Likelihood** (1, 2, 3, 4, or 5 - see Sheet 1)	**Severity** (1, 2, 3, 4 or 5 - see Sheet 1)	**Risk Value** (1 - 25 - see Sheet 1)	**Risk level** (L, M, H or E - see Sheet 1)	**Accept Risk** (Yes or No)	**What we are doing now to manage this risk.**	**Effectiveness of our strategies** (**N** = Not generally applied or only applied in isolated situations for example in less than 20% of cases; **P** = Partially applied, not usually documented or applied in less than 50% of cases; **L** = Largely applied, formally documented and largely repeatable or applied in up to 85% of cases; **F** = Fully applied, formally documented and fully repeatable or applied in more than 85% of cases.)	**Further Action Needed & Opportunities for improvement - Include milestone(s) & target date(s)**
Field Hub Site	Fiber Cut btw LH Sites	5	1	5	M	Yes/Mit/Rec	All areas redundant	If this occurred on I4 downtown, it would have a great impact	None
Field Hub Site	Fiber Cut at a MH Sites	3	3	9	M	No/Mit/Rec	I-95S and all I-4 redundant links	If this occurred on I95 at MH4 on SB link, it would have a great impact	Finish connection via D2 and D7 fiber rings
Field Hub Site	Lightning Strike	4	2	8	M	Yes/Mit	Upgrading grounding to ensure of proper installation		Need to add loop prevention protocol. Need to send Maintenance contractor out to check grouding
Field Hub Site	Utility Power Failure at LH site for 1 week	4	2	8	M	Yes/Mit	Some areas have redundancy and loop prevention protocols		
Field Hub Site	Utility Power Failure at MH site for 1 day	4	1	4	L	Yes	Generator at site		none
Field Hub Site	Utility Power Failure affecting an entire area 2-3 MH's and connected LH's	3	4	12	H	Yes/Mit/Rec	Generator at MH sites but not LH. Maintenance contractor working with power company. Replacing UPS in cabinets		Need redundant power for LH such as UPS. Possibly looking into distributed power systems for the future.
Field Hub Site	Flood/Water Damage to all equipment at MH site	3	2	6	M	Yes/Mit	Spare equipment in place. Maintenance		I95- MH1 needs to be elevated as its in a flood zone
Field Hub Site	Fire at MH site	4	3	12	H	Yes/Mit/Rec	Spare equipment in place. Maintenance Contractor to evaluate and repair		
Field Hub Site	Vandalism/Theft	1	1	1	L	Yes	Spare equipment in place. Maintenance Contractor to evaluate and repair		
Field Hub Site	Software/Firmware Upgrade corruption at MH Site	4	3	12	H	Yes/Mit/Rec	Back up configs in place. ITS Staff would go out to site locally to repair		Could perform upgrades on site vs remotely. Have someone onsite.
Field Hub Site	Core Network Switch/Router Malfunction/bug	4	3	12	H	Yes/Mit	Back up configs in place. ITS Staff would go out to site locally to repair		Identify alternative vendor
Field Hub Site	Severe Weather causing mass infrastucture damage (Hurricane, Tornado) multiple	2	5	10	H	Yes/Mit/Rec	Procured replacement eqiupment and replace based on most critical sites		Need purchased replacement up to 50%
Field Hub Site	Hardware Failure causing comm. loss (i.e. fiber optic transceiver, bad media convertor) at MH Site	3	3	9	M	Yes/Mit	Some areas have redundancy and loop prevention protocols	If this occurred on I95 at MH4 on SB link, it would have a great impact	Verify loop prevention protocol at MH sites
Field Hub Site	Accidental Deletion of hardware/software programming/configuration (Switch or Router)	3	4	12	H	Yes/Mit/Rec	Configuration backup in solar winds but solar winds is not backed up		Will backup solar winds DB
FON	Cable Damage from animals at the RTMC	1	3	3	L	No/Mit/Rec	Built new RTMC building with underground fiber		Find a protective application that prevents rodent entry or other solution
FON	Damage from Construction activities at the RTMC	3	5	15	H	Yes/Mit/Rec	Call Maintenance Contractor, Sunguide would failover to Deland although operators would not be able to access it		Plan for redundant route for the RTMC
FON	Damage (uncut) from Construction activities in the field (e.g. High bends in pull or splice box, crushed pull box pinching fiber, Improper repair (Splicing), etc.)	4	4	16	H	Yes/Mit/Rec	Construction company contacted, if response time to long, FDOT Maintenance contractor performs work and invoices contruction company		
FON	Lawn mower damage	5	2	10	H	No/Mit/Rec	Installed concrete apron; provided info more directly (via website)		Bolt down all splice vault covers
FON	Damage from attempted Theft/Vandalism in the field	4	4	16	H	Yes/Mit/Rec	Some areas have redundancy and loop prevention protocols. Call fiber contractor to repair.		None
FON	Damage from Servere Weather (i.e. aerial fiber)	3	4	12	H	Yes/Mit/Rec	Some areas have redundancy and loop prevention protocols. Call fiber contractor to repair.		Direct bury fiber instead of aerial where available.
Website	Website hacked and becomes unavailable or displays improper message or explicit images	2	2	4	L	Yes			
Website	Service Disruption for less than 1 day	5	5	25	E	No/Mit/Rec	Contact IBI for support. Use the improve ticketing system for better perfomance.		None

The area or resource in which the threat affects	**Risk Statement** (e.g. description of each specific risk scenario with regard to people, information, physical assets, finances, reputation, and any other **"things you value"**)	**Likelihood** (1, 2, 3, 4, or 5 - see Sheet 1)	**Severity** (1, 2, 3, 4 or 5 - see Sheet 1)	**Risk Value** (1 - 25 - see Sheet 1)	**Risk level** (L, M, H or E - see Sheet 1)	**Accept Risk** (Yes or No)	**What we are doing now to manage this risk**.	**Effectiveness of our strategies** (**N** = Not generally applied or only applied in isolated situations for example in less than 20% of cases; **P** = Partially applied, not usually documented or applied in less than 50% of cases; **L** = Largely applied, formally documented and largely repeatable or applied in up to 85% of cases; **F** = Fully applied, formally documented and fully repeatable or applied in more than 85% of cases.)	**Further Action Needed & Opportunities for improvement - Include milestone(s) & target date(s)**
Website	Site Oversubscribed (slow site)	4	2	8	M	Yes/Mit	Contact IBI for support. Use the improve ticketing system for better perfomance.		None
Juniper Firewall FHP CAD	Power failure	2	3	6	M	Yes/Mit	redundant power supply connected to separate outlets on different breakers		None
Juniper Firewall FHP CAD	Hackers crippling system and preventing services to be performed	1	3	3	L	Yes	Behind the DMZ		None
Juniper Firewall FHP CAD	Communications Failure (i.e. network communication loss, bad gbic, etc.)	3	3	9	M	Yes/Mit	Spare GBIC in place		Could implement port redundancy
Juniper Firewall FHP CAD	Inoperable (i.e. Hardware or software failure preventing operations)	3	3	9	M	Yes/Mit	Purchased replacement eqiupment		Add duplication connection for FHP CAD Data

Appendix J

Statewide
Transportation Management Center
Information Technology
Standard Operating Procedure

ITS Transportation Management Center Information Technology Standard Operating Procedures

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INFORMATION TECHNOLOGY POLICY REQUIREMENTS

1 Introduction

The Florida Department of Transportation's (FDOT) traffic management centers (TMC) operate Florida's state roadways. Each TMC is equipped with mission critical assets that must be protected from unauthorized and inappropriate access, usage, and theft. The TMC's standard operating procedures are responsible for implementing ways to protect these assets. Several relevant policies and statutes are critical for explicit inclusion into the TMC Standard Operating Procedures statewide. They are listed in the following subsections along with implementation guidance for the TMC to comply with the relevant policies and statues.

This policy guidance applies to: ITS facilities and ITS information technology resources.

A transportation management center is a building housing at least one FDOT owned work station permanently connected to the ITS Network for purposes of operating the Freeway Management System.

ITS Information Technology Resources are computer hardware, software, networks, devices, connections, applications, and data owned, operated, leased, or managed by the ITS operations.

2 Physical Access Controls

2.1 Policy Statement

Rule Chapter 71A-1, Security Policies and Standards, Florida Administrative Code (F.A.C.), requires: information technology resources be protected by physical controls; agencies implement procedures to manage physical access to information technology facilities; and, physical access to central information resource facilities be restricted to authorized personnel. Furthermore, Policy number 001-325-060, Security and Use of Information Technology Resources, requires: information be created and maintained in a secure environment and safeguards be established to ensure the integrity and accuracy of department information that supports critical functions of the department.

2.2 Policy Implementation Controls Requirement

The traffic management center shall implement building and other access controls to protect the TMC and other assets.

3 Internet Monitoring

3.1 Policy Statement

In accordance with Policy Number 001-325-060 Security and Use of Information Technology Resources, employees are prohibited from using IT resources for accessing, sending, storing, creating or displaying inappropriate materials including, but not limited to gambling, illegal activity, sexually explicit materials or materials that include profane, obscene or inappropriate language, or discriminatory, racial, or ethnic content.

3.2 Policy Implementation Controls Requirement

The traffic management center shall implement controls for accessing the Internet. These controls shall restrict access to inappropriate materials as defined above. A commercial web filtering product configured to deny access to these sites shall be in place as one of these controls.

4 Public Records Law

4.1 Policy Statements

Chapter 119, Florida Statute (F.S.) defines a public record as “all documents, papers, letters, maps, books, tapes, photographs, films, sound recordings, data processing software, or other material, regardless of the physical form, characteristics, or means of transmission, made or received pursuant to law or ordinance or in connection with the transaction of official business by any agency. In addition, all state, county, and municipal records are open for personal inspection and copying by any person and providing access to public records is a duty of each agency.

Rule Chapter 71A-1, F.A.C., requires: agency computer users follow agency established guidelines for acceptable use of email and other messaging resources. Furthermore, Policy number 001-325-060, Security and Use of Information Technology Resources prohibits the use of non-departmental email systems (ie AOL, MSN, Yahoo mail) through the department’s network, unless it is specifically approved with Form 325-080-001., Acquiring Information Technology Resources. It also states that in cases where personal e mail accounts are utilized for Department business purposes, copies of any email must be forwarded to an official e-mail account.

4.2 Policy Implementation Controls Requirement

The traffic management center shall implement controls that fulfill requirements of Chapter 119 Florida Statutes (F.S). Where personal e mail accounts are utilized for Department business purposes, copies of any email must be forwarded to an official e-mail account. The use of non-departmental email systems (ie AOL, MSN, Yahoo mail) through the department's network, is prohibited unless it is specifically approved with Form 325-080-001., Acquiring Information Technology Resources

5 Password Complexity Requirements

5.1 Policy Statements

Rule Chapter 71A-1 F.A.C. defines a complex password as having at least 8 characters and being comprised of at least 3 of the following categories: uppercase English letters, lowercase English letters, numbers 0-9 and non alphanumeric characters. The rule also states that user accounts will be authenticated, at a minimum, by a complex password.

5.2 Policy Implementation Controls Requirement

The traffic management center shall implement controls requiring complex passwords that comply with the requirements in Rule Chapter 71A-1 F.A.C at a minimum.

6 Disaster Recovery Plans

6.1 Policy Statement

Rule Chapter 71A-1, F.A.C., requires "information technology resources identified as critical to the continuity of governmental operations have documented disaster recovery plans to provide for the continuation of critical agency functions in the event of disaster."

6.2 Policy Implementation Controls Requirement

The traffic management center shall have a Disaster Recovery Plan in place that defines how to continue to operate traffic in the event that the primary TMC facility is no longer able to operate traffic.

7 Adherence to District Information Technology Resource Usage Policy

7.1 Policy Statement

Rule Chapter 71A-1,F.A.C., states that " the information security policies and standards of this rule chapter apply equally to all levels of management and to all members of the workforce." This rule chapter also states that "each agency shall develop, document, implement, and maintain an agency wide information security program. The goal of the information security program is to ensure administrative, operational, and technical controls are sufficient to reduce to an acceptable level risks to the confidentiality, availability, and integrity of agency information and information technology resources." Policy number 001-325-060, Security and Use of Information Technology Resources applies to all department information technology resources that access, process, or have custody of data. This includes all owned, leased and contracted services involving mainframe, microcomputer, distributed processing and networking environments. The policy requires department information technology resources be used for department business and each individual with authorized access to the department's information technology resources follow the policy and all information security standards and procedures.

7.2 Policy Implementation Controls Requirement

The Department's Policy number 001-325-060, Security and Use of Information Technology Resources fulfils Rule Chapter 71A-1 F.A.C. TMC staff shall be furnished this policy, and will sign and date a statement indicating they have read and will follow this policy. Completion of annual computer training addressing these computer security issues also meets the intent.

Appendix K

D5
COVID-19 Staffing
Standard Operating Procedure

Staffing Reductions TMC

- At 75% reduction the following job duties removed
    - Performance Measure Reports
    - RRSP dispatch/communications
    - TIM website Maintenance
    - Outreach (safety bulletins, emails, etc.)
    - QA/QC
    - TIM Ops Dashboard

Plan A: Normal Operations from RTMC Floor

- Operations will continue to follow the Standard Operating Procedures and the Standard Operating Guidelines.
- Staffing levels remain the same.

Plan B: Closure of RTMC Floor (Temporary: 24-48 hours)

- RTMC Operations will be moved to the Metric Office Conference Room and Iteris Lake Mary Office for Metric's teams staff and the HNTB Office Conference Room for HNTB employees.
- Staff will use Laptops or PCs to VPN into the FDOT network and will connect to the VMs with Window 8 or better and the most recent Windows security. SOP to be provided to staff.
- The Metric main line (7304) will roll to a google number which will be monitored by Metric Staff. The main line for HNTB (7295) will roll to a google number which will be monitored by HNTB. The RTMC main line (7300) will roll to (7304)- coordinate with Donna.
- The TIM Team will communicate directly with FHP, Local PD, SO, FD, and Road Rangers via SLERS radio, cell phones, Mutualink.
- Operations will use Skype, or other means group chat, to coordinate between the two teams and the TIM team.
- At the beginning of each shift a teleconference will be held between all parties (Metric, HNTB, and TIM) to discuss who's working and any current updates.
- Teleconference line is as follows: ***Toll-Free Access Number***: *877-594-8353;* ***Participant Pass Code***: *92190122*
- Metric staff will coordinate with I-4 Ultimate dispatch and OPD for any incident within Ultimate via cell phone or group chat.
- Staffing levels will remain the same during this plan.
- Coordination with Asset Maintenance contractors will be handled by the RTMC Operators.
- Normal operations are expected, to include: posting event management, posting DMS, publishing incident information to FL511, routine ITS device checks, and stakeholder notification emails (TIM, SYS, EVT, COIN, First Responder Incidents).

Plan C: Closure of RTMC Floor (Work from DeLand)

Plan D: Closure of RTMC Floor (Isolate/work from home)

- RTMC Operations would be continued with managers, supervisors and operators 24/7.
- Staff will use Laptops or PCs to VPN into the FDOT network and will connect to the VMs with Window 8 or better and the most recent Windows security. SOP to be provided to staff.
- The Metric main line (7304) will roll to a google number which will be monitored by Metric Staff. The main line for HNTB (7295) will roll to a google number which will be monitored by HNTB. The RTMC main line (7300) will roll to (7304)- coordinate with Donna.
- The TIM Team will communicate directly with FHP, Local PD, SO, FD, and Road Rangers via SLERS radio, cell phones, Mutualink.
- Operations will use Skype, or other means group chat, to coordinate between the two teams and the TIM team.
- At the beginning of each shift, a teleconference will be held between all parties (Metric, HNTB, and TIM) to discuss who's working and any current updates.
- Teleconference line is as follows: ***Toll-Free Access Number***: *877-594-8353;* ***Participant Pass Code***: *92190122*
- Staffing schedule will be sent to both teams as updates or changes occur. A schedule of the IT staff will also be included.
- Metric staff will coordinate with I-4 Ultimate dispatch and OPD for any incident within Ultimate via cell phone or group chat.
- Staffing levels remain the same.
- Staffing level requirements for a skeleton crew if needed or requested:
    - Metric (1-operator for CFX, 1-operator for I-4, 1-arterial operator & Supervisor/Lead/Manager) M-F 6am-10pm.
    - Metric (1-Operator and 1-lead to cover CFX, I-4 and Arterial) M-F overnight.
    - Metric (1-operator for CFX, 1-Lead for I-4, 1-arterial operator) Weekend.
        - 2 corridor managers and a signal timing engineer split in two shifts (M-F: 6am-7pm)
        - Arterial operations provide local agencies support remotely.
    - HNTB (1-operator for I-75/I-4, 1-operator for I-95/SR-528 & Supervisor/Manager). M-F 6am-10pm.
    - HNTB (1-opeator I-75/I-95/I-4/SR-528) M-F Overnight.
    - HNTB (1-operator for I-75/I-4, 1-Lead/supervisor for I-95/SR-528) Weekend.
- Staffing requirements for TIM would include 1 TIM Specialist per shift and TIM Program Manager.
- Coordination with Asset Maintenance contractors will be handled by the RTMC Operators.
- Normal operations are expected, to include: posting event management, posting DMS, publishing incident information to FL511, routine ITS device checks, and stakeholder notification emails (TIM, SYS, EVT, COIN, First Responder Incidents).
- Arterial team will telework via RDP to their workstations.

Information regarding environmental cleaning and disinfection recommendations from the CDC can be found here: https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/cleaning-disinfection.html

All non-essential tours/meetings have been canceled. Meetings will be held by web-based means.

I-4 Lynx			I-75			I-95/SR 528		
Staffing Level	**Function**	**Total Units**	**Staffing Level**	**Function**	**Total Units**	**Staffing Level**	**Function**	**Function**
75%+	Sun - Thurs: 6am - 12:00am Fri-Sat: 6am - 3:30am 3-6 units/shift Full capabilities	15	**75%+**	Sun - Thurs: 6:30am - 8:30pm Fri-Sat: 6:30am - 8:30pm 3 units/shift Full capabilities	6	**75%+**	Mon-Fri: 6:30am - 8:30pm Sat-Sun: None 6 units/shift Full capabilities	12
50-74%	Sun - Thurs: 6am - 12:00am Fri-Sat: 6am - 12:00am 3-4 units/shift Full capabilities	8-11	**50-74%**	Mon-Fri: 7:00am - 7:00pm Sat-Sun: 8:30am-5:30pm 2 units/shift Prioritize lane blocking events	3-5	**50-74%**	Mon-Fri: 6:30am - 8:30pm Sat-Sun: None 3-5 units/shift Full capabilities	6-10
<50%	Sun - Thurs: 7am -8:00pm Fri-Sat: 7-8pm 3 units/shift Prioritize lane block events	< 7	**<50%**	Mon-Fri: 7:00am - 7:00pm Sat-Sun: 8:30am-5:30pm 1 units/shift Prioritize lane blocking events	2	**<50%**	Mon-Fri: 6:30am - 8:30pm Sat-Sun: None 3 units/shift Prioritize lane blocking events	< 5

Appendix L

District 5
I-75 Emergency Shoulder Use
Standard Operating Procedure

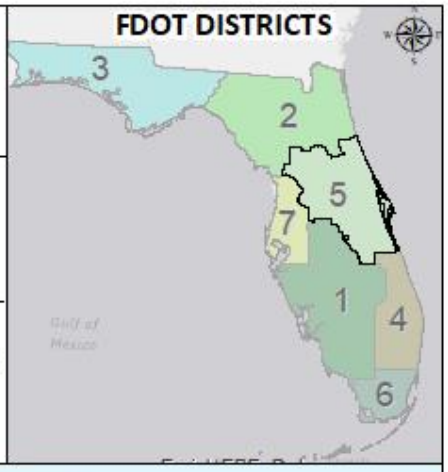
FDOT DISTRICT 5

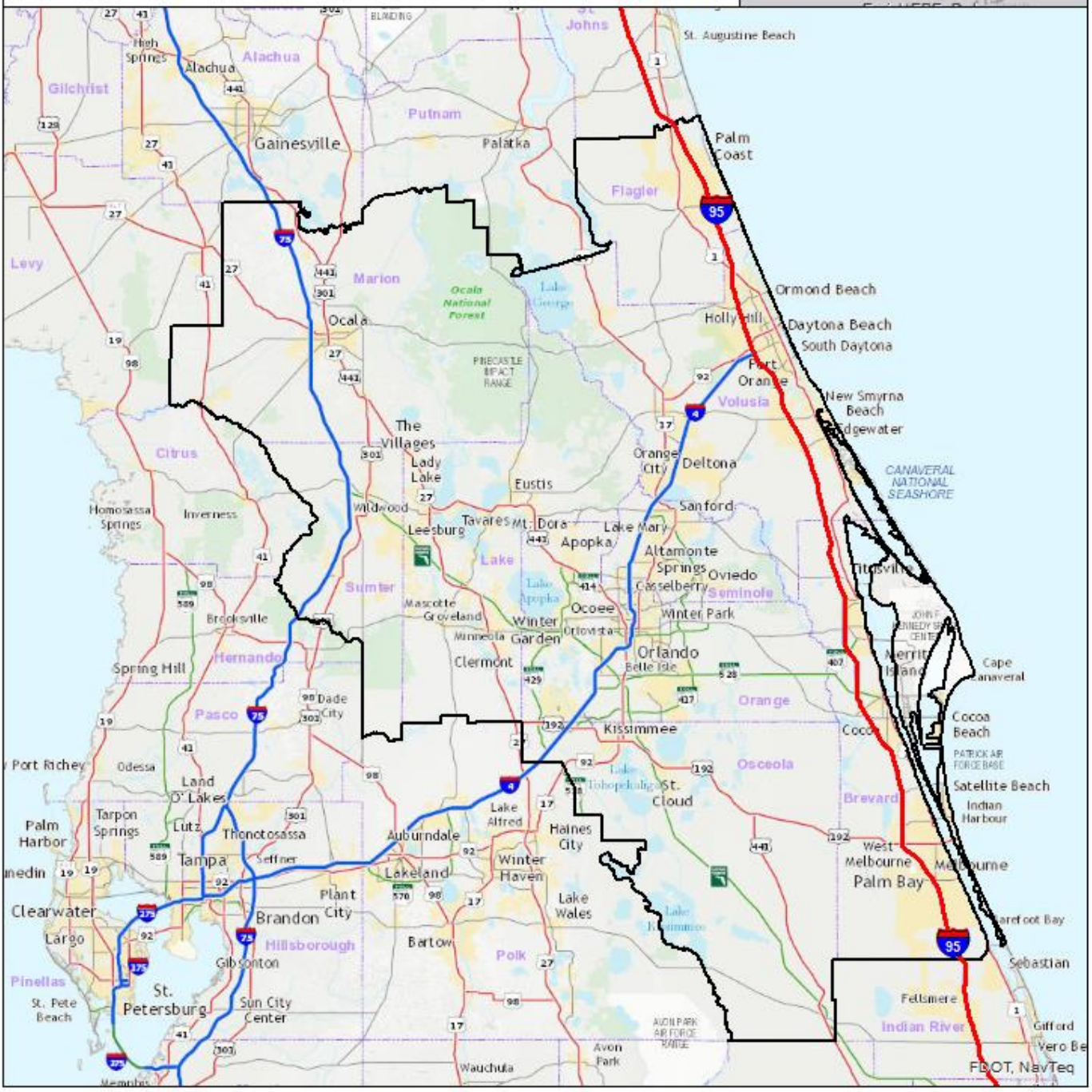
APRIL 2020

Emergency Shoulder Use Standard Operating Procedure

I-95 Northbound through Brevard, Volusia, and Flagler Counties
MM 160 to MM 297

1 inch = 25 miles





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This document is based on previous District 5 I95 ESU SOP

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Emergency Shoulder Use Standard Operating Procedure

DISTRICT FIVE I-95 CORRIDOR: BREVARD, VOLUSIA, & FLAGLER COUNTIES

This Standard Operating Procedure (SOP) establishes the operations required to be prepared for and to implement Emergency Shoulder Use (ESU) as shown in the ESU Concept Plans for I-95 Northbound between Brevard (MM 160) and Flagler County (MM 297), totaling 137 miles. The implementation of ESU requires the coordinated effort of the Florida Department of Transportation (Department), Florida Highway Patrol (FHP) and other law enforcement agency partners, and contracting partners. This SOP establishes what operations must be performed and by whom, when the operations will be performed, where the operations will be performed, and how the operations will be performed. This SOP may be revised. The ability to adapt to actual conditions is a necessity during any emergency event.

The purpose of the ESU plan is to serve as a tool to help evacuate a region due to or in advance of a natural or man-made disaster. It is designed to temporarily increase the roadway capacity and **is intended to be a 24-hour operation.** The current ESU Concept Plans show the typical location for traffic control channelizing devices, Law Enforcement Officers (LEO), narrow shoulder locations and emergency crossover locations. It is possible that the plan may be implemented in conjunction with neighboring Districts Two and Four. In those cases, close coordination will be required.

ORGANIZATION STRUCTURE AND COMMUNICATION

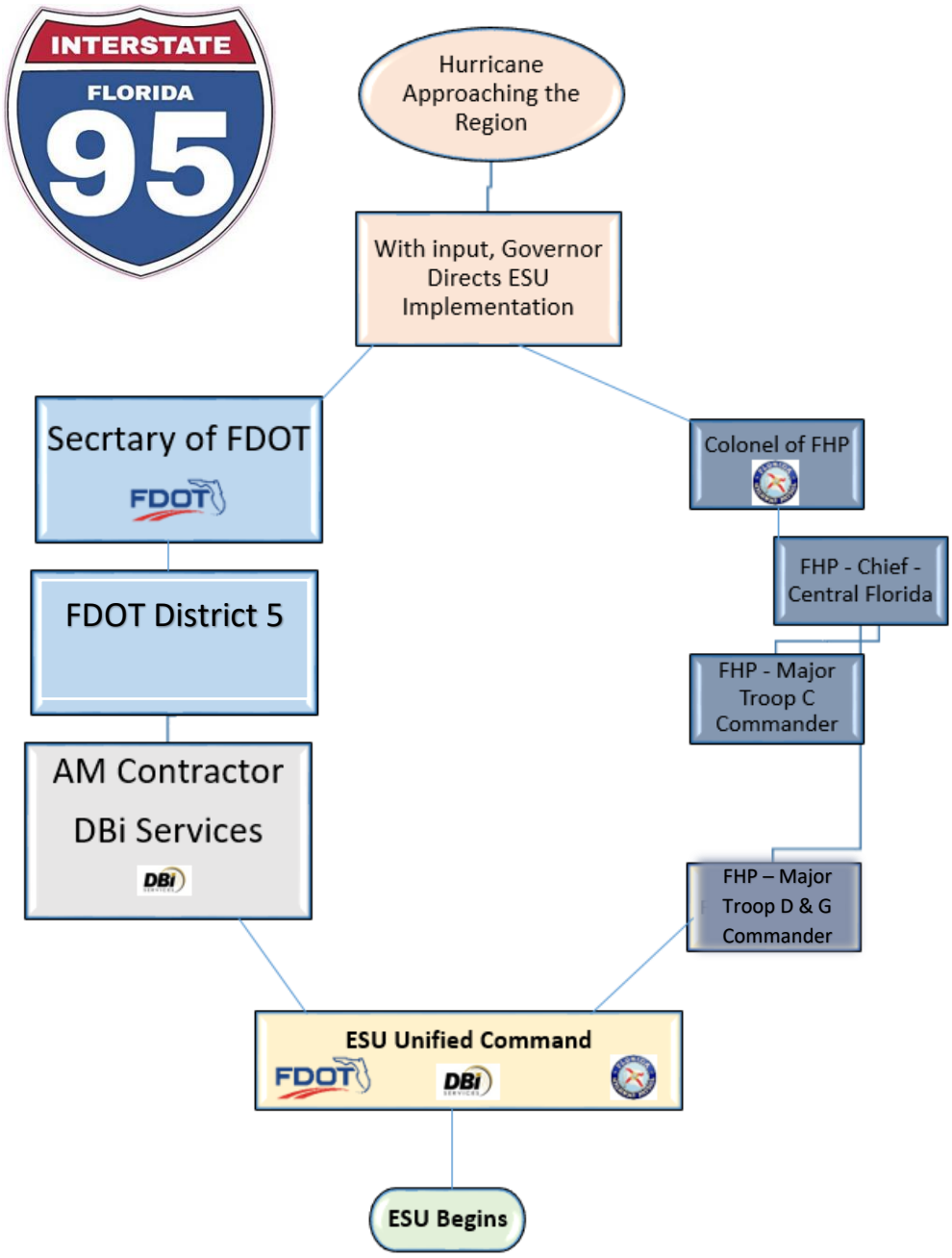
An Area Command is the appropriate Incident Command System (ICS) organizational structure for this SOP. Terms and concepts from the National Incident Management System (NIMS) and ICS standardized systems are used in this SOP without elaboration. Please refer to an appropriate NIMS or ICS document for further explanation of any unfamiliar terms and/or conditions. See Attachment A for a list of acronyms for this SOP.

The Department and FHP will implement Emergency Shoulder Use (ESU) following direction from the Governor or State Coordinating Officer. The Department will provide the direction to implement ESU from the State Emergency Operations Center (EOC) to the District EOC. FHP will provide the direction using a similar process. At that point, coordination and implementation of ESU will be at the District and Troop level.

The Area Commander (AC) is responsible for providing overall direction on pre-event preparation, ensuring that all parties perform assignments and report status as required. The District Five Maintenance Engineer shall be designated as the AC. The District Five Operations Section chief shall be responsible for the overall implementation of ESU along this corridor. The individuals assigned to the Operations Section Chief position are identified in the District Five EOC Organization Chart.

Notifications and orders to implement will be given to the Asset Maintenance Contractors and all other personnel and Contractors deemed necessary by the District Maintenance Engineer or designee. Notification to appropriate personnel will be made via telephone, e-mail, fax, radio, etc.

Emergency Shoulder Use – Operational Flow Chart



PRIMARY NOTIFICATION

- *Florida Highway Patrol (FHP) District Offices – Troop D & G*
- *Florida Department of Transportation – District Five (D5)*
- *Asset Maintenance Contractors (AMC) – DBi SERVICES, LLC*
- *Department of Emergency Management – Emergency Medical and Fire Services*
- *County Emergency Management Office – Brevard, Volusia, Flagler*
- *Communications Office – News Media*

CONTACT LIST

(***Not for public distribution***)

Name	Agency	Email	Phone
John Hatfield	FDOT D5 DME	John.hatfield@dot.state.fl.us	386-801-7602
Dennis Kirk	FDOT D5 Assistant DECO	Dennis.kirk@dot.state.fl.us	386-279-5476
Chris Barone	FDOT D5 Assistant DME	Christine.barone@dot.state.fl.us	386-801-1434
Jim Stroz	FDOT D5 Traffic Ops	Jim.stroz@dot.state.fl.us	386-943-5309
District Five EOC	FDOT D5	NA	386-943-5740
RTMC D-5	FDOT D5 Traffic Ops	D5.RTMC@dot.state.fl.us	407-736-1900
Ron Meade	FDOT D5 Deland Operations	Ron.meade@dot.state.fl.us	352-239-4047
Mo Hassan	FDOT D5 Brevard Operations	Mo.hassan@dot.state.fl.us	352-409-1850
Carrie Stanbridge	FDOT D2 DME	Carrie.stanbridge@dot.state.fl.us	386-758-3744
Ed Ward	FDOT D2 DECO	Ed.ward@dot.state.fl.us	386-961-7581
D2 EOC	FDOT D2	NA	386-961-7177
Tony Castro	FDOT D4 DME	Antonio.Castro@dot.state.fl.us	954- 448-2905
Dean Morris	FDOT D4 DDMA	Dean.morris@dot.state.fl.us	954-777-4203
D4 EOC	FDOT D4	NA	954-497-2272
Alvaro Gomez-Muro Criado	DBI Senior VP - Southeast	Alvaro.gomezmuro@dbiservices.com	407-453-9974
Summer Howell	DBI District Manager – Florida North	Summer.howell@dbiservices.com	386-623-4428
Luz Carrera	DBI D5 – E5T54/I-95 Project Manager	Luz.carrera@dbiservices.com	305-804-8456
Jonathon Lord	Flagler County EM	jlord@flaglercounty.org	386-313-4240
Tom Cisco	Volusia County EM	tcosco@volusia.org	386-341-5602
Kimberly Prosser	Brevard County EM	Kimberly.prosser@brevardcounty.us	321-637-6670
Maj Steven Harris	FHP Troop G Commander	StevenHarris@flhsmv.gov	904-695-4000
Maj Waxler Bright	FHP Troop D Commander	waxlerBright@flhsmv.gov	407-737-2800

EQUIPMENT LIST

All signs are permanent flip down signs and will be installed and maintained by the AMC. No ramp closures are planned at this time.

Summary of Sign Quantities	
NO TRUCKS BUSES OR TRAILERS	25
LEFT SHOULDER OPEN FOR USE	24
PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)	3
LAW ENFORCEMENT OFFICERS (LEO)	2
EMERGENCY ASSISTANCE VEHICLE (EAV)	2
Total Devices	1
	57

See Attachment B for the table of sign locations. Some adjustments can be made to fit field conditions as needed provided the required distance between the signs is maintained as shown in the plans. Also see Attachment C for Sign and LEO location examples.

ANNUAL PREPAREDNESS OPERATIONS UNDER BLUE SKIES

The Preparedness Operations phase considers what tasks need to occur prior to Hurricane Season each year. All Maintenance Contractor activities will be performed to MRP standards per their contracts. The status of all tasks will be discussed at the monthly progress meetings and included in the contractor's monthly activity report.

Pre-Implementation Operation Activity (Blue Skies)	**Responsible Party**	**Timeline**	**Quality Control**
Verify that all ITS are functioning	RTMC	June 1	Traffic Operations
Inspect Permanent Signs	AM Contractor	June 1	Department AM Contract Manager & Inspector
Ensure temporary signs and PCMS Equipment are available and ready	AM Contractor	June 1	Department AM Contract Manager & Inspector
Check shoulder conditions to ensure that drop off standards are meeting MRP requirements	AM Contractor	June 1st & August 15th	Department AM Contract Manager & Inspector
Check for potholes and repair to meet MRP requirements	AM Contractor	As needed prior to June 1st & August 15th	Department AM Contract Manager & Inspector
Remove Vegetation to meet MRP requirements	AM Contractor	Quarterly and June 1st & August 15th	Department AM Contract Manager & Inspector
Remove Litter to meet MRP criteria along the entire corridor. (Include excess debris under guardrail)	AM Contractor	June 1st & Aug 15th	AM Contractor, Department AM Contract Manager & Department Inspector
Remove Encroachments to meet MRP requirements	AM Contractor	Quarterly and June 1st & August 15th	Department AM Contract Manager & Inspector
Sweep the Shoulders to remove all loose materials and small debris	AM Contractor	Monthly during hurricane season. Immediately prior to implementation of	Department AM Contract Manager & Inspector
Ensure Guardrail meets MRP criteria along the entire corridor	AM Contractor	June 1st & Aug 15th	AM Contractor, Department AM Contract Manager & Department Inspector
Ride the Corridor	AM Contractor & Department Staff	June 1st & Aug 15th	Department AM Contract Manager & Inspector
Coordinate with FHP	AM Contractor & Department Staff	Prior to June 1	DME

Coordinate with Local Agency Partners	AM Contractor & Department Staff	Prior to June 1	DME
Coordinate with Social Media, Local News Partners	Communications Office	Prior to June 1 and immediately prior to implementation of ESU	DME
Schedule and hold exercises for coordination efforts with D-4, D-5 and D-2 as well as FHP and Asset Maintenance Contractor	AM Contractor, FDOT and FHP	Exercise as needed.	DME
Monitor upcoming and on-going construction work.	AM Contractor & Department Staff	Prior to and throughout Hurricane season	Department AM Contract Manager and Inspector
Coordinate with Decision Makers	DME	On-Going	DME

PRE-IMPLEMENTATION OPERATIONS UNDER PENDING GRAY SKIES

Pre-Implementation Operation Activity (Pending Gray Skies)	**Responsible Party**	**Location**	**Timeline (When)**	**Timeline (How Long)**	**Quality Control**
Verify that all ITS are functioning	RTMC	Along the corridor	7 to 5 days out		Traffic Operations
Pre-Storm Meeting with AM Contractor	FDOT		7 to 5 days out		Department
Remove Vegetation to meet MRP criteria adjacent to ESU (including vegetation under guardrail)	AM Contractor	Entire Corridor Length	7 to 5 days out	2 days	Department AM Contract Manager & Inspector
Remove Litter to meet MRP criteria along the entire corridor. (Include excess debris under guardrail)	AM Contractor	Entire Corridor Length	7 to 5 days out	2 days	Department AM Contract Manager & Inspector
Ensure Guardrail meets MRP criteria along the entire corridor	AM Contractor	Entire Corridor Length	7 to 5 days out	3 days	Department AM Contract Manager & Inspector
Remove Encroachments to meet MRP requirements	AM Contractor	Entire Corridor Length	7 to 5 days out	3 days	Department AM Contract Manager & Inspector

Number of EAV's and staging locations will be shown in the AM Contractor Emergency Plan	AM Contractor	As defined along corridor	2 days out for notification to AM contractor for EAV support		DME
Deploy Portable Changeable Message Signs	AM Contractor	Per Plans & SOP Equipment List	Implementation of ESU is anticipated	6 hours	Department AM Contract Manager & Inspector
Sweep the Shoulders to remove all loose materials and small debris adjacent to ESU and accompanying paved shoulder used for emergency response vehicles	AM Contractor	Entire Corridor Length	7 to 5 days out	3 days	Department AM Contract Manager & Inspector
Notify FHP for removal of abandoned vehicles	AM Contractor / FHP	Entire Corridor Length	Implementation of ESU is anticipated	8 – 12 hours	Department AM Contract Manager & Inspector
Sweep the Shoulders to remove all loose materials and small debris adjacent to ESU and accompanying paved shoulder used for emergency response vehicles	AM Contractor	Entire Corridor Length	Implementation of ESU is anticipated	8 – 12 hours	Department AM Contract Manager & Inspector
Ride the Corridor & correct any last-minute items found	AM Contractor & Department Staff	Entire Corridor Length	Implementation of ESU is anticipated	4 hours	Department AM Contract Manager & Inspector
Coordinate with FHP, D-4, and D-2 staff	AM Contractor & Department Staff	Entire Corridor Length	Implementation of ESU is anticipated	On-Going	DME
Coordinate with Local Agency Partners	AM Contractor & Department Staff	Entire Corridor Length	Implementation of ESU is anticipated	On-Going	DME
Coordinate with Social Media, Local News Partners	Communications Office	Entire Corridor Length	Implementation of ESU is anticipated	On-Going	DME
Coordinate with Decision Makers	DME	Entire Corridor Length	Implementation of ESU is anticipated	On-Going	DME

PUBLIC INFORMATION: FHP and FDOT Communications Offices will constantly provide updated information to radio, TV, news media, and local authorities, prior to, during, and after the operation. This will be accomplished by the preparation of news releases and dissemination to appropriate news media on a timely basis.

The Traffic Management Center (TMC) will post messages on the Dynamic Message Signs (DMS) signs and 511.

LOGISTICS: The implementation of ESU requires a coordinated effort between the FDOT, Florida Highway Patrol, and county and local officials. The TMC will keep the District EOC informed of traffic conditions and assist with coordination of Road Ranger response efforts.

DEPLOY THE PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS): DBi SERVICES, LLC will transport the PCMSs to the designated locations and set up according to standards. The PCMS panels shall display the message "Drive Safely" and the operation of the unit including the appropriate message will be re-checked.

REFUELING SITES FOR STATE VEHICLES: Fuel for state vehicles will be obtained at commercial gas stations or at local FDOT facilities. Additionally, there may be fuel tankers positioned at strategic locations along the route if determined necessary.

EQUIPMENT STAGING SITES: Equipment and supplies will be maintained and provided by the Asset Maintenance Contractor. Once information is received that ESU procedures are to be implemented, the equipment will be transported by the Asset Maintenance Contractor to the traffic post, etc. to await deployment.

DISABLED VEHICLES AND MOTORISTS OF DISABLED VEHICLES: Emergency Assistance Vehicles (EAV) shall patrol the roadway and will be used to remove and restore disabled vehicles to remove and transport motorists of disabled vehicles to the nearest commercial facility to ensure the free flow of traffic as much as possible. Motorists should be advised by news media to have a full tank of fuel prior to entering the interstate.

EMERGENCY MEDICAL SERVICES: Emergency Medical Services (EMS) will be advised upon the implementation of ESU operations. Due to the shoulders for evacuation, there may be a need to pre-stage emergency equipment.

COMMUNICATIONS: District Five EOC will serve as the central point of coordination Communication will be maintained throughout pre-implementation operations under pending gray skies with the following:

Florida Highway Patrol
FDOT Central Office
Asset Maintenance Contractor / Roadside Assistance Services Contractor
FDOT Communications Office
FDOT District 2
FDOT District 4

IMPLEMENTATION OPERATIONS

Upon notification to implement ESU with confirmation through the District Secretary, the AC will begin notifications and direct the Operations Section Chief to begin implementation. Working from **north to south**, the asset maintenance contractor shall implement ESU within 4 hours after the order has been given and will coordinate their placements and timing of PCMSs with District 2 and 4 staff as directed.

DBi SERVICES, LLC will closely coordinate their efforts to ensure that the shoulders are not opened to traffic prior to the shoulders being cleared by both contractors. Once DBi SERVICES, LLC has flipped all their signs, they will program the appropriate message on the PCMS and open the shoulder to traffic.

Implementation Operations	Responsible Party	Location	Timeline (When)	Timeline (How Long)	Quality Control
Flip down permanent signs	AM Contractor	Per Plans and SOP Equipment List	Implementation of ESU	3-hours	Department AM Contract Manager & Inspector
Set display messages on Portable Changeable Message Signs	AM Contractor	Per Plans & SOP Equipment List	Implementation of ESU	1-hour	Department AM Contract Manager & Inspector
Ride the Corridor for final check and debris removal	AM Contractor & Department Staff	Entire Corridor Length	Implementation of ESU	4 hours	Department AM Contract Manager & Inspector
Coordinate with FHP	AM Contractor & Department	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME
Monitor ITS for any adjustments needed	Department Staff	Entire Corridor Length	Prior to and During Implementation of the ESU	On-Going during Implementation of ESU	DME
Positioning of Law Enforcement Agencies and Emergency Assistance Vehicles	LEO & AM Contractor/Pre - Event Contractor	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME and Contract Manager
Deployment of Roadside Assistance	AM Contractor	Entire Corridor Length	4 to 8 hours prior to Implementation of ESU	On-Going during Implementation of ESU	DME and Contract Manager
Coordinate with Local Agency Partners	District EOC	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME
Coordinate with Social Media, Local News Partners	Communications Office	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME
Coordinate with Decision Makers	DME	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME

SET-UP

The District Five EOC will serve as the central point of coordination for implementation of internal resources. Coordination beyond our own assets will take place at the County Emergency Operations Centers via the Department Representative. Communication will be maintained throughout the ESU with the following:

Florida Highway Patrol
FDOT Central Office
Asset Maintenance Contractor / Roadside Assistance Services Contractor
FDOT Communications Office
FDOT District 2
FDOT District 4

DEPLOY RESOURCES: The order to deploy personnel and equipment resources will be given by the AC. When the order to deploy is given, the Department will task the Asset Maintenance Contractors (AMC) to deploy resources. The AMC will deploy resources to their designated locations immediately upon notification. Set-up time is estimated at 4 hours.

VERIFY DEPLOYMENT: Contractors and FHP will notify the District Five EOC when verification is complete.

COMMERCIAL AND OTHER LARGE VEHICLE RESTRICTIONS: Due to the shoulder widths, large commercial trucks and other large vehicles will be required to stay on the mainline.

DURATION

MONITORING OPERATIONS: During this operation, air and ground FHP and other law enforcement units and the District EOC will continually monitor the traffic flow. Any bottlenecks or traffic difficulties will be promptly and appropriately dealt with. Interchange areas will be monitored, and ramps will be closed by FHP and/or other law enforcement agencies when deemed necessary.

EMERGENCY RESPONSE: Emergency response vehicles will utilize the outside paved shoulders and crossovers to respond to emergency situations. Crossovers are listed on sheets three (4) of the concept plan. If necessary, air-evacuations may be utilized for injuries and medical emergencies.

CRASH CLEARANCE: Crashes will be cleared off the roadway as expeditiously as possible. If the vehicle can be driven or able to be pushed, it will be moved off the roadway as far as possible. Wreckers will be called from the FHP wrecker rotation list or Emergency Roadside Assistance Services Contractor (ERAS) Contractor and will use the available shoulders and median strip to respond to the crash scene and remove damaged vehicles.

RAMP/LANE CLOSURES: If an incident occurs requiring ramp or lane closures, law enforcement will request FDOT resources for MOT support via the RTMC. A Road Ranger will provide initial support until the Asset Contractor can respond. Per the Road Ranger contract, they should not be on scene for more than an hour. The Asset Contractor will respond as soon as possible with the appropriate MOT to meet the needs of the incident as defined in their established contractual requirements.

WEIGH STATION CLOSURES: Following the issuance of the Governor's Executive Order and upon issuance of the Secretary's Emergency Order, the Weigh Stations will suspend normal operations to support the ESU. The facility will remain staffed to ensure access to the facilities, if needed, for emergency responders and evacuees.

POST IMPLEMENTATION OPERATIONS

The following will take place upon the determination to end ESU Operations. Time required to remove the ESU devices from the time the decision is made to cease ESU = 4 hours.

Post Implementation Operations	**Responsible Party**	**Location**	**Timeline (How Long)**	**Quality Control**
Demobilization of Motorist Assistance Contractors	Road Rangers and/or ERAS Contractor	Entire Corridor Length	On-Going during Post-Implementation of ESU	Department Road Ranger Contract Manager
Monitor ITS for Any Changes	FDOT	Entire Corridor Length	On-Going during Post-Implementation of ESU	DME
Coordinate with Local Agency Partners	AMC & FDOT	Entire Corridor Length	On-Going during Post-Implementation of ESU	DME
Coordinate with Social Media, Local News Partners	FDOT Communications Office	Entire Corridor Length	On-Going during Post-Implementation of ESU	DME
Coordinate with Decision Makers	FDOT	Entire Corridor Length	On-Going during Post-Implementation of ESU	DME

THE OPERATION WILL TERMINATE PRIOR TO TROPICAL STORM FORCE WINDS TO ALLOW FOR TRAFFIC ON THE ROADWAY TO CLEAR AND FOR PERSONNEL TO SEEK SHELTER.

WHEN TO TERMINATE OPERATION: The traffic volume and speeds will determine the duration of the ESU Operations. When it is apparent that traffic in the northbound lanes is flowing smoothly and the volume is not as great as to create bottlenecks, the Department in coordination with the SEOC, Central Office, D2, D4, FHP and County EOCs will assess the information and make a determination to terminate ESU operations

The FHP Troop D & G Commanders will be notified via their chain of command that we are ready to cease operation of the I-95 ESU.

PUBLIC INFORMATION: Prior to the termination of the ESU, the SEOC, Communications Office will notify the media that the operation is going to be terminated and give them the time of termination.

POST EVENT OPERATIONS

Post Event Operations	Responsible Party	Location	Timeline (How Long)	Quality Control
Reset Flip Panels	AMC	Per Plans and SOP Equipment List	4 hours	Department AM Contract Manager & Inspector
Remove Portable Changeable Message Signs	AMC	Per Plans & SOP Equipment List	2 - 3 hours	Department AM Contract Manager & Inspector
Ride the Corridor	AMC & FDOT	Entire Corridor Length	4 hours	Department AM Contract Manager & Inspector

RECOVER AND STORE EQUIPMENT: All deployed resources will be recovered or restored by the appropriate agency and stored.

ATTACHMENT A: LIST OF ACRONYMS

AC – Area Command

AMC – Asset Management Contractor

DME – District Manager Engineer

DMS – Dynamic Message Signs

EAV – Emergency Assistance Vehicle

EOC – Emergency Operations Center

ERAS – Emergency Roadside Assistance Service

ESU – Emergency Shoulder Use

FDOT – Florida Department of Transportation

FHP – Florida Highway Patrol

ICS – Incident Command System

ITS – Intelligent Traffic System

LEO – Law Enforcement Officer

MOT – Maintenance of Traffic

MRP – Maintenance Rating Program

NIMS – National Incident Management System

PCMS – Portable Changeable Message Signs

RISC – Rapid Incident Scene Clearance

RTMC – Regional Transportation Management Center

SOP – Standard Operating Procedure

TMC – Traffic Management Center

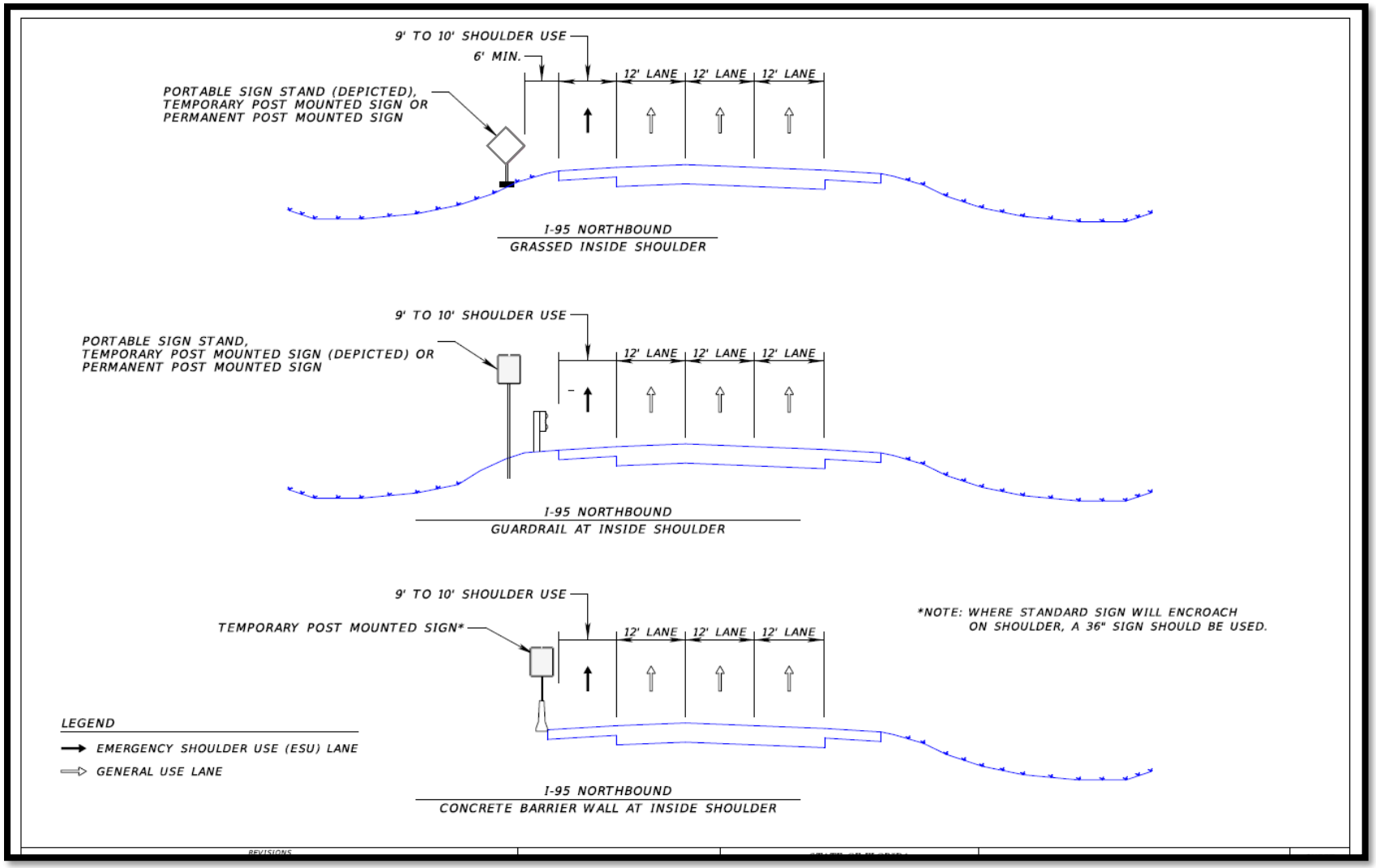
ATTACHMENT B: SIGN TABLE

Road	County	Section	Mile Marker	Placement (distance +/-)	Message	Type
I-95 N.B.	Brevard	70220	159.96		Indian River/Brevard County Line	
I-95 N.B.	Brevard	70220	174.13	1000’ N. of SR 14 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70220	174.38	2320’ N. of SR 14 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70220	176.54	1000’ N. of CR 516 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70220	176.79	2320’ N. of CR 516 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70220	181.19	1000’ N. of US 192 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70220	181.44	2320’ N. of US 192 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70220	183.85	1000’ N. of SR 518 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70220	184.10	2320’ N. of SR 518 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70220	188.71	1000’ N. of SR 404 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70220	188.96	2320’ N. of SR 404 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70220	191.63	1000’ N. of CR 509 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70220	191.88	2320’ N. of CR 509 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70220	196.48	1000’ N. of SR 519 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70220	196.73	2320’ N. of SR 519 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70225	201.62	1000’ N. of SR 520 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70225	201.87	2320’ N. of SR 520 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70225	202.74	1000’ N. of SR 524 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70225	203.00	2320’ N. of SR 524 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70225	205.75	1000’ N. of SR 528 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70225	206.00	2320’ N. of SR 528 on ramp	No Trucks Buses or Trailers	Sign

I-95 N.B.	Brevard	70225	208.53	1000’ N. of Port St. John Pkwy on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70225	208.78	2320’ N. of Port St. John Pkwy on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70225	211.83	1000’ N. of SR 407 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70225	212.08	2320’ N. of SR 407 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70225	215.74	1000’ N. of SR 50 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70225	215.99	2320’ N. of SR 50 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70225	220.45	1000’ N. of SR 406 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70225	220.70	2320’ N. of SR 406 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70225	223.93	1000’ N. of SR 46 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70225	224.18	2320’ N. of SR 46 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Brevard	70225	231.47	1000’ N. of CR 5A on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Brevard	70225	231.72	2320’ N. of CR 5A on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Volusia	79002	232.46		Brevard/Volusia County Line	
I-95 N.B.	Volusia	79002	244.35	1000’ N. of SR 442 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Volusia	79002	244.60	2320’ N. of SR 442 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Volusia	79002	247.98	3000’ Prior to Construction	Left Shoulder Closed Ahead	Sign
I-95 N.B.	Volusia	79002	248.08	2500’ Prior to Construction	Lt. Shlder Lane Ends/Next 2000’ Merge Rt	PCMS
I-95 N.B.	Volusia	79002	248.13	1820’ Prior to Construction	Merge Right ¼ Mile	Sign
I-95 N.B.	Volusia	79002	248.38	850’ Prior to Construction	Lane Transition Sign	Sign
I-95 N.B.	Volusia	79002	248.50	250’ Prior to Construction	EAV and LEO Stationing	Patrol
I-95 N.B.	Volusia	79002	248.56		End ESU for Construction	
I-95 N.B.	Volusia	79002	263.10		End Construction Zone	
I-95 N.B.	Volusia	79002	263.20	500’ N. of Construction Zone	Lt. Shldr Open ½ Mile/No Truck Buses or Trailers	PCMS
I-95 N.B.	Volusia	79002	263.45	1820’ N. of Construction Zone	No Trucks Buses or Trailers	Sign

I-95 N.B.	Volusia	79002	263.55	2820’ N. of Construction Zone	LEO	Patrol
I-95 N.B.	Volusia	79002	263.70	3140’ of Construction Zone	Lt Shoulder Open for use/No Truck Buses or Trailers W/EAV	PCMS and Patrol
I-95 N.B.	Volusia	79002	265.66	1000’ N. of LPGA Blvd on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Volusia	79002	265.91	2320’ N. of LPGA Blvd. on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Volusia	79002	267.90	1000’ N. of SR 40 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Volusia	79002	268.55	2320’ N. of SR 40 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Volusia	79002	273.87	1000’ N. of US1/SR5 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Volusia	79002	274.12	2320’ N. of US1/SR5 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Flagler	73001	278.28		Volusia/Flagler County Line	
I-95 N.B.	Flagler	73001	278.84	1000’ N. of Old Dixie Hwy on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Flagler	73001	279.09	2320’ N. of Old Dixie Hwy on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Flagler	73001	284.11	1000’ N. of SR 100 on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Flagler	73001	284.36	2320’ N. of SR 100 on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Flagler	73001	289.68	1000’ N. of Palm Coast Pkwy on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Flagler	73001	289.93	2320’ N. of Palm Coast Pkwy on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	Flagler	73001	293.46	1000’ N. of Matanzas Woods Pkwy on ramp	Left Shoulder Open for Use	Sign
I-95 N.B.	Flagler	73001	293.71	2320’ N. of Matanzas Woods Pkwy on ramp	No Trucks Buses or Trailers	Sign
I-95 N.B.	St. Johns		297.00		Flagler/St. Johns County Line	

ATTACHMENT C: SIGN AND LEO LOCATION EXAMPLES



ATTACHMENT D: PRECAUTIONS FOR SAFETY SERVICE PATROLS (during Pandemic)

General Guidance

- Practice proper hand hygiene by promptly washing your hands or using hand sanitizer after physically interacting with others.
- If washing your hands, please do so for at least 20 seconds with soap and warm water.
- Avoid touching your face (eyes, nose, and mouth).
- Cover your mouth and nose with your bent elbow or tissue when you cough or sneeze. Make sure to dispose of the tissue immediately.
- Avoid close physical contact with others, including shaking hands and hugging.
- Maintain at least six (6) feet distance between yourself and anyone who is coughing or sneezing, when possible.
- Promptly disinfect your gear after physical contact with any individual.
- Keep an adequate supply of disinfectant wipes and hand sanitizer in an easily accessible place while on-duty.
- Wear a mask when assisting motorists and properly dispose after use.
- Educate yourself and participate in training on the use of Personal Protective Equipment (PPE) for respiratory protection, if available.
- Ensure only trained personnel wearing appropriate PPE have contact with individuals who have or may have COVID-19.
- Seek medical care if you have a fever, cough or difficulty breathing.

Interaction with Motorists

- Wear masks as recommended by Centers for Disease Control (CDC) guidance, during all interactions during a shift to limit the amount of exposure with motorists.
- Approach motorists <u>only</u> from the passenger side window, unless a non-traffic side approach is warranted.
- Insist motorists stay in their vehicles.
- Instead of allowing a motorist to use the cell phone, make the call for them or allow the motorist to speak via speaker phone while maintaining a safe distance of at least 6 feet.

Transporting Motorists

- Call EMS/EMTs if the motorist has any medical emergency. Symptomatic and Asymptomatic COVID-19 is in itself not a medical emergency.
- Do not transport motorists except in emergency cases.
- Should you need to provide transport, wear a mask at all times and do not use recirculating (max) air conditioning until the passenger has exited the vehicle and a full wipe-down has been completed.
- Where the motorist vehicle is in a safe position, have drivers and passengers wait in vehicles for rides, particularly in inclement weather.
- Provide a protective block and traffic control while motorists wait for a ride.

Equipment/Cleaning

- Always use Personal Protective Equipment (PPE), if available.

- Conduct intensive vehicle cleanings before, during and after every shift.
- Wear masks as recommended by CDC guidance and ensure proper training for wearing masks.
- Clean SLERS communications equipment in accordance with Technical Services Memorandum(s) 42-05B & 42-07A.
- Each Road Ranger should have cleaning materials and hand sanitizer with them at all times.
- Sanitize any equipment that's frequently touched.
- Crack windows during downtime to air vehicles.
- Use fresh air circulation instead of recirculating A/C setting.
- Use FDOT procedures on how best to clean/disinfect SLERS radios.

Shift Practices

- Some patrol shifts have decreased or modified due to staffing or traffic demands.
- Some dispatch employees may work remotely.
- Patrol drivers may hold meetings over the phone or radio rather than in person.
- The requirement to disseminate brochures, Move It cards, etc. have been suspended until further notice.

Work-Home Practices

- Change out of uniform at the end of a shift immediately after returning home prior to interacting with family members.
- Practice good hygiene upon entering the home to include washing hands, changing clothes, etc.
- Keep field uniform and shoes away at an isolated space before entering in the main living space.

Appendix M

District 5
I-95 Emergency Shoulder Use
Standard Operating Procedure

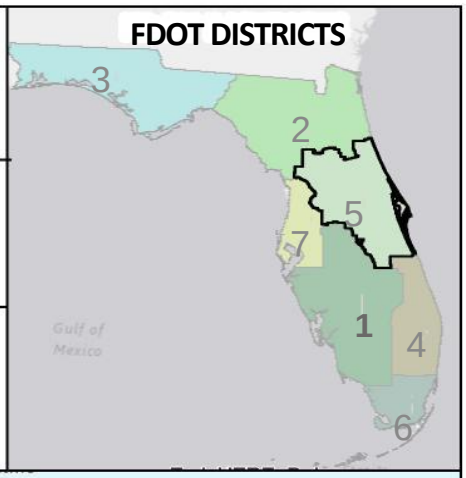
FDOT DISTRICT 5

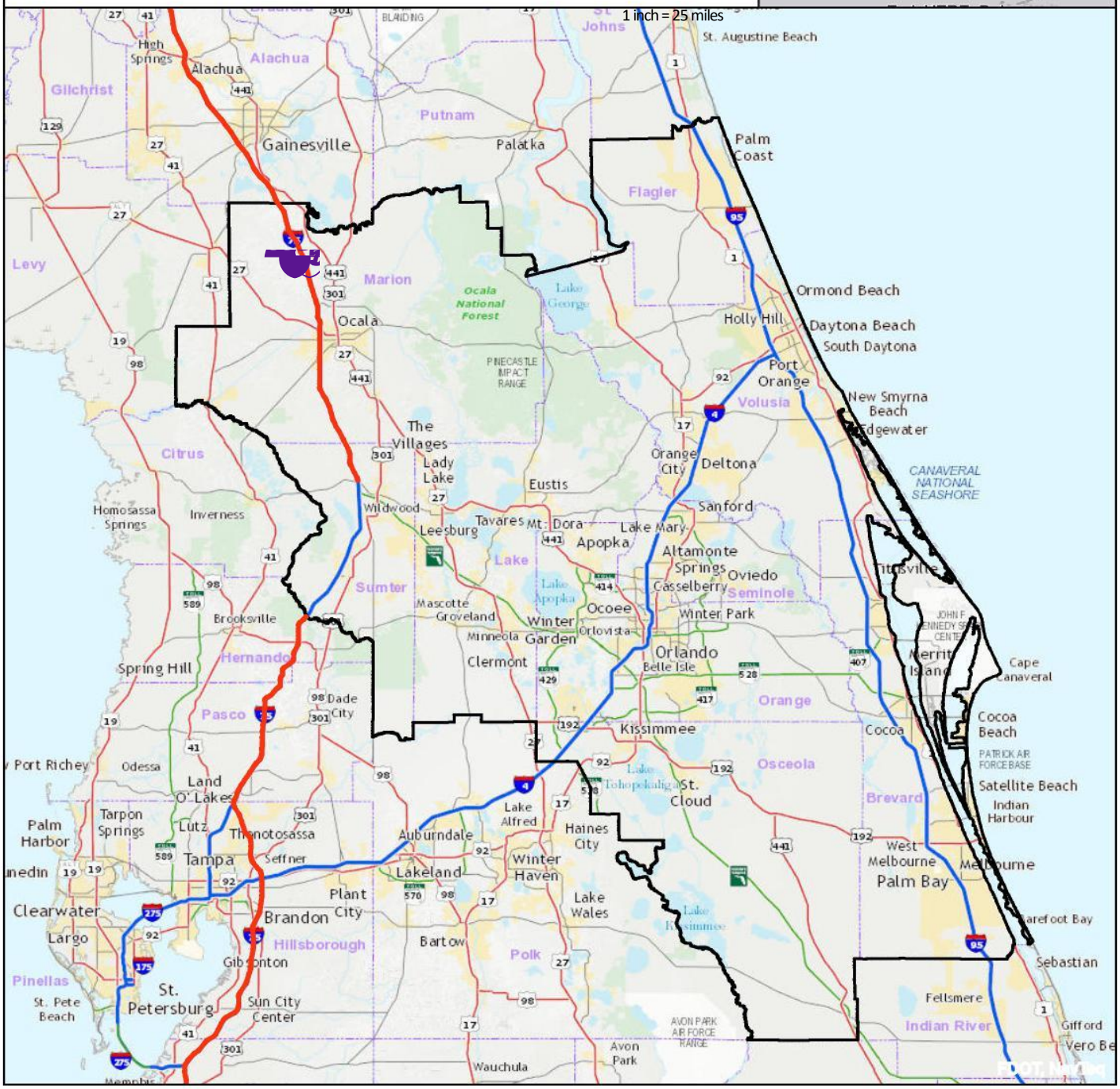
INTERSTATE 75

June 2020

Emergency Shoulder Use Standard Operating Procedure

I-75 Northbound from Hernando-Sumter to Marion-Alachua County Line MM 305 to MM 373





FDOT, NavTeq

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This document is based on previous District 5 I75 ESU SOP and District 7 I75 ESU SOP

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Do not copy, distribute, or release without written permission of District Five Maintenance Engineer.

Emergency Shoulder Use Standard Operating Procedure

DISTRICT FIVE I-75 CORRIDOR: HERNANDO|SUMTER TO MARION|ALACHUA COUNTY LINE

This Standard Operating Procedure (SOP) establishes the operations required to be prepared for and to implement Emergency Shoulder Use (ESU) as shown in the ESU Concept Plans for I-75 Northbound between MM 305 in Sumter County to the Marion County Line MM 373, totaling 68 miles. The implementation of ESU requires the coordinated effort of the Florida Department of Transportation (Department), Florida Highway Patrol (FHP) and other law enforcement agency partners, and contracting partners. This SOP establishes what operations must be performed and by whom, when the operations will be performed, where the operations will be performed, and how the operations will be performed. This SOP may be revised. The ability to adapt to actual conditions is a necessity during any emergency event.

The purpose of the ESU plan is to serve as a tool to help evacuate a region due to or in advance of a natural or man-made disaster. It is designed to temporarily increase the roadway capacity and **is intended to be a 24-hour operation.** The current ESU Concept Plans show the typical location for traffic control channelizing devices, Law Enforcement Officers (LEO), narrow shoulder locations and emergency crossover locations. It is possible that the plan may be implemented in conjunction with neighboring Districts Seven and Two. In those cases, close coordination will be required.

ORGANIZATION STRUCTURE AND COMMUNICATION

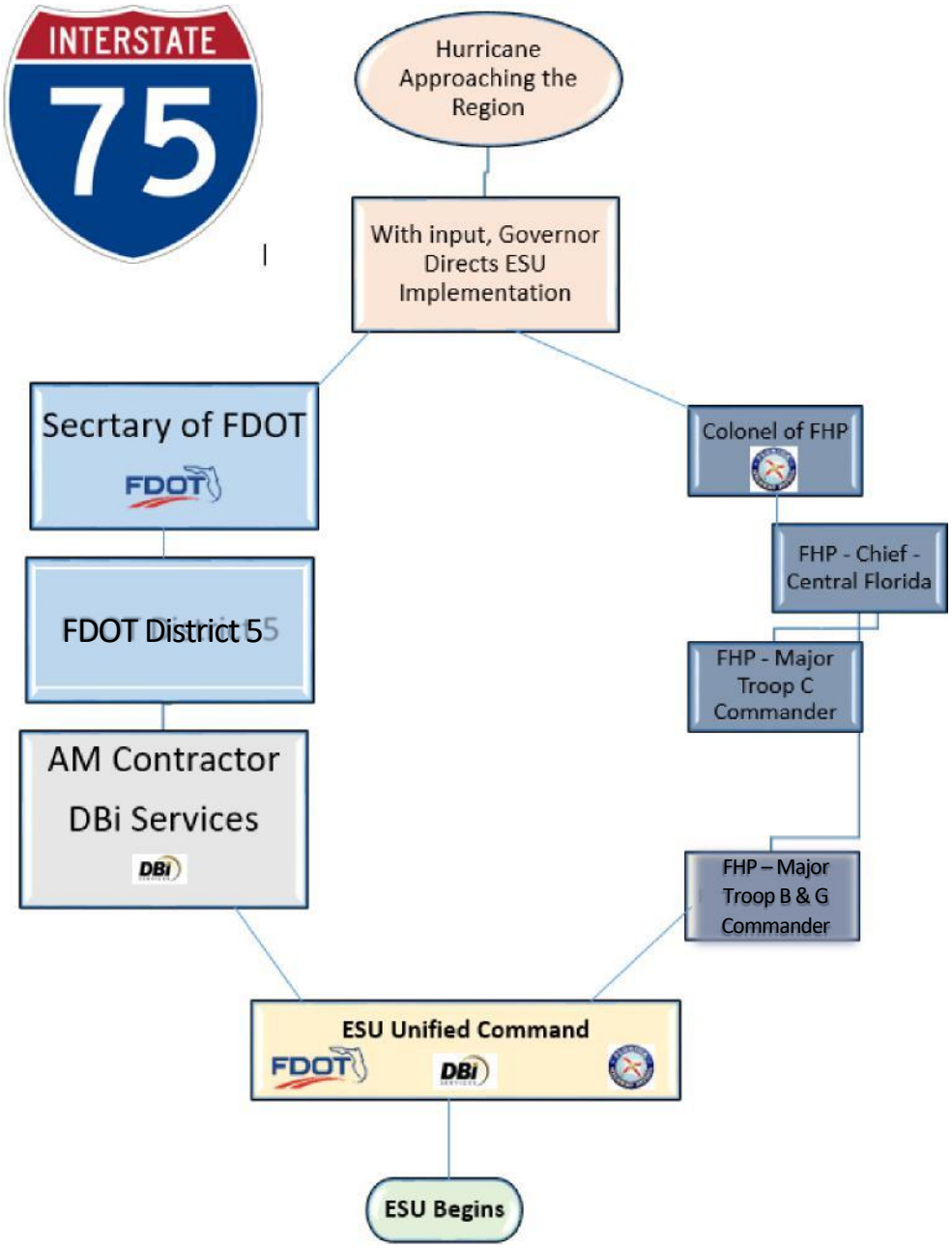
An Area Command is the appropriate Incident Command System (ICS) organizational structure for this SOP. Terms and concepts from the National Incident Management System (NIMS) and ICS standardized systems are used in this SOP without elaboration. Please refer to an appropriate NIMS or ICS document for further explanation of any unfamiliar terms and/or conditions. See Attachment A for a list of acronyms for this SOP.

The Department and the FHP will implement Emergency Shoulder Use (ESU) following direction from the Governor or State Coordinating Officer. The Department will provide the direction to implement ESU from the State Emergency Operations Center (EOC) to the District EOC. FHP will provide the direction using a similar process. At that point, coordination and implementation of ESU will be at the District and Troop level.

The Area Commander (AC) is responsible for providing overall direction on pre-event preparation, ensuring that all parties perform assignments and report status as required. The District Five Maintenance Engineer shall be designated as the AC. The District Five Operations Section chief shall be responsible for the overall implementation of ESU along this corridor. The individuals assigned to the Operations Section Chief position are identified in the District Five EOC Organization Chart.

Notifications and orders to implement will be given to the Asset Maintenance Contractors (AMC) and all other personnel and Contractors deemed necessary by the District Maintenance Engineer or designee. Notification to appropriate personnel will be made via telephone, e-mail, fax, radio, etc.

Emergency Shoulder Use – Operational Flow Chart



PRIMARY NOTIFICATION

- *Florida Highway Patrol (FHP) Command Center – Troop B & G*
- *Florida Department of Transportation – District Five (D5)*
- *Asset Maintenance Contractors (AMC) – DBi SERVICES, LLC*
- *County Emergency Management Office – Sumter, Marion*
- *Communications Office – News Media*

CONTACT LIST

(***Not for public distribution***)

Name	Agency	Email	Phone
John Hatfield	FDOT D5 DME	John.hatfield@dot.state.fl.us	386-801-7602
Dennis Kirk	FDOT D5 Assistant DECO	Dennis.kirk@dot.state.fl.us	386-279-5476
Chris Barone	FDOT D5 Deputy District DME	Christine.barone@dot.state.fl.us	386-801-1434
Jim Stroz	FDOT D5 Traffic Ops	Jim.stroz@dot.state.fl.us	386-943-5309
RTMC D-5	FDOT D5 Traffic Ops	D5.RTMC@dot.state.fl.us	407-736-1900
Mike McCammon	FDOT D5 Ocala Operations	Michael.mccammon@dot.state.fl.us	352-239-4047
Philip Maggio	FDOT D5 Leesburg Operations	Philip.maggio@dot.state.fl.us	352-409-1850
Carrie Stanbridge	FDOT D2 DME	Carrie.Stanbridge@dot.state.fl.us	386-961-7302
Ed Ward	FDOT D2 ECO	Ed.ward@dot.state.fl.us	386-961-7581
D2 EOC	FDOT D2	NA	
Lance Grace	FDOT D7 DME	Lance.grace@dot.state.fl.us	813-362-5791
Angela Aborizk	FDOT D7 ECO	Angela.aborizk@dot.state.fl.us	813-695-2427
Debbie Meyer	FDOT TPE DME	Debbie.Meyer@dot.state.fl.us	321-446-3671
Douglas Prager	FDOT TPE ECO	Douglas.prager@dot.state.fl.us	954-934-1216
Alvaro Gomez-Muro Criado	DBI Senior VP - Southeast	Alvaro.gomezmuro@dbiservices.com	407-453-9974
Summer Howell	DBI District Manager – Florida North	Summer.howell@dbiservices.com	386-623-4428
Spencer Schreiber	PM – E5Q90 / I-75	spencer.schreiber@dot.state.fl.us	352-538-5739
David Casto	Sumter County EM	David.casto@sumtercountyfl.gov	904-305-4972
Preston Bowlin	Marion County EM	jbowlin@marionso.com	352-438-2300
Major Joseph Franza	FHP Troop C Commander (Sumter County)	JosephFranza@flhsmv.gov	954-654-5917
Major Eileen Powell	FHP Troop B Commander (Marion County)	EileenPowell@flhsmv.gov	386-758-0515
District Five EOC	FDOT D5	NA	386-943-5740

EQUIPMENT LIST

All signs are permanent flip down signs. A traffic operation work order was executed with the AMC for the installation in accordance with their contract limits. As noted in the below sign inventory, DBi SERVICES, LLC will be responsible for installing the signs. Signs will be maintained in the "up" position. The signs will not have an alternative message during non-active periods.

Summary of Sign Quantities	
Portable Changeable Message Sign (PCMS)	**2**
DYNAMIC MESSAGE SIGNS	2
NO TRUCKS BUSES OR TRAILERS	10
LEFT SHOULDER OPEN FOR USE	8
LT SHOULDER OPEN $^{1}/_{2}$ MILE	1
Total Devices	***23***

See Attachment B for the road sign table.

There are two (2) patrolling Emergency Assist Vehicles (EAVs). There are ten (10) interchanges. The rest areas at MM(s) 307 & 345 will remain open. There are no pinch points or narrow shoulder locations, and no ramp closures are planned.

ANNUAL PREPAREDNESS OPERATIONS UNDER BLUE SKIES

The Preparedness Operations phase considers what tasks need to occur prior to Hurricane Season each year. All Maintenance Contractor activities will be performed to MRP standards per their contracts. The status of all tasks will be discussed at the monthly progress meetings and included in the contractor's monthly activity report.

Pre-Implementation Operation Activity (Blue Skies)	Responsible Party	Timeline	Quality Control
Verify that all ITS are functioning	RTMC	June 1	Traffic Operations
Install Permanent Signs	AM Contractor	Installation planned to start by July 1	Department AM Contract Manager & Inspector
Ensure temporary signs and PCMS Equipment are available and ready	AM Contractor	Prior to June 1	Department AM Contract Manager & Inspector
Check shoulder conditions to ensure that drop off standards are meeting MRP requirements	AM Contractor	Prior to June 1	Department AM Contract Manager & Inspector
Check for potholes and repair to meet MRP requirements	AM Contractor	As needed prior to June 1	Department AM Contract Manager & Inspector
Remove Vegetation to meet MRP requirements	AM Contractor	Quarterly and immediately prior to implementation of ESU	Department AM Contract Manager & Inspector
Remove Encroachments to meet MRP requirements	AM Contractor	Quarterly and immediately prior to implementation of ESU	Department AM Contract Manager & Inspector
Sweep the Shoulders to remove all loose materials and small debris	AM Contractor	Monthly during hurricane season. Immediately prior to implementation of ESU	Department AM Contract Manager & Inspector
Ride the Corridor	AM Contractor & Department Staff	Prior to June 1 and immediately prior to implementation of ESU	Department AM Contract Manager & Inspector
Coordinate with FHP	AM Contractor & Department Staff	Prior to June 1	DME
Coordinate with Local Agency Partners	AM Contractor & Department Staff	Prior to June 1	DME
Coordinate with Social Media, Local News Partners	Communications Office	Prior to June 1 and immediately prior to implementation of ESU	DME

PRE-IMPLEMENTATION OPERATIONS UNDER PENDING GRAY SKIES

Pre-Implementation Operation Activity (Pending Gray Skies)	Responsible Party	Location	Timeline (When)	Timeline (How Long)	Quality Control
Verify that all ITS are functioning	RTMC	Along the corridor	5 to 7 days out		Traffic Operations
Pre-Storm Meeting with AM Contractor	FDOT		5 to 7 days out		Department
Remove Vegetation to meet MRP criteria adjacent to ESU (including vegetation under guardrail)	AM Contractor	Entire Corridor Length	7 to 5 days out	2 days	Department AM Contract Manager & Inspector
Remove Litter to meet MRP criteria along the entire corridor. (Include excess debris under guardrail)	AM Contractor	Entire Corridor Length	7 to 5 days out	2 days	Department AM Contract Manager & Inspector
Ensure Guardrail meets MRP criteria along the entire corridor	AM Contractor	Entire Corridor Length	7 to 5 days out	2 days	Department AM Contract Manager & Inspector
Remove Encroachments to meet MRP requirements	AM Contractor	Entire Corridor Length	7 to 5 days out	3 days	Department AM Contract Manager & Inspector
Number of EAV's and staging locations will be shown in the AM Contractor Emergency Plan	AM Contractor	As defined along corridor	2 days out for notification to AM contractor for EAV support		DME
Deploy Portable Changeable Message Signs	AM Contractor	Per plan & SOP Attachment B sign table	Implementation of ESU is anticipated	6 hours	Department AM Contract Manager &
Sweep the shoulders to remove all loose materials and small debris	AM Contractor	Entire Corridor Length	Implementation of ESU is anticipated	2 days	Department AM Contract Manager &
Notify FHP for removal of Abandoned Vehicles	AM Contractor / FHP	Entire Corridor Length	Implementation of ESU is anticipated	8 – 12 hours	Department AM Contract Manager &
Ride the Corridor	AM Contractor & Department Staff	Entire Corridor Length	Implementation of ESU is anticipated	4 hours	Department AM Contract Manager &
Coordinate with FHP, D7 and D2 staffs	AM Contractor & Department Staff	Entire Corridor Length	Implementation of ESU is anticipated	On-Going	DME
Coordinate with Local Partners	AM Contractor & Department Staff	Entire Corridor Length	Implementation of ESU is anticipated	On-Going	DME

Coordinate with Social Media, Local News Partners	Communications Office	Entire Corridor Length	Implementation of ESU is anticipated	On-Going	DME

PUBLIC INFORMATION: FHP and FDOT Communications Offices will constantly provide updated information to radio, TV, news media, and local authorities, prior to, during, and after the operation. This will be accomplished by the preparation of news releases and dissemination to appropriate news media on a timely basis.

The Traffic Management Center (TMC) will post messages on the Dynamic Message Signs (DMS) signs and 511.

LOGISTICS: The implementation of ESU requires a coordinated effort between the Department, FHP, and county and local officials. The TMC will keep the District EOC informed of traffic conditions and assist with coordination of Road Ranger response efforts.

DEPLOY THE PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS): DBi SERVICES, LLC will transport the PCMSs to the designated locations and set up according to standards. The PCMS panels shall display the message "Drive Safely" and the operation of the unit including the appropriate message will be re-checked.

REFUELING SITES FOR STATE VEHICLES: Fuel for state vehicles will be obtained at commercial gas stations or at local Department facilities. Additionally, there may be fuel tankers positioned at strategic locations along the route if determined necessary.

EQUIPMENT STAGING SITES: Equipment and supplies will be maintained and provided by the Asset Maintenance Contractor. Once information is received that ESU procedures are to be implemented, the equipment will be transported by the Asset Maintenance Contractor to the traffic post, etc. to await deployment.

DISABLED VEHICLES AND MOTORISTS OF DISABLED VEHICLES: Emergency Assistance Vehicles (EAV) shall patrol the roadway and will be used to remove and restore disabled vehicles to remove and transport motorists of disabled vehicles to the nearest commercial facility to ensure the free flow of traffic as much as possible. Motorists should be advised by news media to have a full tank of fuel prior to entering the interstate.

EMERGENCY MEDICAL SERVICES: Emergency Medical Services (EMS) will be advised upon the implementation of ESU operations. Due to the shoulders for evacuation, there may be a need to pre-stage emergency equipment.

COMMUNICATIONS: District Five EOC will serve as the central point of coordination Communication will be maintained throughout pre-implementation operations under pending gray skies with the following:

Florida Highway Patrol
FDOT Central Office
Asset Maintenance Contractor / Roadside Assistance Services Contractor
FDOT Communications Office
FDOT District(s) 2 & 7

IMPLEMENTATION OPERATIONS

Upon notification to implement ESU with confirmation through the District Secretary, the AC will begin notifications and direct the Operations Section Chief to begin implementation. Working from north to south, the asset maintenance contractors shall implement ESU within 4 hours after the order has been given and will coordinate their placements and timing of PCMSs with District 2 and 7 staff as directed.

DBi SERVICES, LLC will closely coordinate their efforts to ensure that the shoulders are not opened to traffic prior to the shoulders being cleared by both contractors. Once DBi SERVICES, LLC has flipped all their signs, they will program the appropriate message on the PCMS and open the shoulder to traffic.

Implementation Operations	Responsible Party	Location	Timeline (When)	Timeline (How Long)	Quality Control
Flip down permanent signs *north to south	AMC	Per Plans and SOP Equipment List	Implementation of ESU	2-hour prior	Department AM Contract Manager & Inspector
Set and display messages on Portable Changeable Message Signs & DMS	AMC	Per Plans & SOP Equipment List	Implementation of ESU	1-hour prior	Department AM Contract Manager & Inspector
Ride the Corridor	AMC & FDOT	Entire Corridor Length	Implementation of ESU	4 hours prior	Department AM Contract Manager & Inspector
Coordinate with law enforcement agencies	AMC & FDOT	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME
Monitor ITS for any adjustments needed	FDOT	Entire Corridor Length	Prior to and during Implementation of ESU	On-Going during Implementation of ESU	DME
Positioning of LEO and EAV	LEO & AMC / Pre-Event Coordinator	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME and Contract Manager
Deployment of Roadside Assistance	AMC	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME and Contract Manager

Coordinate with Local Agency Partners	District EOC	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME
Coordinate with Social Media, Local News Partners	FDOT Communications Office	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME
Coordinate with Decision Makers	FDOT	Entire Corridor Length	Implementation of ESU	On-Going during Implementation of ESU	DME

SET-UP

The District Five EOC will serve as the central point of coordination. Communication will be maintained throughout the ESU with the following:

Florida Highway Patrol
Florida Department of Transportation Central Office
Asset Maintenance Contractor / Roadside Assistance Services Contractor
FDOT Communications Office
FDOT District 7
FDOT District 2

DEPLOY RESOURCES: The order to deploy personnel and equipment resources will be given by the AC. When the order to deploy is given, the Operations Chief will task the AMC to deploy resources. The AMC will deploy resources to their designated locations immediately upon notification. Set-up time is estimated at 12 hours

VERIFY DEPLOYMENT: Contractors and FHP will notify the District Five Operations Chief when resource deployment verification is complete.

COMMERCIAL AND OTHER LARGE VEHICLE RESTRICTIONS: Due to the shoulder widths, large commercial trucks and other large vehicles will be required to stay on the mainline.

The positioning of FHP or other Law Enforcement and the Emergency Assistance Vehicle (EAV) are identified in the typical layout plan sheet as shown below. EAV staging and quantities will be implemented as determined by the contractor per the ERAS scope of services.

DURATION

MONITORING OPERATIONS: During this operation, FHP and other law enforcement units and the District EOC will continually monitor the traffic flow. Any bottlenecks or traffic difficulties will be promptly and appropriately dealt with. Interchange areas will be monitored and ramps will be closed by FHP and/or other law enforcement agencies when deemed necessary.

EMERGENCY RESPONSE: Emergency response vehicles will utilize the outside paved shoulders and crossovers to respond to emergency situations. Crossovers are listed on sheets five (5) of the concept plan. If necessary, air-evacuations may be utilized for injuries and medical emergencies.

CRASH CLEARANCE: Crashes will be cleared off the roadway as expeditiously as possible. If the vehicle can be driven or able to be pushed, it will be moved off the roadway as far as possible. Wreckers will be called from the wrecker rotation list or Emergency Roadside Assistance Services Contractor (ERAS) Contractor and will use the available shoulders and median strip to respond to the crash scene.

RAMP/LANE CLOSURES: There are no planned ramp closures currently. If an incident occurs requiring ramp or lane closures, law enforcement will request Department resources for MOT support via the RTMC. A Road Ranger will provide initial support until the Asset Contractor can respond. Per the Road Ranger contract, they should not be on scene for more than an hour. The Asset Contractor will respond as soon as possible with the appropriate MOT to meet the needs of the incident as defined in their established contractual requirements.

WEIGH STATION CLOSURES: Following the issuance of the Governor's Executive Order and upon issuance of the Secretary's Emergency Order, the Weigh Stations will suspend normal operations to support the ESU. The facility will remain staffed to ensure access to the facilities, if needed, for emergency responders and evacuees.

POST IMPLEMENTATION OPERATIONS

The following will take place upon the determination to end ESU Operations. Time required to remove the ESU devices from the time the decision is made to cease ESU = 4 hours.

Post Implementation Operations	Responsible Party	Location	Timeline (How Long)	Quality Control
Demobilization of Motorist Assistance Contractors	Road Rangers and/or ERAS Contractor	Entire Corridor Length	On-Going during Post-Implementation of ESU	Department Road Ranger Contract Manager
Monitor ITS for Any Changes	FDOT	Entire Corridor Length	On-Going during Post-Implementation of ESU	DME
Coordinate with Local Agency Partners	AMC & FDOT	Entire Corridor Length	On-Going during Post-Implementation of ESU	DME
Coordinate with Social Media, Local News Partners	FDOT Communications Office	Entire Corridor Length	On-Going during Post-Implementation of ESU	DME
Coordinate with Decision Makers	FDOT	Entire Corridor Length	On-Going during Post-Implementation of ESU	DME

THE OPERATION WILL TERMINATE PRIOR TO TROPICAL STORM FORCE WINDS TO ALLOW FOR TRAFFIC ON THE ROADWAY TO CLEAR AND FOR PERSONNEL TO SEEK SHELTER.

WHEN TO TERMINATE OPERATION: The traffic volume and speeds will determine the duration of the ESU Operations. When it is apparent that traffic in the northbound lanes is flowing smoothly and the volume is not as great as to create bottlenecks, the Department in coordination with the SEOC, Central Office, D2, D7, FHP and County EOC will assess the information and make a determination to terminate ESU operations

The FHP Troop B and G Commanders will be notified via their chain of command that the Department is ready to cease operation of the I-75 ESU.

PUBLIC INFORMATION: Prior to the termination of the ESU, the Communications Office will notify the media that the operation is going to be terminated and give them the time of termination.

POST EVENT OPERATIONS

Post Event Operations	Responsible Party	Location	Timeline (How Long)	Quality Control
Reset Flip Panels	AMC	Per Plans and SOP Equipment List	4 hours	Department AM Contract Manager &
Remove Portable Changeable Message Signs	AMC	Per Plans & SOP Equipment List	2 - 3 hours	Department AM Contract Manager &
Ride the Corridor	AMC & FDOT	Entire Corridor Length	4 hours	Department AM Contract Manager & Inspector

RECOVER AND STORE EQUIPMENT: All deployed resources will be recovered or restored by the

ATTACHMENT A: LIST OF ACRONYMS

AC – Area Command

AMC – Asset Management Contractor

DME – District Manager Engineer

DMS – Dynamic Message Signs

EAV – Emergency Assistance Vehicle

EOC – Emergency Operations Center

ERAS – Emergency Roadside Assistance Service

ESU – Emergency Shoulder Use

FDOT – Florida Department of Transportation

FHP – Florida Highway Patrol

ICS – Incident Command System

ITS – Intelligent Traffic System

LEO – Law Enforcement Officer

MOT – Maintenance of Traffic

MRP – Maintenance Rating Program

NIMS – National Incident Management System

PCMS – Portable Changeable Message Signs

RISC – Rapid Incident Scene Clearance

RTMC – Regional Transportation Management Center

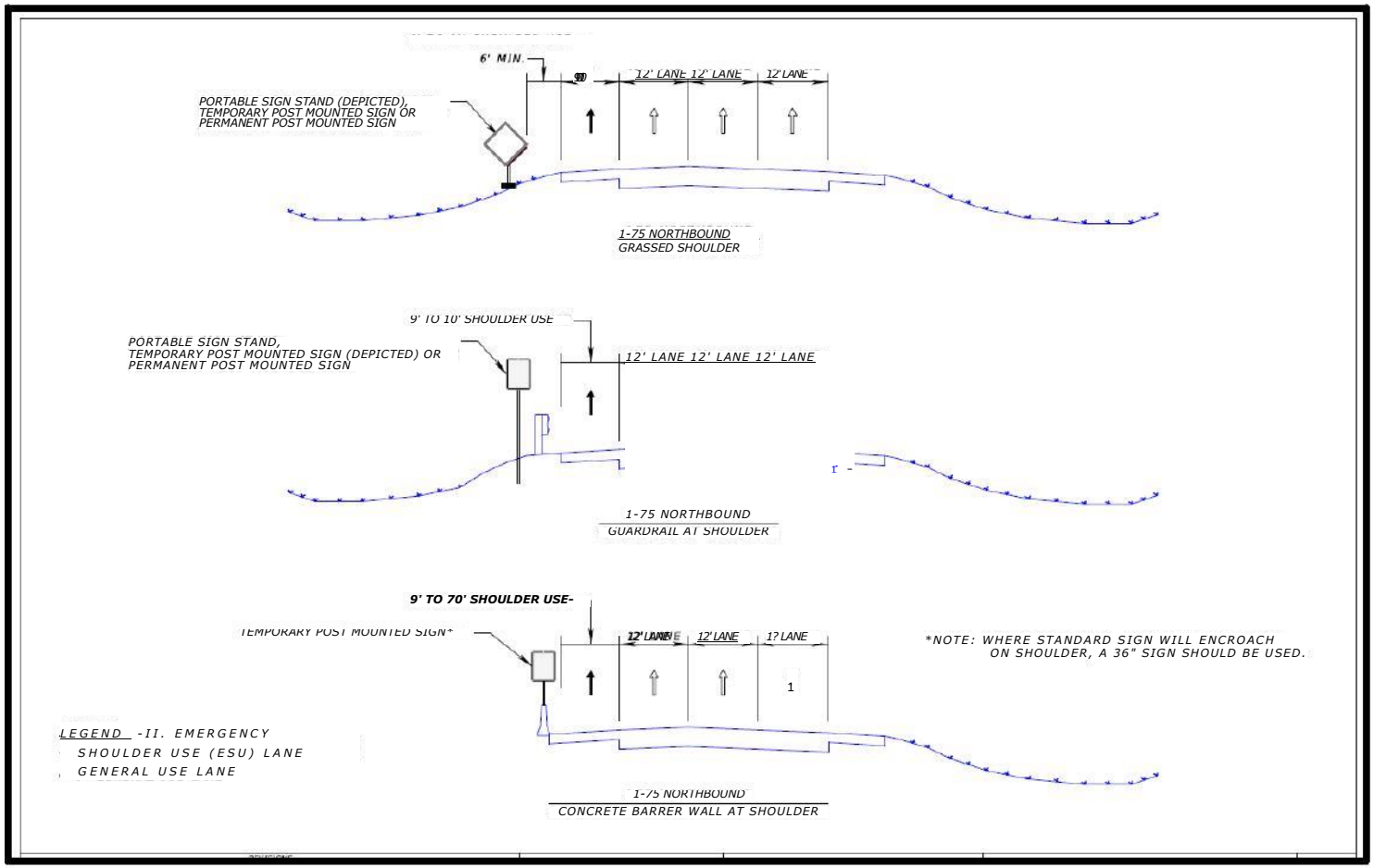
SOP – Standard Operating Procedure

TMC – Traffic Management Center

ATTACHMENT B: SIGN TABLE

Road	County	Mile Marker	Placement Note	Message
I-75, N.B.	Sumter	MM 308.8	3010 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Sumter	MM 309	3020 Preset 10 (Back Side)	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Sumter	MM 314.8	3060 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Sumter	MM 315.8	3070 Preset 10 (Back Side)	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Sumter	MM 322.8	3140 Preset 10 (Back Side)	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Sumter	MM 323.5	3140 Preset 11 (Back Side)	LEFT SHOULDER OPEN FOR USE
I-75, N.B.	Sumter	MM 331.3	3240 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 338	3310 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 341	3330 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 342.2	3330 Preset 11	LEFT SHOULDER OPEN FOR USE
I-75, N.B.	Marion	MM 342.2	3340 Preset 10 (Back Side)	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 346.5	3381 (TPAS) Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 349	3410 Preset 10 (Back Side)	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 350.5	3420 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 352.1	3440 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 352.2	3440 Preset 11	LEFT SHOULDER OPEN FOR USE
I-75, N.B.	Marion	MM 354.2	3450 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 354.3	3450 Preset 11	LEFT SHOULDER OPEN FOR USE
I-75, N.B.	Marion	MM 357	3490 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 358.1	3500 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 358.2	3500 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 368.2	3610 Preset 10	NO TRUCKS BUSES OR TRAILERS
I-75, N.B.	Marion	MM 368.4	3620 Preset 10	NO TRUCKS BUSES OR TRAILERS

ATTACHMENT C: SIGN AND LEO LOCATION EXAMPLE



ATTACHMENT D: PRECAUTIONS FOR SAFETY SERVICE PATROLS (during Pandemic)

General Guidance

- Practice proper hand hygiene by promptly washing your hands or using hand sanitizer after physically interacting with others.
- If washing your hands, please do so for at least 20 seconds with soap and warm water.
- Avoid touching your face (eyes, nose, and mouth).
- Cover your mouth and nose with your bent elbow or tissue when you cough or sneeze. Make sure to dispose of the tissue immediately.
- Avoid close physical contact with others, including shaking hands and hugging.
- Maintain at least six (6) feet distance between yourself and anyone who is coughing or sneezing, when possible.
- Promptly disinfect your gear after physical contact with any individual.
- Keep an adequate supply of disinfectant wipes and hand sanitizer in an easily accessible place while on-duty.
- Wear a mask when assisting motorists and properly dispose after use.
- Educate yourself and participate in training on the use of Personal Protective Equipment (PPE) for respiratory protection, if available.
- Ensure only trained personnel wearing appropriate PPE have contact with individuals who have or may have COVID-19.
- Seek medical care if you have a fever, cough or difficulty breathing.

Interaction with Motorists

- Wear masks as recommended by Centers for Disease Control (CDC) guidance, during all interactions during a shift to limit the amount of exposure with motorists.
- Approach motorists <u>only</u> from the passenger side window, unless a non-traffic side approach is warranted.
- Insist motorists stay in their vehicles.
- Instead of allowing a motorist to use the cell phone, make the call for them or allow the motorist to speak via speaker phone while maintaining a safe distance of at least 6 feet.

Transporting Motorists

- Call EMS/EMTs if the motorist has any medical emergency. Symptomatic and Asymptomatic COVID-19 is in itself not a medical emergency.
- Do not transport motorists except in emergency cases.
- Should you need to provide transport, wear a mask at all times and do not use recirculating (max) air conditioning until the passenger has exited the vehicle and a full wipe-down has been completed.
- Where the motorist vehicle is in a safe position, have drivers and passengers wait in vehicles for rides, particularly in inclement weather.
- Provide a protective block and traffic control while motorists wait for a ride.

Equipment/Cleaning

- Always use Personal Protective Equipment (PPE), if available.
- Conduct intensive vehicle cleanings before, during and after every shift.
- Wear masks as recommended by CDC guidance and ensure proper training for wearing masks.

- Clean SLERS communications equipment in accordance with Technical Services Memorandum(s) 42-05B & 42-07A.
- Each Road Ranger should have cleaning materials and hand sanitizer with them at all times.
- Sanitize any equipment that's frequently touched.
- Crack windows during downtime to air vehicles.
- Use fresh air circulation instead of recirculating A/C setting.
- Use FDOT procedures on how best to clean/disinfect SLERS radios.

Shift Practices

- Some patrol shifts have decreased or modified due to staffing or traffic demands.
- Some dispatch employees may work remotely.
- Patrol drivers may hold meetings over the phone or radio rather than in person.
- The requirement to disseminate brochures, Move It cards, etc. have been suspended until further notice.

Work-Home Practices

- Change out of uniform at the end of a shift immediately after returning home prior to interacting with family members.
- Practice good hygiene upon entering the home to include washing hands, changing clothes, etc.
- Keep field uniform and shoes away at an isolated space before entering in the main living space.

Appendix N

Daytona Area Events Concept of Operations

Florida Department of Transportation District Five

Daytona Area Event Management

Concept of Operations

August 2016
FINAL

Prepared for:

Florida Department of Transportation District Five
Intelligent Transportation Systems (ITS) Section
719 S. Woodland Blvd.
DeLand, FL 32720

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List of Acronyms and Abbreviations

ADMS ..... Arterial Dynamic Message Signs
APL ..... Approved Products List
ASC ..... Adaptive Signal Control
ATC ..... Advanced Traffic Controller
ConOps ..... Concept of Operations
DMS ..... Dynamic Message Sign
FDOT ..... Florida Department of Transportation
FHWA ..... Federal Highway Administration
GIS ..... Geographic Information System
GUI ..... Graphical User Interface
ITS ..... Intelligent Transportation System
LAN ..... Local Area Network
MOU ..... Memorandum of Understanding
NITSA ..... National ITS Architecture
NTCIP ..... National Transportation Communications for ITS Protocol
RITSA ..... Regional Intelligent Transportation System Architecture
RTMC ..... Regional Traffic Management Center
SITSA ..... Statewide Intelligent Transportation System Architecture
SEMP ..... Systems Engineering Management Plan
TERL ..... Traffic Engineering Research Lab
TMC ..... Traffic Management Center

1. Overview

1.1 Identification

This document identifies the Concept of Operations (ConOps) for integrating, updating and redefining the Intelligent Transportation System (ITS) components and their locations to facilitate traffic flow before and after an event around eastern Volusia County. The existing and proposed ITS, signals devices and system components are discussed, as well as the relationships and responsibilities of the various agencies for an effective event management solution within the Daytona area.

Some of the major events that impact traffic in the area of the Daytona International Speedway are:

- Daytona 500
- Coke Zero 400
- Bike week
- Biketoberfest
- Country 500
- Speedweek
- SCCA CFR Regional
- Red Bull Global Rallycross
- Fall Cycle Scene
- Ferrari World Finals
- Jeep Beach
- Incidents on I-95

1.2 Document Overview

A ConOps document includes the proposed environment of the system and the system utilization by stakeholders and associated agencies. It specifically describes the ITS and Signal components that are already in place or are being proposed for future deployment in Volusia County to support the needs of the agencies and the public.

This document is organized as follows:

Section 1 – Overview
Section 2 – Referenced Documentation
Section 3 – Current System Situation
Section 4 – Justification and Nature of the Changes
Section 5 – Concepts for the Proposed System
Section 6 – Operational Scenarios
Section 7 – Summary of Impacts

Section 8 – Analysis of the Proposed System
Appendices

The development of the Concept of Operations for Daytona Area Event Management is based on a number of guidelines and builds upon planning, reports, and documentation developed prior to the development of this Concept of Operations.

The development of this Concept of Operations for Daytona Area Event Management was developed in accordance with guidelines and information presented on the Florida Department of Transportation's (FDOT) Systems Engineering Management Plan (SEMP) website, which can be found at the following link:
http://www.dot.state.fl.us/trafficoperations/ITS/Projects_Deploy/SEMP.shtm

1.3 *System Overview*

The City of Daytona Beach owns and operates 58 miles of fiber optic cable, approximately 70 traffic surveillance cameras, wireless connections to remote cameras, and traffic signals which are linked to the City's Traffic Management Center (TMC). The City's TMC has four viewing and control workstations, and a three-monitor video wall. The TMC is currently in the City's signal shop located at 950 Bellevue Avenue, Daytona Beach FL 32114.

The City and the Speedway manages the traffic system around the Speedway events with the assistance of local agencies, such as the FDOT, Daytona Beach Police Department, FHP and Volusia County. The FDOT supports the City by providing an FDOT representative to be present on event days. This representative operates approximately 40 Dynamic Message signs (DMS) on I-4, I-95, and state arterial roadways. The Department also provides support by using surveillance cameras that are full pan-tilt-zoom, which gives operators the ability to use the wide range of motion to quickly identify and mitigate any potential issues. The DMS are also particularly useful for directing traffic. Small DMS signs are used to direct traffic to the parking lots. The Florida 511 system and a local radio station are also used in order to disseminate information to the event's attendees.

In addition, FDOT has an Adaptive Signal System on SR 400 to assist with traffic congestion. Volusia County also has existing infrastructure in the area. There is also an extensive fiber network in the area of East Volusia. Some of the additional infrastructure is described in the following sections of this report.

The proposed improvements to the Daytona Area, detailed in the following sections, are being installed to manage traffic throughout the County more effectively and proactively during events. The communication system being installed will provide the local agency operation's centers with

the ability to communicate to the field devices within their jurisdiction. Each sub-system will provide benefit to both the operations center personnel as well as the driving public.

The following descriptions outline the roles and responsibilities for the system:

Project Sponsors – Agencies that are involved in funding the system and defining the system's goals, objectives, and requirements for Daytona Area Event Management. The Sponsors included in this project are listed as follows:

- Florida Department of Transportation, District Five

User Agencies – Agencies that will utilize the devices and infrastructure installed under this system for traffic monitoring, congestion management, traffic incident management, performance measures, data collection, and roadway improvement. The User Agencies included in this project are listed as follows:

- Volusia County
- Police and Emergency Responders
- City of Daytona Beach
- City of Ormond Beach
- Speedway

Maintenance and Operation Agencies – Agencies that will be responsible to maintain and operate the ITS system equipment and infrastructure are listed as follows:

- Volusia County
- City of Daytona Beach
- Florida Department of Transportation, District Five

Agency Contact Information

Agency	Address	Phone
Florida Department of Transportation, District Five	719 S. Woodland Blvd. DeLand, FL 32720-6800	1-800-780-7102
Volusia County	123 W. Indiana Ave. DeLand, FL 32720	386-257-6000
City of Daytona Beach	301 S. Ridgewood Ave., Daytona Beach, FL 32114	386-671-8400
Daytona International Speedway	1801 W International Speedway Blvd Daytona Beach, FL 32114	1-800-748-7467
Daytona Beach Police Department	129 Valor Blvd. Room 3001 Daytona Beach, FL 32114	386-671-5102
Florida Highway Patrol	1551 E. International Speedway Blvd. Deland, FL 32724	386-736-5350
City of Ormond Beach	22 South Beach Street Ormond Beach, FL 32174	386-677-0311

Table 1 – Agency Contact Information

2. Referenced Documentation

The following documents, of the exact issue shown, form a part of this document to the extent specified herein. In the event of a conflict between the contents of the documents referenced herein and the contents of this document, this document shall be considered the superseding document. Additionally, noted documents will be developed in support of or, in conjunction with, the preparation and definitions of this Concept of Operations.

DOCUMENT	DATE	CONTACT
FDOT ConOps Template	3/18/16	Derek.Vollmer@dot.state.fl.us

Table 2 – Referenced Documentation

3. Current System Situation

3.1 Background, Objectives, and Scope

The Daytona Area currently has existing ITS infrastructure consisting of various ITS sub-system components, which are interconnected via a fiber optic network, copper interconnect and wireless antennas along the arterial roadways. There are several existing ADMS that are on existing roadways leading to the Daytona International Speedway. These ADMS are currently not operational. The FDOT RTMC can no longer communicate to devices and are therefore to be removed as part of the proposed project.

The primary objective for this project is for motorists to ingress and egress the various parking lots in a timely manner as well as alternative routes for incidents on I-95. These routes can be found at **Appendix A.** Various agencies contribute information, equipment, and manpower in order to maximize the efficiency of the process on event days. Currently, events management relies highly on the City of Daytona Beach, the City of Daytona Beach Police Department, FHP, Volusia County traffic engineering and the FDOT employees.

3.2 Operational Constraints

The existing ITS system cannot meet the demands that occur from the events at the Daytona International Speedway. This constraint limits the activities that occur in the area due to event organizers considering the impacts that the congestion has on their attendees. By revamping the ITS system, increasing motorist information and awareness, and reducing congestion, more event organizers will consider holding their events in the Daytona area.

The existing ITS system also has constraints with information dissemination. As stated earlier in the document, some of the existing ITS devices within the limits of the Daytona International

Speedway are non-operational. The existing ITS infrastructure and existing devices are shown within **Appendix B**.

3.3 Description of the Current System or Situation

Daytona Beach is home to many events which hosts large volumes of people. The City currently has limited resources and roadway capacity for routing the public to and from events such as the Daytona 500. While the International Speedway Corporation does not release the official attendance figures, an estimated 250,000 fans attend the Daytona 500 each February. Another event that Daytona Beach hosts annually is Bike Week. Bike Week attracts approximately 500,000 people to the area for the 10 day event every year.

Currently, during major events at the Daytona International Speedway, the City of Daytona Beach and Volusia County temporarily disable traffic signals surrounding the Speedway and Law Enforcement officers manually route traffic to parking Lot 7. After the event is over, law enforcement generally route all traffic leaving the Speedway to SR 40 to go south or north on I-95. The City of Ormond Beach stated that it takes an estimated 3-4 hours to clear the area of congestion after each event.

The Daytona International Speedway is also investing in redevelopment to increase the demand for use during the rest of the year. The redevelopment with over 300,000 square feet and a projected investment of approximately $120 - $150 million, called ONE DAYTONA is a significant project anchored by several shops, theater, hotels, and an approximately 300-unit residential apartment community including a four-story midrise campus and garden style complex. ONE DAYTONA will quickly become synonymous with visitors, meeting and convention delegates, race fans and residents as east Central Florida's place to live, work, stay and play.[1]

3.4 User Profiles

The City of Daytona Beach TMC uses the Advanced Traffic Controller (ATC) traffic signal controllers. The city also uses Adaptive Signal Control (ASC) for 22 intersections on US 92. The City's traffic signal cabinets are currently at capacity and any new equipment will have to be installed inside new cabinets.

Blank-out signs, ADMS and Bluetooth sensors will be proposed in this project on all approaches of the major intersections to the Speedway and the surrounding area. The following sections provide details of the proposed equipment. The end user of the signal and ITS systems is the motoring public. Motorists will benefit from the blank-out signs in addition of ITS devices when approaching the intersections by having reduced travel delays when traveling during the event

[1] http://www.onedaytona.com/

days. An anticipated result of these travel delays is that people have less apprehension about participating in these events, which would increase attendance and result in more people purchasing goods and services from local businesses.

3.5 Support Environment

The City of Daytona Beach and Volusia County are the only agencies that operate signals surrounding the Daytona International Speedway. Volusia County operates the signals for both the City of Ormond Beach and the City of Holly Hill within their respective city limits. Those agencies will continue to maintain and operate the signal controllers and associated equipment. The FDOT will maintain any new ITS equipment to be installed under this project. If any upgrades to the City and County cabinets are required, the City and County will be responsible for maintaining these upgraded or new cabinets.

4. Justification and Nature of the Changes

4.1 Justification for Changes

According to the Daytona Event Planning Report by Ghyabi & Associates, Inc, some of the key issues that are to be addressed include:

- Complexity of guidance to parking areas can be confusing for motorists.
- Direction to Lot 7 is minimal or not observed.
- Communication with the TMC has technology problems which cause delays with response by FHP and other agencies.

4.2 Description of the Desired Changes

The District has identified ITS as an integral part of providing innovative services to motorists in the Daytona Beach area. By coordinating with local Cities and County agencies, the District is attempting to populate ITS equipment on arterial roadways to ease traffic congestion on major Arterial Roadways and to help with event management around the Daytona International Speedway. Bluetooth devices are proposed in this project to collect data for travel time information. This data is to be used for the demand management and information system. As shown in other areas of the State of Florida, the effectiveness of ADMS placements results in assisting with traffic management on an arterial roadway level, alleviating backups and offering time savings on the roadways. ADMS will be installed on arterial roadways that lead to Lot 7 and Daytona International Speedway. The ADMS will be connected to fiber optic cable and will utilize its own power source. Locations of ADMS are indicated in **Appendix C**.

Blank-out signs will also be added to inform and direct motorists to event parking, detours, etc. These devices will help in assisting the motorist with traffic flow on the desired roadways. Blank-out signs will be installed approaching the intersection and at the intersections, as

indicated in **Appendix C**. One sign will be located approximately two hundred feet prior to the turn lane and the other will be mounted on the intersection's mast arms or strain poles. These signs will communicate to a controller cabinet that will be connected to fiber optic cable. This new system will be separated from the existing traffic signal's cabinets. These signs will be wired to have pre-established messages that will be operated and by the FDOT RTMC or the FDOT staff at the Daytona Beach TMC during events.

4.3 Change Priorities

Several different scenarios are being analyzed to determine the feasibility and cost for the best implementation to assist with the alleviation of congestion. A cost analysis was developed to determine the type of equipment that would be used in this project that would meet the FDOT budget and satisfy the needs of the City, County, residents and visitors during the events in the area. The priorities determined to be feasible are: blank-out signs, ADMS and Bluetooth devices and the Purdue Performance Metrics for monitoring traffic and signal performance.

4.4 Changes Considered but Not Included

Changing the existing traffic signal controllers to an Adaptive System and re-timing were considered but will not be included in this project due to budgetary constraints.

4.5 Assumptions and Constraints

The equipment and software chosen for this project will be compatible with the components that already exist in the area and will facilitate the operation and maintenance of all ITS devices. All applicable devices will be listed on the FDOT Statewide Approved Products List (APL), which will ensure that they have been tested by the FDOT Traffic Engineering Research Lab (TERL) and are certified to meet FDOT Standards.

Project constraints include funding for the operating and maintaining agencies to provide adequate staff and maintenance. Without funding for operations and maintenance of the system, the system will not operate as proposed and will therefore not provide the benefits stated throughout this document.

5. Concepts for the Proposed System

5.1 Background, Objectives, and Scope

The expansion of the current system to include additional ADMS, Blank-out Signs, and Bluetooth sensors on arterial roadways around Daytona International Speedway is proposed to inform motorists of the appropriate route to parking lots during events. The additional device sites will also allow the FDOT District Five RTMC to disseminate travel time and other

important traffic related information to motorists as well as trailblazing of routes specifically to Lot 7, handicap parking and I-95 detours.
The ADMS, Blank-out Signs, and Bluetooth Sensors will communicate to the RTMC via fiber optic communications or a combination of fiber optic and wireless technologies. Operators at the RTMC will be able to post messages on ADMS to alert motorists of important information after the motorist exits I-95 as they drive toward the Speedway and Lot 7. The SunGuide® software, which is used by the RTMC to control all of their ITS devices, has an interface driver, which will enable the Operator to post a message on the correct ADMS using a Graphical User Interface (GUI). An interface driver may need to be developed in order for the Department to control the messages on the Blank-out signs.

Not only will this system be used for events, but to also assist with detouring motorists when an incident happens on I-95. The DMS messages may be posted at several interchanges both upstream and downstream of the incident. Motorists can then use this information to reroute in order to avoid congestion and delays.

5.2 Operational Policies and Constraints

The District's RTMC operates around the clock, seven days a week. The RTMC always has at least 1 Shift Supervisor and 1 TMC Operator. During weekday peak hours, a second RTMC Operator and 511 Operators are also on duty to monitor the additional traffic. For further information on staffing, see Section 5.4.

Due to the involvement of several agencies within the project limits, a Memorandum of Understanding (MOU) will be required to ensure all stakeholders are in agreement with the way operations will be conducted, including the City of Daytona Beach, Volusia County, and Daytona International Speedway. In addition to the devices and features being proposed to be implemented, another improvement includes the development of pre-event signal plans to help flush traffic. Traffic controller clocks will be required to be synced to GPS to allow for inter-agency coordination.

5.3 Description of the Proposed System

There will be 6 proposed ADMS within the Daytona Event Management project limits. The ADMS will be strategically located near interchanges of local roadways with I-95 and will provide information for motorists traveling toward the Daytona International Speedway. They will be placed 1-mile or less from I-95, east of the key interchanges identified below:

- I-95 @ SR 400
- I-95 @ US 92
- I-95 @ LPGA Blvd.
- I-95 @ SR 40

- I-95 @ US 1
- Clyde Morris Blvd & LPGA Blvd.

The ADMS system design will be in accordance with the statewide and District Five Regional ITS Architectures (RITSA). The proposed communications infrastructure will provide the necessary support to implement regional architecture flows between ITS centers and agencies in the region according to the following regional service packages which are currently not included within the FDOT District Five RITSA.

There will be 71 blank-out signs and 24 Bluetooth sensors within the Daytona Event Management project limits. The Blank-out signs will be located at intersections which typically comprises of heavy traffic for events within the area of the Daytona International Speedway. One blank-out sign and, preferably, one Bluetooth sensor will be installed approximately 200 feet upstream from the intersection in the direction of travel toward the speedway. The other sign will be located on a mast arm or signal strain pole at the intersections identified below:

- SR 400 & Williamson Blvd
- SR 400 & SR 483 (Clyde Morris Blvd)
- SR 400 & SR 5A
- Midway Ave & Speedway Rear Entrance
- Midway Ave & Richard Petty Blvd
- US 92 & LPGA Blvd
- US 92 & Williamson Blvd
- US 92 & Turn One Dr
- US 92 & Bill France Blvd
- US 92 & Midway Ave
- US 92 & SR 483 (Clyde Morris Blvd)
- US 92 & SR 5A (Nova Rd)
- SR 430 & SR 483 (Clyde Morris Blvd)
- SR 430 & SR 5A
- CR 483 (Clyde Morris Blvd) & Jimmy Ann Dr
- LPGA Blvd & Williamson Blvd
- LPGA Blvd & CR 483 (Clyde Morris Blvd)
- LPGA Blvd & SR 5A
- SR 40 & Williamson Blvd
- SR 40 & CR 483 (Clyde Morris Blvd)
- SR 40 & SR 5A
- US 1 & SR 5A

5.4 Modes of Operation

FDOT District Five envisions the following modes of operation:

Standard / After-Hours – The FDOT District Five RTMC operates on a 24/7/365 schedule.

- M-F - Three shifts: 6am-2pm, 2pm-10pm, 10pm-6am
    - 6am-2pm - Lead Supervisor and Three Operators
    - 2pm-10pm - Lead Supervisor and Three Operators
    - 10pm-6am - Lead Supervisor and Two Operators
- M-F - TMC Manager is on from 8am-5:30pm
- M-F – 3pm-8pm – One Split Shift Operator
- Weekend - Two shifts: 10am-10pm, 10pm-10am
    - 10am-10pm - Lead Supervisor and Two Operators
    - 10pm-10am - Lead Supervisor and Two Operators
- Weekend - Flex shifts – One Operator - 6am-2pm, 2pm-10pm

Maintenance – Emergency Maintenance and Preventative Maintenance will be performed by the District Five ITS Maintenance Contractor. Preventative maintenance for the ADMS System will be performed according to manufacturers' specifications and requirements.

Emergency – Emergency operations shall be coordinated with the Volusia County Emergency Operations Centers (EOC) based on their policy and procedures.

5.5 User Involvement and Interaction

The SunGuide® Software includes an incident management subsystem. The subsystem incorporates a graphical user interface (GUI) and geographic information system (GIS) map of the region. The software includes an interface to control Arterial Dynamic Message Signs. This software interface will be used to post messages to the ADMS and clear the messages once the message is no longer valid. The project also proposes to give City of Daytona secondary control of the DMS signs.

5.6 Support Environment

Following Project Acceptance, the device components will be turned over to the Department in proper working order and will have a manufacturer warranty period covering defects in assembly, fabrication, and materials from the date of final acceptance by the Engineer. Immediately following after Project Acceptance or the Contractor maintenance period, the routine and periodic maintenance of the installations will be the responsibility of the District Five ITS Maintenance Group. Should any part fail during the Warranty Period, the Contractor or the District Five ITS Maintenance Contractor will remove the part, send it back to the Manufacturer

for repair or replacement and receive the new/repaired part for stockpiling. After the Warranty Period has expired, all costs associated with the repair or replacement of previously warranted parts will be paid for by FDOT District Five.

6. Operational Scenarios

During the events at the Daytona International Speedway, signal timings around the event will be adjusted to provide help with the congestion. The changes to the signal timings will be addressed in pre-set plans for traffic signals. This will indicate the signal timing adjustments needed for each event.

7. Summary of Impacts

Key system stakeholders for the Volusia County signal system include but are not limited to, FDOT, City of Daytona Beach, City and County police, emergency operations, transit agencies, pedestrians, and motorists. The Event Management signs and Bluetooth readers will enhance the capabilities of the existing system and therefore are anticipated to provide benefits to all stakeholders. The summaries of impacts are:

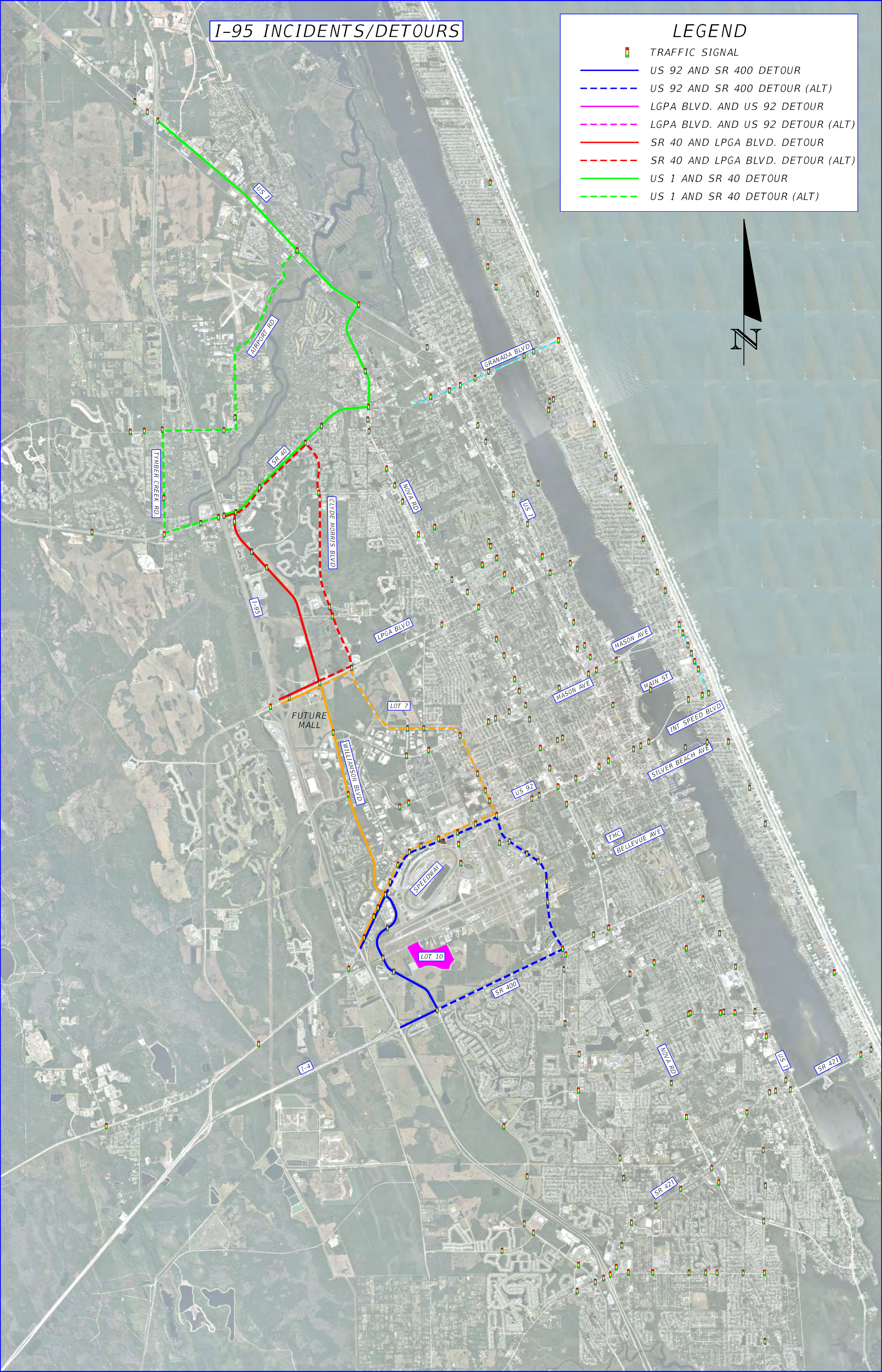
- Disseminate traffic information to motorists
- Re-route traffic during events at the Daytona International Speedway and when there are lane closures on I-95 due to incidents
- Improved travel time reliability and reduced congestion
- Provide new information and a "Tool" to RTMC operators, City of Daytona Beach, City of Daytona Beach Police Department and FHP to assist them in performing their duties

8. Analysis of the Proposed System

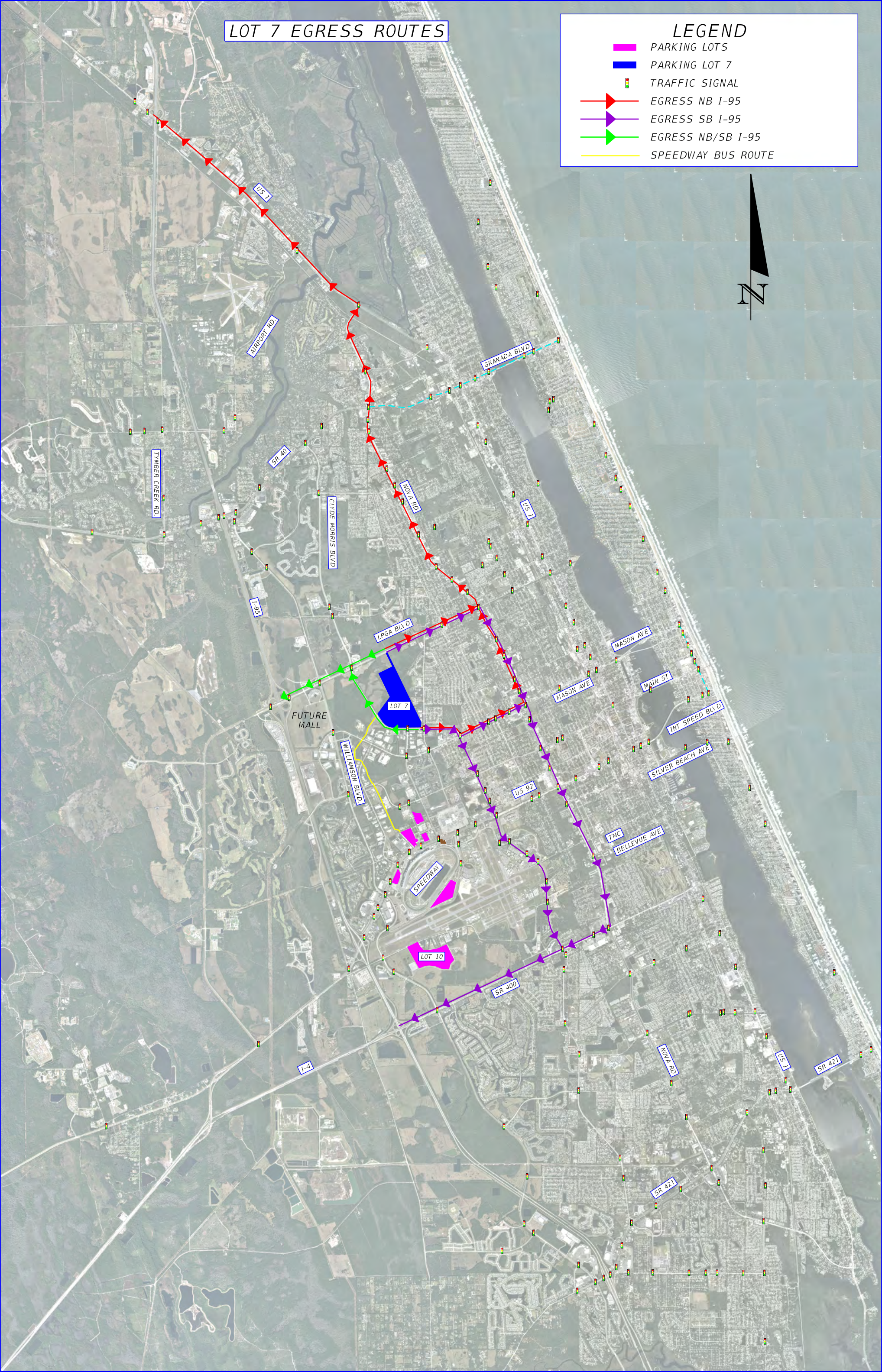
The proposed system will be a beneficial and integral part of providing innovative routing to the motorists around Daytona International Speedway (handicap parking) and in/out of the parking lot 7 (public parking). The use of ADMS and Blank-out signs, in conjunction with Bluetooth readers, will provide information to motorists regarding events at the Daytona International Speedway and potentially reduce travel time as well as providing additional safety to motorists and pedestrians. The system will also minimize the use of Law Enforcement personnel to direct traffic. The project is proposed to be implemented, from design to construction, during a two year period.

Appendix A – Route Configurations

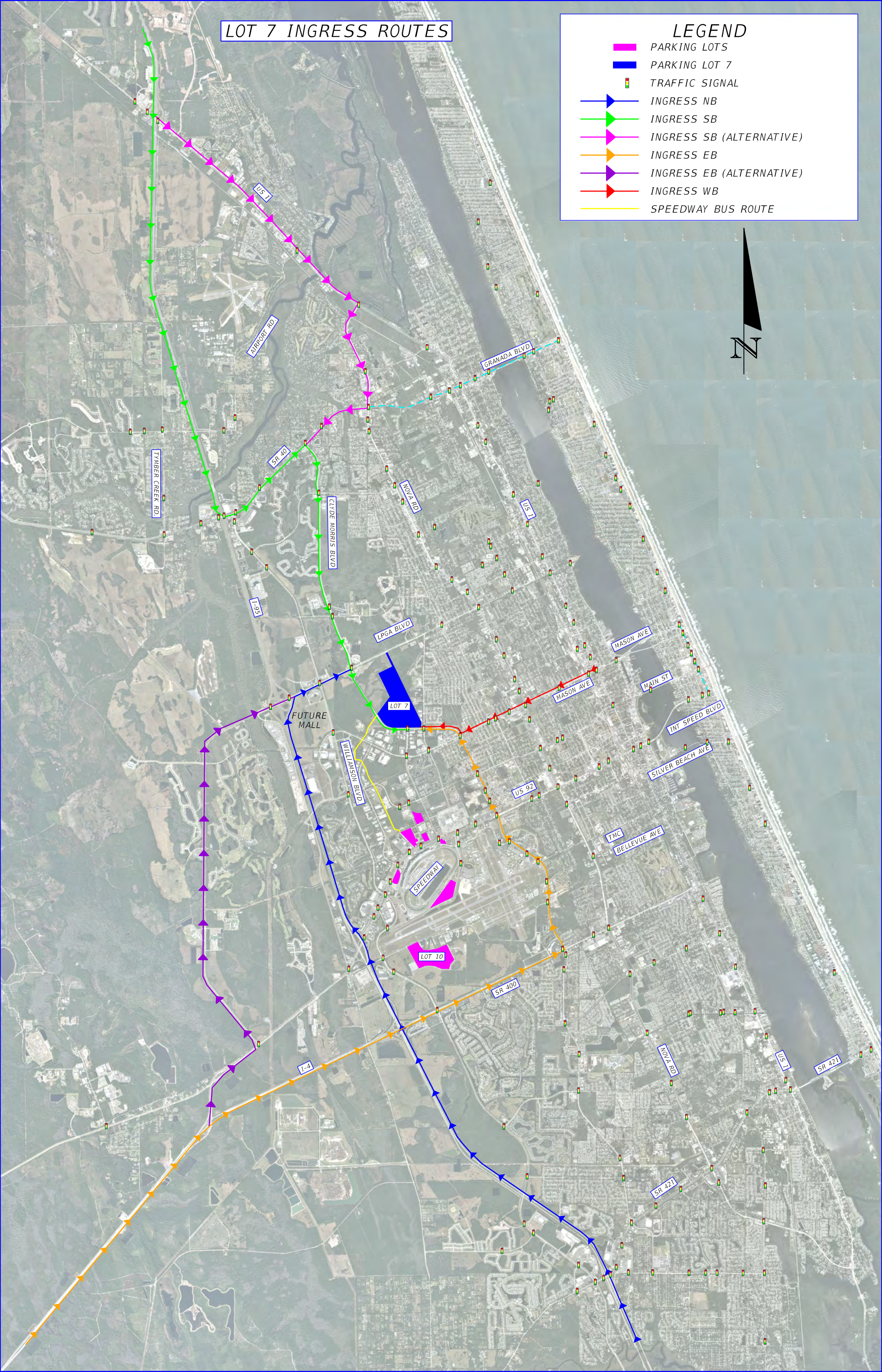
I-95 INCIDENTS/DETOURS



LOT 7 EGRESS ROUTES



LOT 7 INGRESS ROUTES

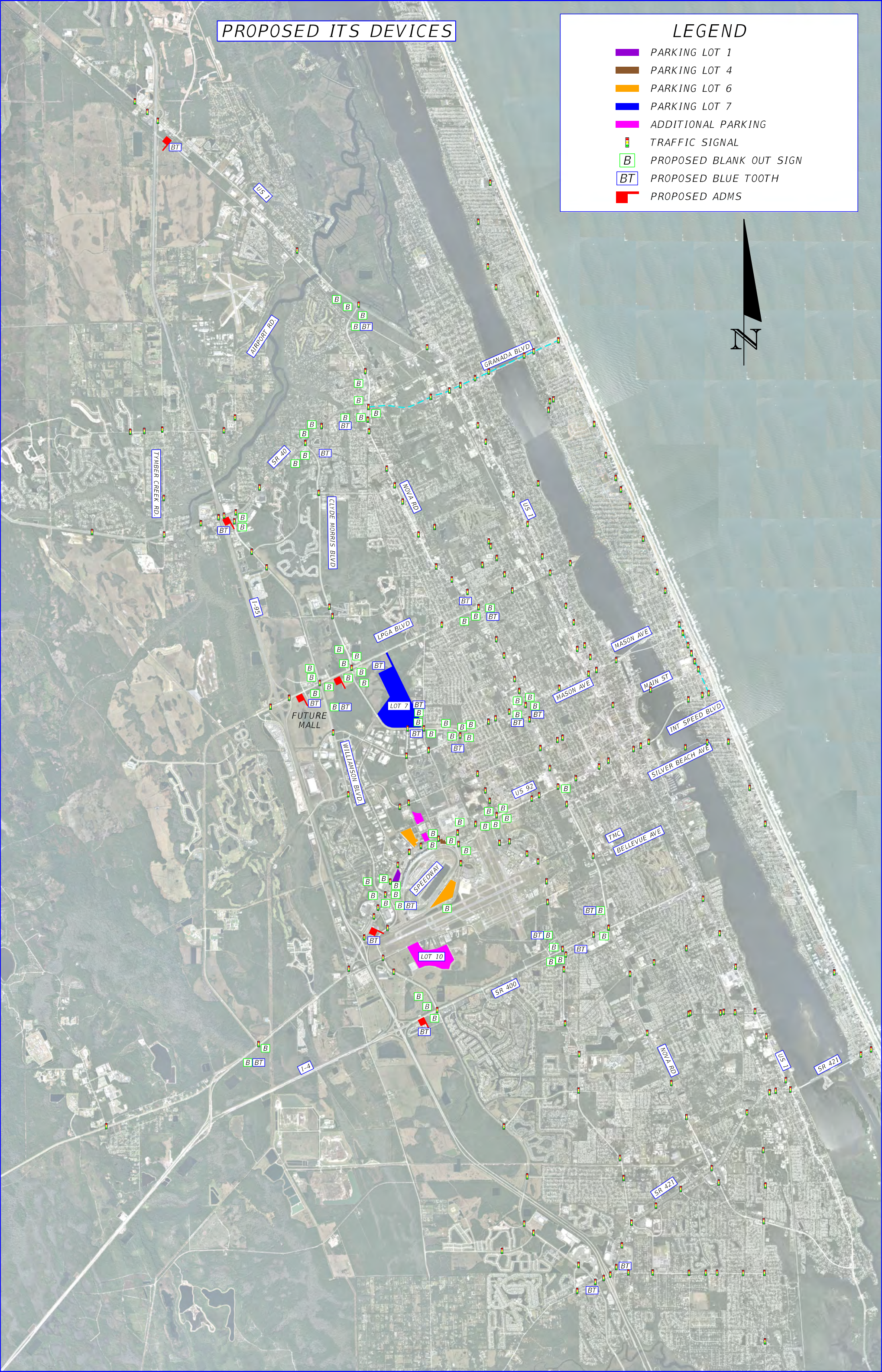


Appendix B - Existing ITS Devices

EXISTING ITS DEVICES
LEGEND
TRAFFIC SIGNAL
EXISTING FDOT CCTV
EXISTING COUNTY CCTV
EXISTING 2 CCTV
EXISTING DMS
DAYTONA BEACH EXISTING FIBER
FDOT EXISTING FIBER
VOLUSIA COUNTY EXISTING FIBER
CITY OF ORMOND BEACH EXISTING FIBER
N
US 1
AIRPORT RD.
GRANADA BLVD
SR 40
TYMBER CREEK RD.
CLYDE MORRIS BLVD
NOVA RD
US 1
I-95
LPGA BLVD
MASON AVE
MAIN ST
MASON AVE
INT SPEED BLVD
LOT 7
FUTURE MALL
WILLIAMSON BLVD.
SILVER BEACH AVE
US 92
TMC
BELLEVUE AVE
SPEEDWAY
LOT 10
SR 400
I-4
NOVA RD
US 1
SR 421
SR 421

Appendix C - Proposed ITS Devices

PROPOSED ITS DEVICES



Appendix O

I-75 Diversion Routes Draft

INTEGRATED CORRIDOR MANAGEMENT DIVERSION ROUTES SIGNAL TIMING IMPLEMENTATION GUIDE

City of Ocala, Marion and Sumter County

Draft Report

Financial Project ID: 435443-5-82-01
HNTB No.: 67012-PL-005
Task Work Order: 5

Prepared by:
HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, Florida 32746

October 27, 2020

Professional Engineer:
Camila Amaya

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Implementation Process 5
When to Discontinue Diversion Timing Patterns 6
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Introduction

The Diversion Route Timing Pattern Implementation Guide was developed to standardized and document traffic signal control measures to assist in incident management along I-75 throughout District Five, as part of the District Integrated Corridor Management. A diversion traffic signal timing patterns has been designed, programmed, and tested in order to minimize the surface street impacts of traffic being diverted from closures or major incidents along I-75.

This Implementation Guide is designed and intended to be used as a working document for the deployment of diversion timing patterns during emergency conditions. Every incident or event is unique; factors such as time of day, day of week, and season of the year, all reflect different traffic volume demands, and the location and expected duration of the incident or event impact the strategies used. As such, these timing patterns are designed as a starting point; particularly in longer term situations, fine turning for the specific condition is likely to be needed for optimal performance.

The support provided by the RTMC play a major role in the implementation of these diversion routes. Traffic management staff will be able to actively monitor traffic conditions along both the freeway and the surface streets, provide current traffic information about delays to motorists, and implement traffic signal timings patterns to best accommodate the increased demands. Law enforcement officers' efforts will include issues at the incident scene, as well as traffic control at four way stops and protected-permissive left turn favoring the diversion route.

When to Implement Diversion Timing Patterns

The decision to implement a diversion route timing plan is based upon a comparison of the advantages and disadvantages of implementing the plan. In other words, will the implementation help or hurt the overall situation? The Traffic Incident Management Team has defined three levels of incidents on the Interstate system, based on their severity and impacts on traffic:

- Level 1 (Minor): Impact to the traveled roadway is estimated to be less than 25 minutes, with no lane blockage or minor lane blockage (i.e. shoulder or gore blockages)
- Level 2 (Intermediate): Impact to the traveled roadway is estimated to be 25 minutes to 50 minutes with lane blockages but not a full closure of the roadway.
- Level 3 (Major): Impact to the traveled roadway is estimated to be more than 50 minutes and/or the roadway is fully closed in any single direction. Significant area-wide congestion can be expected.

The severity and expected duration of the incident will be based on an assessment of conditions at the scene. In a Level 1 incident, as the impact on traffic is limited to minor main line delays, the amount of diversion to the surface street system will be minimal. There would be no need to implement a diversion timing pattern.

A Level 2 incident will create a greater level of delay on the interstate, for a longer period time. Depending on the number of lanes close, the mainline will continue to flow but with a limited capacity. Preferred diversion routes will be suggested on the variable massage signs, with an approximate travel time. In this case, the need to implement a diversion route timing patter is necessary.

The most severe incident, Level 3, will result in an impact for more 90 minutes or the closure of the roadway. With an extended impact, mainline queues will develop to the point that travel times will seem excessive to many, who will then attempt to exit and find the alternate route to avoid the congestion. Implementation of the appropriate diversion timings is necessary to manage the additional volumes on the surface streets. Active monitoring of current conditions on the alternate route, using video cameras and real time vehicular travel time data, should be performed as part of this decision process.

In the worst case of a Level 3 incident, a full closure of one direction of the interstate, the need for a diversion route timing plan is better justified. Except for a middle of the night incident, a complete closure will warrant a diversion plan implementation. As in a less severe Level 3 incident, current condition along the diversion route should be monitored and reviewed to ensure there are no other incidents on the alternate route, construction lane closures, or lack communication to signals along a key part of the route.

Table 1: Implementation Matrix

Maintaining Agency	Level of Implementation Authority	TMC Contact Information
Marion County	RTMC advises on diversion route implementation to the Maintaining Agency and proceed to make all timing changes.	
City of Ocala	RTMC advises on diversion route implementation to the Maintaining Agency and proceed to make all timing changes.	Nick Blizzard Tel: 352-351-6707 Christopher Ramos Email: cramos@ ocalafl.org
Sumter County	RTMC advises on diversion route implementation to the Maintaining Agency and proceed to make all timing changes.	

Implementation Process

It is the role of the Local Agency signal timing engineer (or designee) to identify, analyze, recommend and implement the appropriate action in accordance with the Implementation Authority Matrix. After determining implementation of a diversion route timing pattern is the appropriate course of action, the RTMC staff will select the appropriate traffic signal system groups and pattern numbers for the intersections along the route using this guide.

Diversion route timing patterns have been previously deployed into the local controller databases. The corridor management staff will download the pattern command to the appropriate signals. The ATMS will then be monitored to verify the status of the download to ensure the intersections transition into the desired diversion route pattern.

RTMC staff will verify the appropriate sequence, cycle length, offset, and split are running in the traffic controllers. This will confirm the intersection are operating correctly. RTMC staff should advise the local agency when the diversion route pattern had been implemented.

While monitoring the implementation of the diversion route patterns, RTMC staff will note any preemption events, pedestrian push button actuations or any other such activities that could cause any of the intersections within the group to transition out of coordination.

Once the diversion route pattern has been implemented, there is an opportunity to fine-tune the patterns based on observed conditions. Fine-tuning the pattern should be done on a location specific basis, and not done globally. Fine turning might include, but not be limited to, changes in offsets, splits, sequences, and cycle lengths, or placing one or more intersections in free operation to balance queues at large intersections. If fine turning is required, this will be performed by the professional engineer and any changes will be communicated with the local agency.

When to Discontinue Diversion Timing Patterns

At the conclusion of an incident, traffic starting on the route should be given sufficient time to complete the route. For some routes, this could be an hour or more after the incident cleared and main line traffic starts flowing again, or after the closure has been removed.

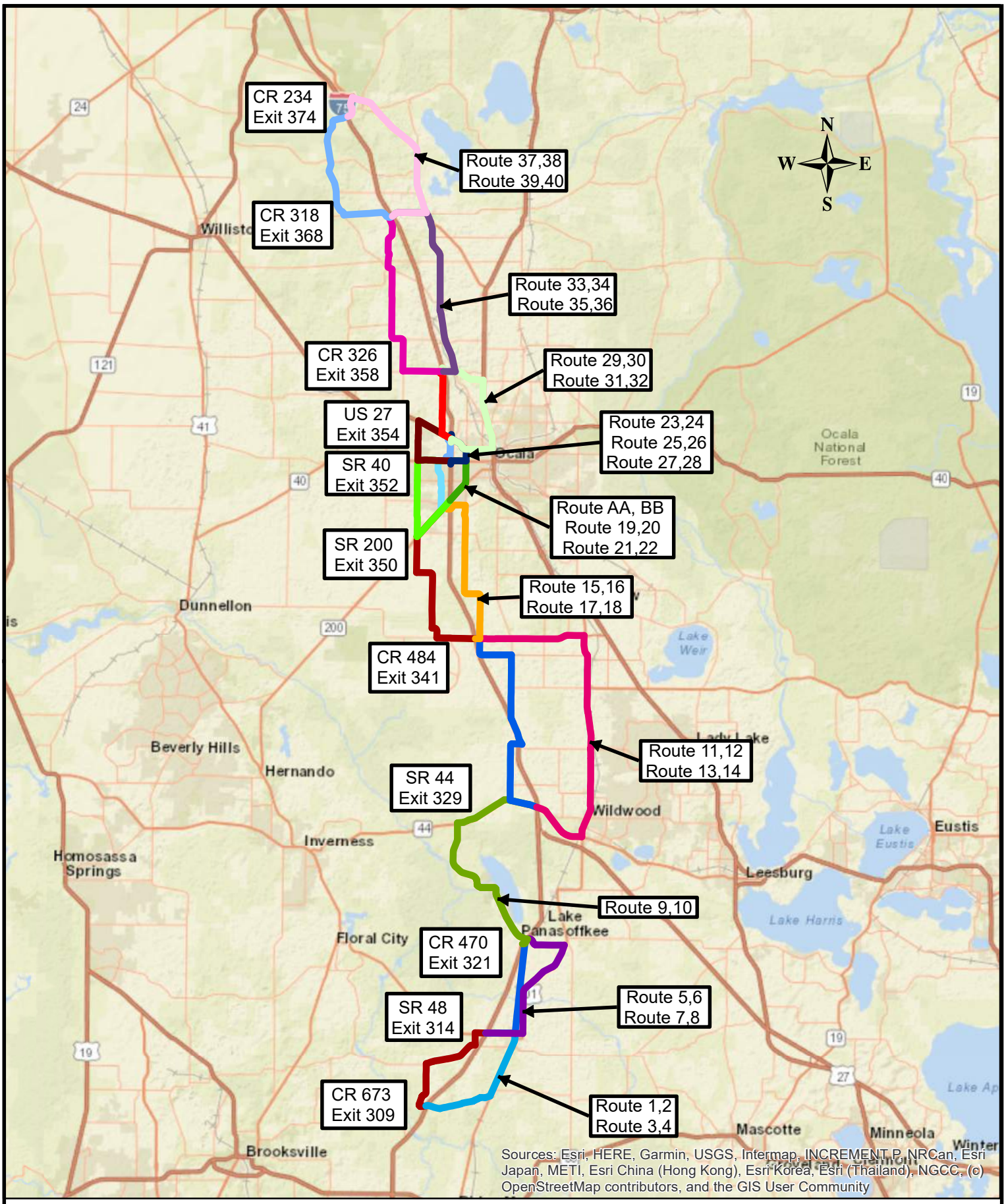
During this period, the alternate route should be monitored using video and travel time data (if available) to determine if vehicular queues are clearing earlier than expected. A goal should be to return to normal time of day operation as soon as possible after diverted traffic has cleared a section of the route.

Upon termination of the diversion route, RTMC staff will download the appropriate command to the signal group. This will return the signals to their standard operations. RTMC staff should be familiar with the standard programming and monitor the appropriate ATMS platform to verify the status of the download and make sure the intersections transition back to pre-diversion route conditions, ensuring there are no issues following the download, such as flashing intersections, incorrect coordination patterns, coordination failures, or inappropriate signal sequences.

Appendix A – I-75 Diversion Route Quick Guide

I-75 Diversion Routes

Route	To-From	Flex Group	Detail Page
1	CR 673-SR 48		10-11
2	SR 48 - CR 673		12-13
3	CR 673-SR 48		14-15
4	SR 48 - CR 673		16-17
5	SR 48-CR 470		18-19
6	CR 470 - SR 48		20-21
7	SR 48-CR 470		22-23
8	CR 470 - SR 48		24-25
9	CR 470-SR 44		26-27
10	SR 44 - CR 470		28-29
11	SR 44- CR 484		30-31
12	CR 484 - SR 44		32-33
13	SR 44- CR 484		34-35
14	CR 484 - SR 44		36-37
15	CR 484-SR 200	HNTB_Route 15_Diversion	38-39
16	SR 200 - CR 484	HNTB_Route 16_Diversion	40-41
17	CR 484-SR 200	HNTB_Route 17_Diversion	42-43
18	SR 200 - CR 484	HNTB_Route 18_Diversion	44-45
19	SR 200-SR 40	HNTB_Route 19_Diversion	46-47
20	SR 40 - SR 200	HNTB_Route 20_Diversion	48-49
21	SR 200-SR 40	HNTB_Route 21_Diversion	50-51
22	SR 40 - SR 200	HNTB_Route 22_Diversion	52-53
23	SR 40-US 27	HNTB_Route 23_Diversion	54-55
24	US 27 - SR 40	HNTB_Route 24_Diversion	56-57
25	SR 40-US 27	HNTB_Route 25_Diversion	58-59
26	US 27 - SR 40	HNTB_Route 26_Diversion	60-61
27	SR 40-US 27	HNTB_Route 27_Diversion	62-63
28	US 27 - SR 40	HNTB_Route 28_Diversion	64-65
29	US 27-CR 326	HNTB_Route 29_Diversion	66-67
30	CR 326 - US 27	HNTB_Route 30_Diversion	68-69
31	US 27-CR 326	HNTB_Route 31_Diversion	70-71
32	CR 326 - US 27	HNTB_Route 32_Diversion	72-73
33	CR 326-CR 318		74-75
34	CR 318 - CR 326		76-77
35	CR 326-CR 318		78-79
36	CR 318 - CR 326		80-81
37	CR 318-CR 234		82-83
38	CR 234 - CR 318		84-85
39	CR 318-CR 234		86-87
40	CR 234 - CR 318		88-89
AA	SR 200 - SR 40	HNTB_Route AA_Diversion	90-91
BB	SR 40- SR 200	HNTB_Route BB_Diversion	92-93

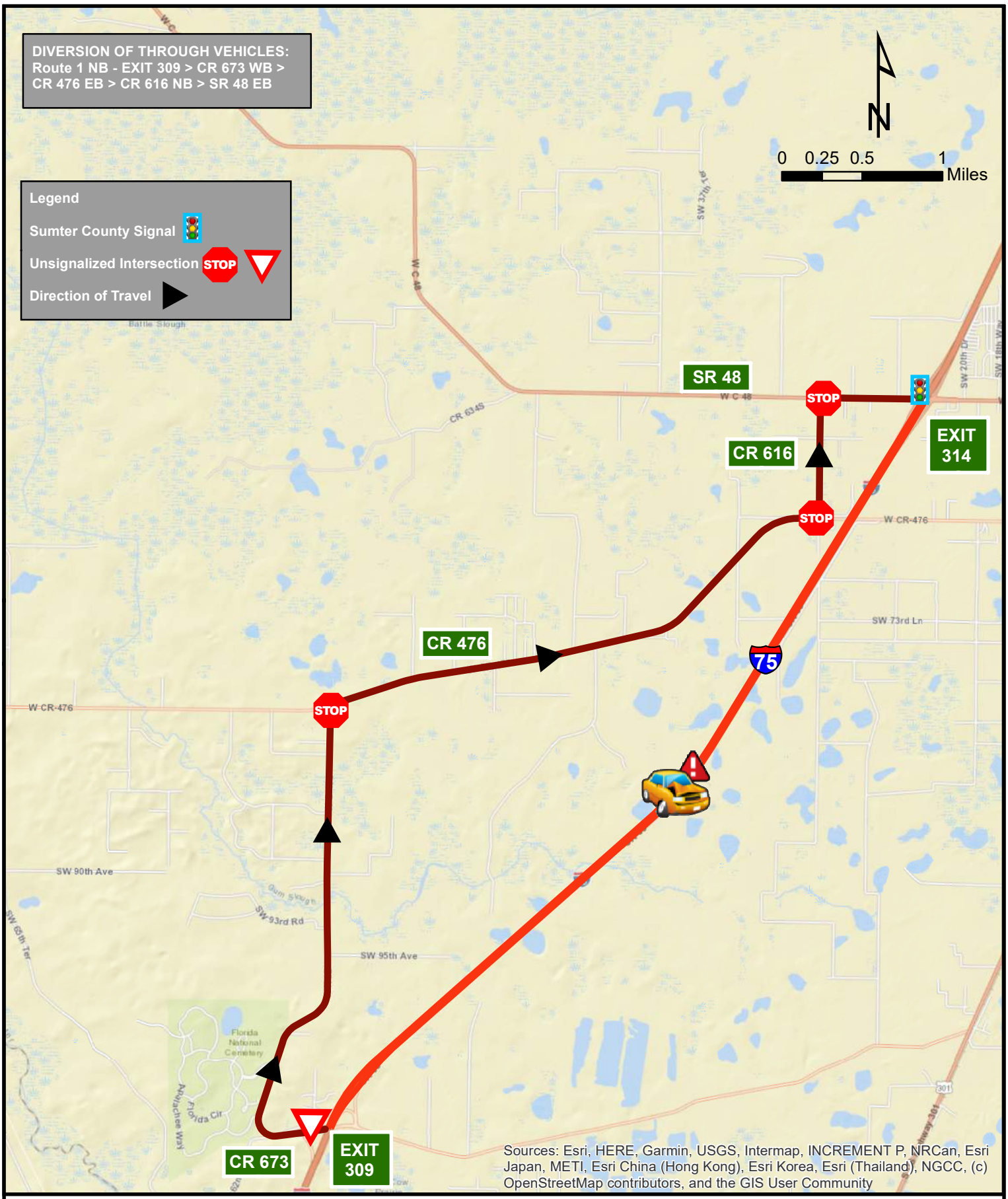


FDOT

District 5 Integrated Corridor Management

Route 1 Timing Pattern

Route 1		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 48 and I-75 SB Ramp	Sumter County	1/1/1	



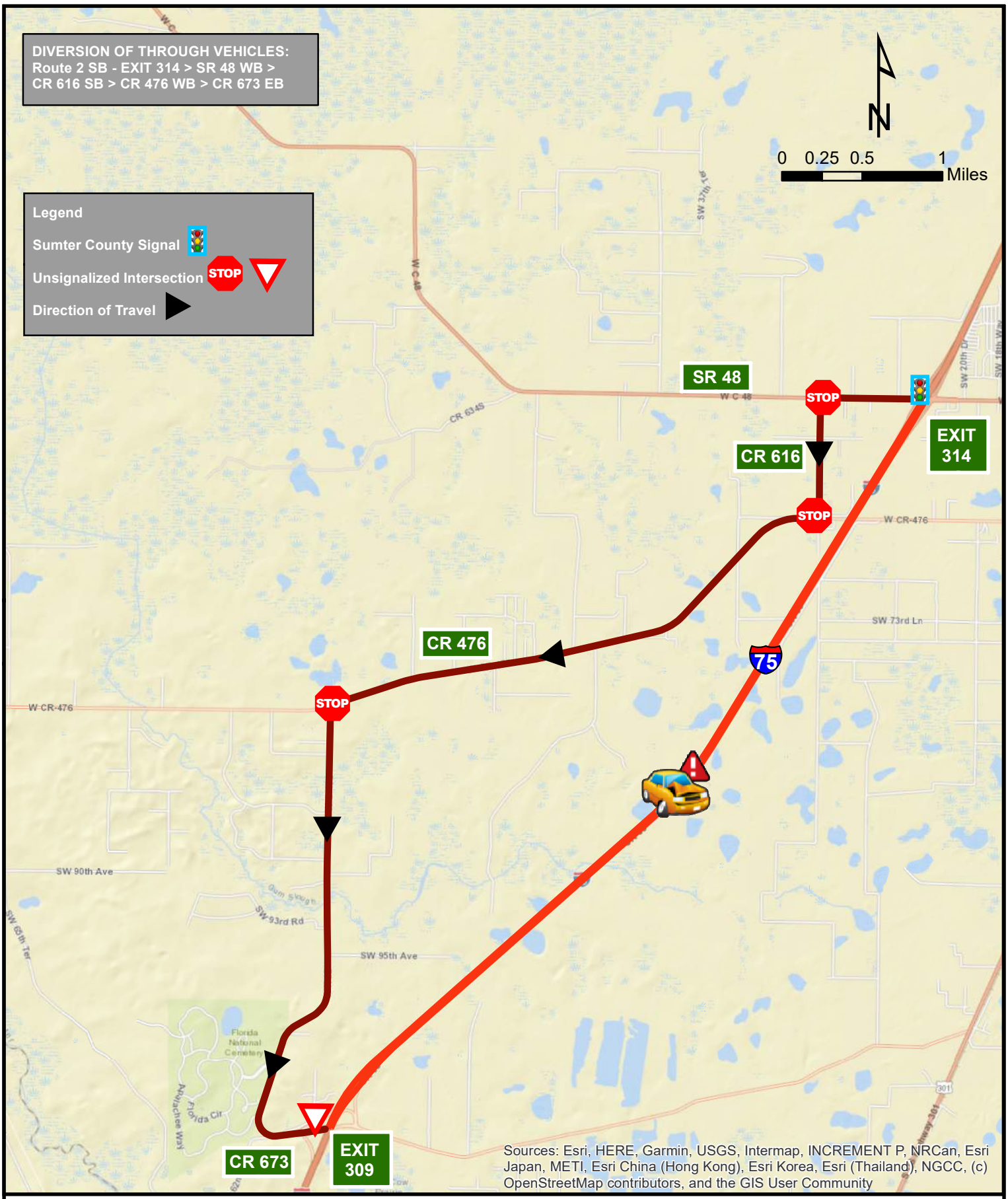
District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 309.25 (CR 673) to MM 314.5 (SR 48)

Route 1 NB

Route 2 Timing Pattern

Route 2		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 48 and I-75 SB Ramp	Sumter County	1/2/1	



District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 314.5 (SR 48) to MM 309.25 (CR 673)

Route 2 SB

Route 3 Timing Pattern

Route 3		Cycle Length = 190 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	US 301 and CR 476 West	Sumter County	3/1/1	
	US 301 and Noble Ave	Sumter County	3/1/1	
	Main St and Belt Ave	Sumter County	3/1/1	
	SR 48 and N West St	Sumter County	3/1/1	
	SR 48 and Lowery St	Sumter County	3/1/1	

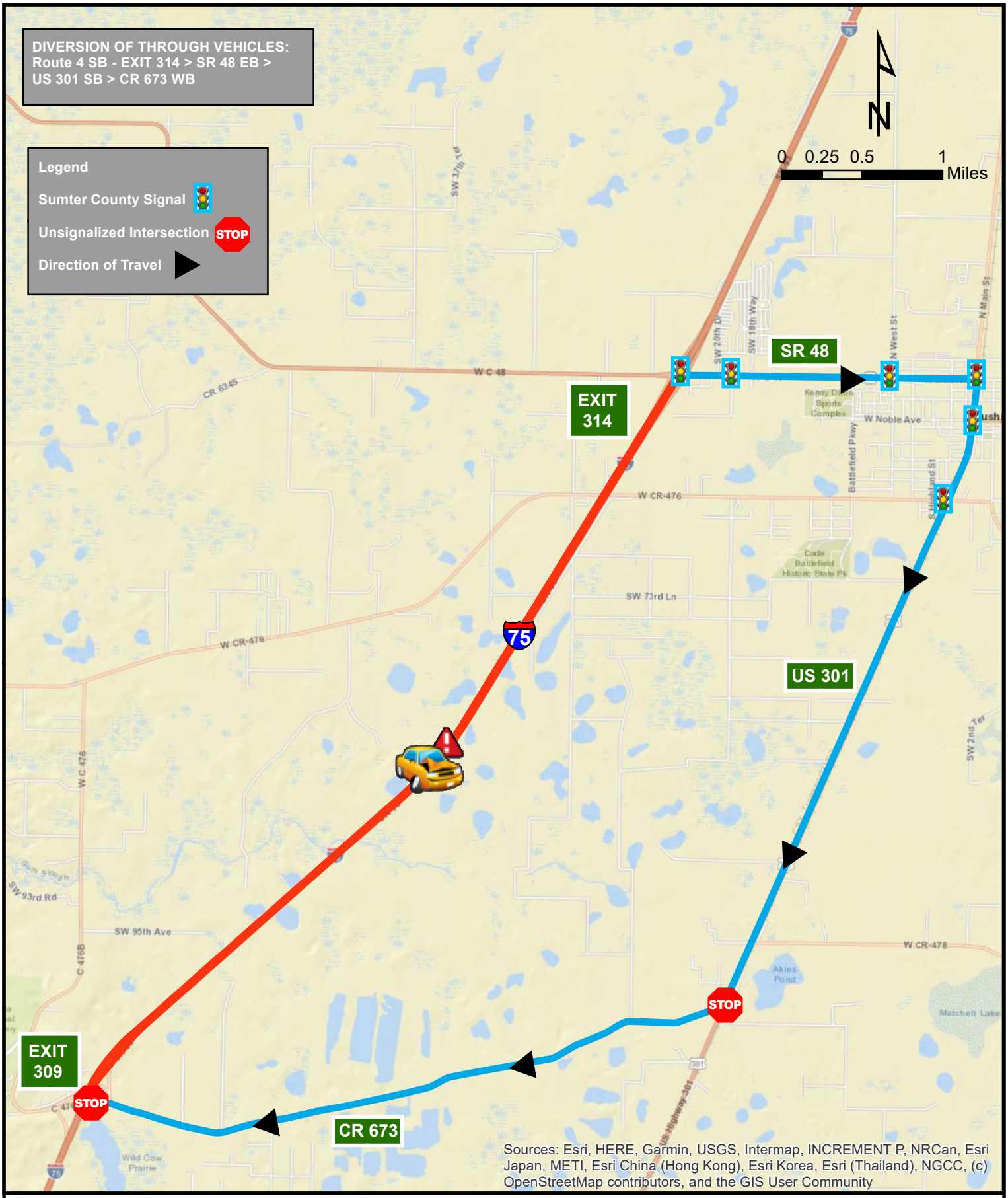
District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 309.25 (CR 673) to MM 314.5 (SR 48)

Route 3 NB

Route 4 Timing Pattern

Route 4		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 48 and I-75 SB Ramp	Sumter County	3/2/1	
	SR 48 and Lowery St	Sumter County	3/2/1	
	SR 48 and N West St	Sumter County	3/2/1	
	Main St and Belt Ave	Sumter County	3/2/1	
	US 301 and Noble Ave	Sumter County	3/2/1	
	US 301 and CR 476	Sumter County	3/2/1	



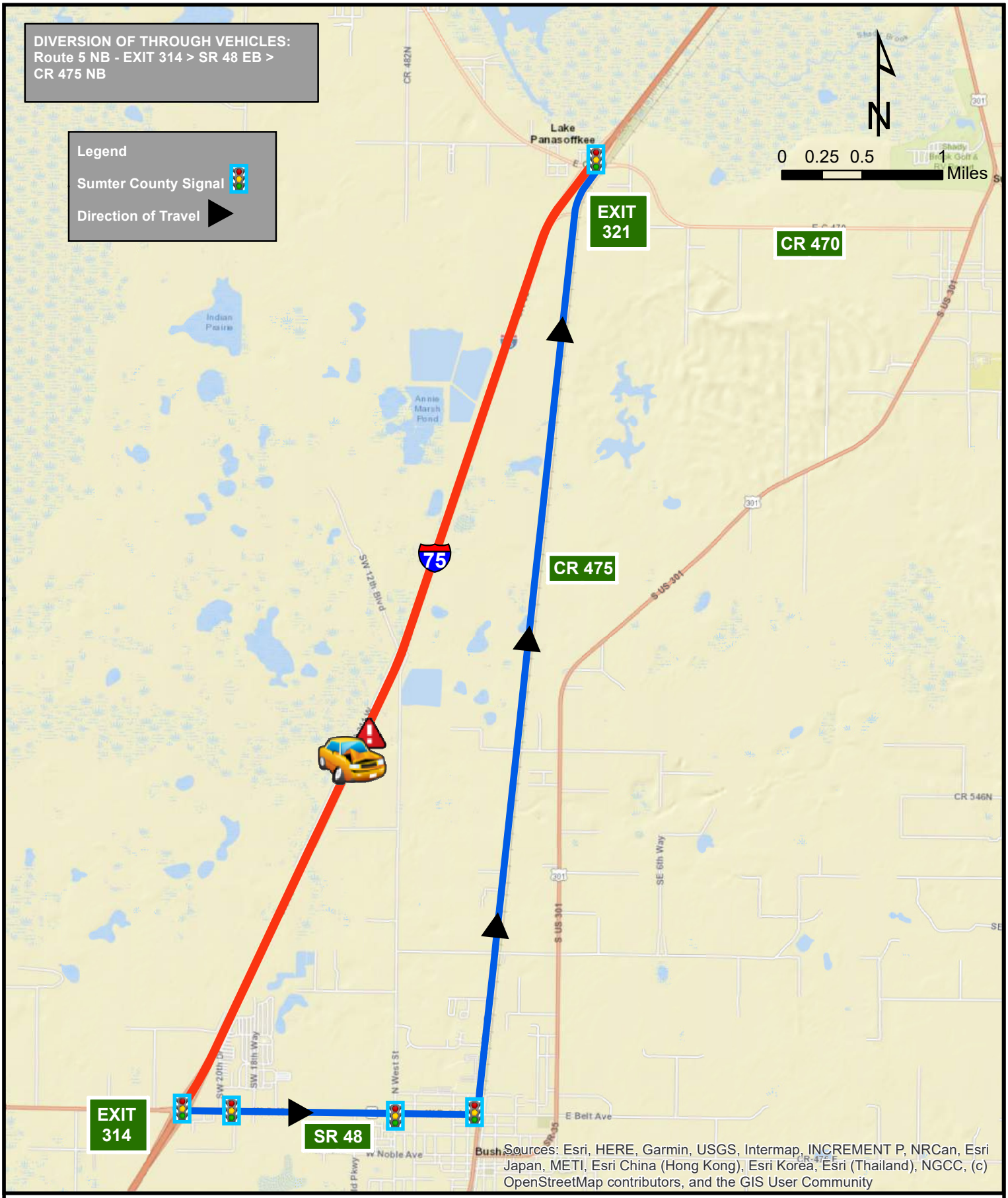
District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 314.5 (SR 48) to MM 309.25 (CR 673)

Route 4 SB

Route 5 Timing Pattern

Route 5		Cycle Length = 190 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 48 and Lowery St	Sumter County	3/3/1	
	SR 48 and West St	Sumter County	3/3/1	
	Main St and Belt Ave	Sumter County	3/3/1	
	CR 470 and I-75 NB Ramp	Sumter County	3/3/1	
	CR 470 and I-75 SB Ramp	Sumter County	3/3/1	



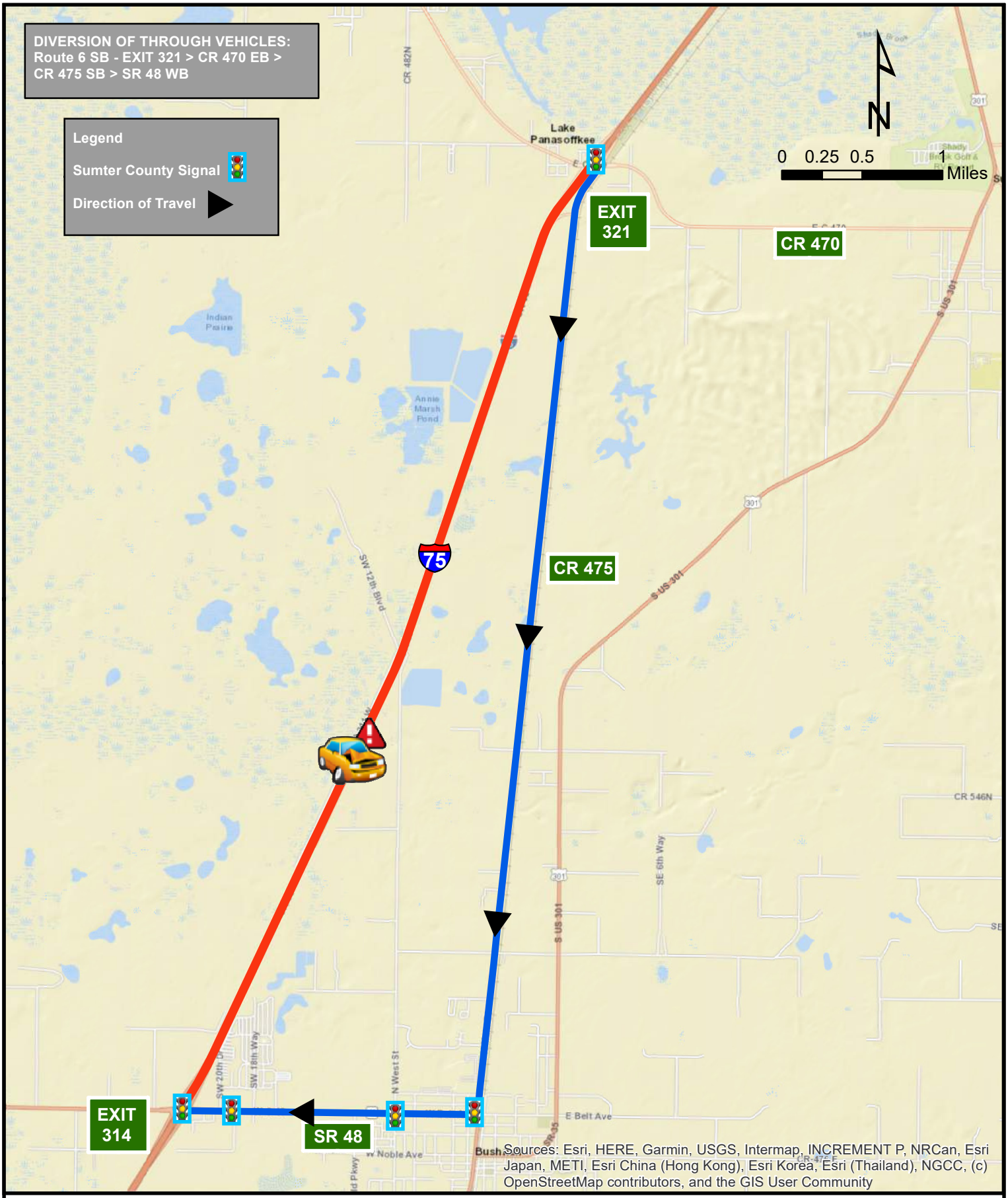
District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 314.5 (SR 48) to MM 321.5 (CR 470)

Route 5 NB

Route 6 Timing Pattern

Route 6		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 470 and I-75 SB Ramp	Sumter County	3/4/1	
	CR 470 and I-75 NB Ramp	Sumter County	3/4/1	
	Main St and Belt Ave	Sumter County	3/4/1	
	SR 48 and West St	Sumter County	3/4/1	
	SR 48 and Lowery St	Sumter County	3/4/1	
	SR 48 and I-75 SB Ramp	Sumter County	3/4/1	



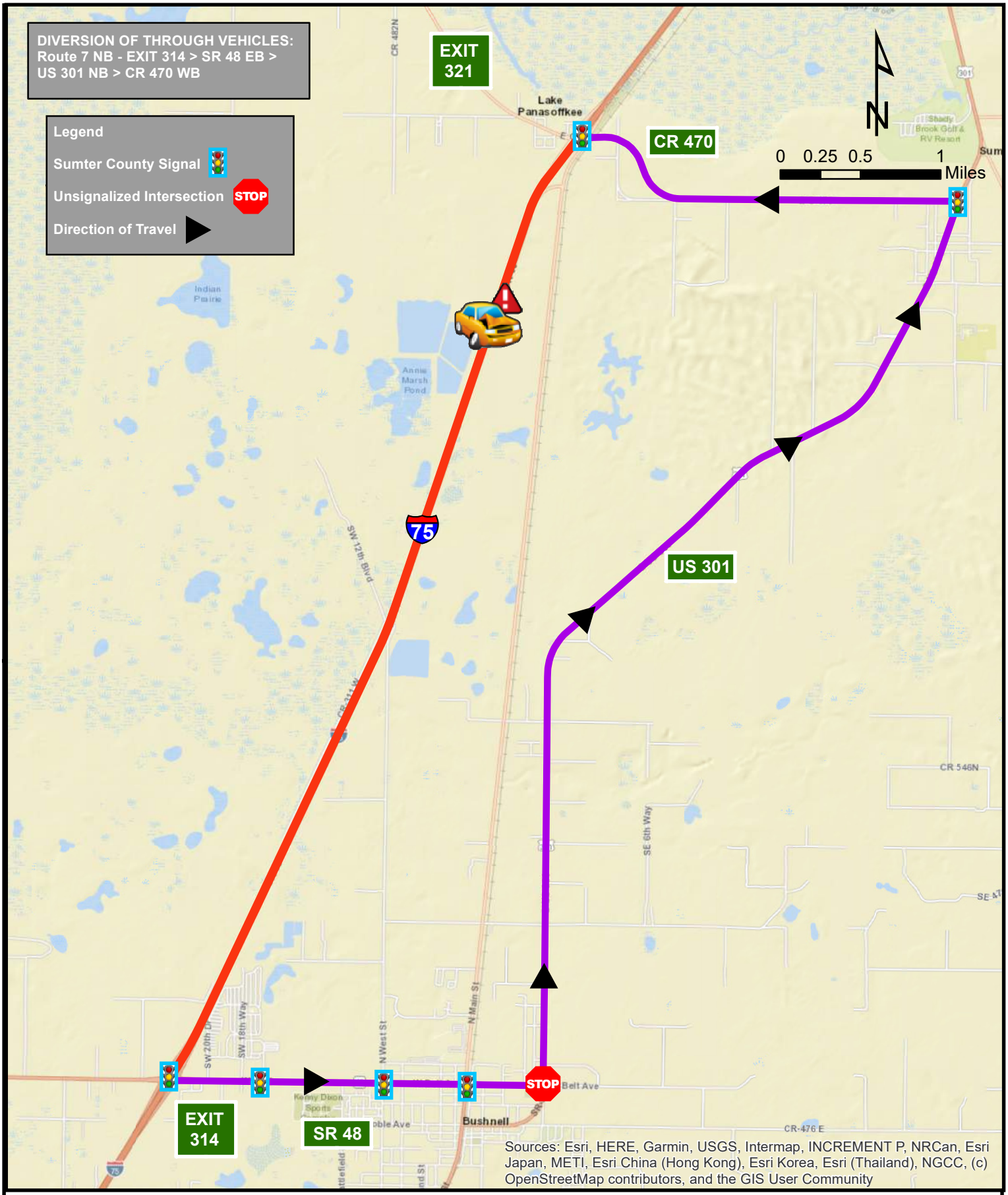
District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 321.5 (CR 470) to MM 314.5 (SR 48)

Route 6 SB

Route 7 Timing Pattern

Route 7		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 48 and Lowery St	Sumter County	4/1/1	
	SR 48 and West St	Sumter County	4/1/1	
	Main St and Belt Ave	Sumter County	4/1/1	
	US 301 and CR 470	Sumter County	4/1/1	
	CR 470 and I-75 NB Ramp	Sumter County	4/1/1	
	CR 470 and I-75 SB Ramp	Sumter County	4/1/1	



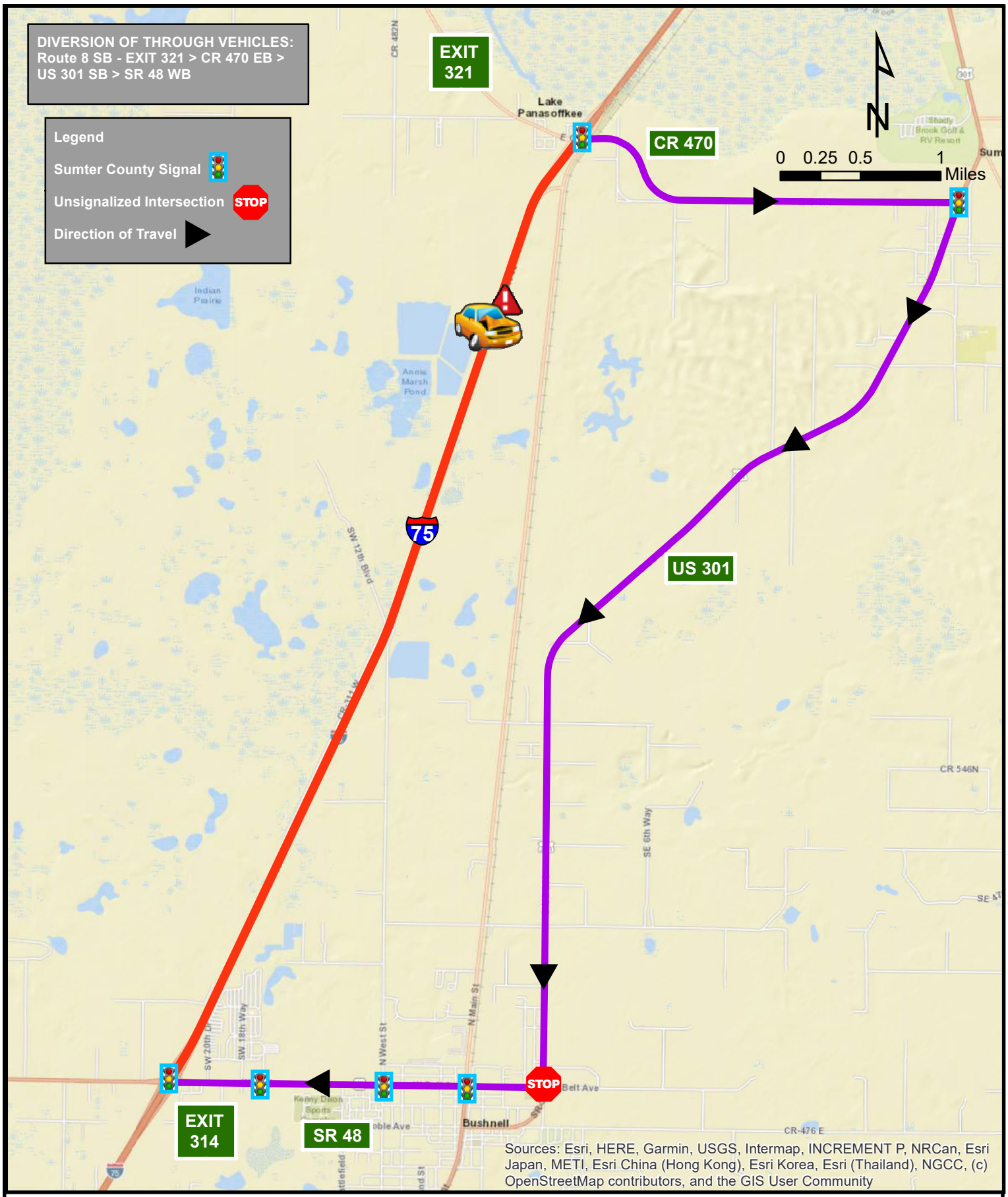
District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 314.5 (SR 48) to MM 321.5 (CR 470)

Route 7 NB

Route 8 Timing Pattern

Route 8		Cycle Length = 190 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 470 and I-75 SB Ramp	Sumter County	4/2/1	
	CR 470 and I-75 NB Ramp	Sumter County	4/2/1	
	US 301 and CR 470 West	Sumter County	4/2/1	
	Main St and Belt Ave	Sumter County	4/2/1	
	SR 48 and West St	Sumter County	4/2/1	
	SR 48 and Lowery St	Sumter County	4/2/1	
	SR 48 and I-75 SB Ramp	Sumter County	4/2/1	



District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 321.5 (CR 470) to MM 314.5 (SR 48)

Route 8 SB

Route 9 Timing Pattern

Route 9		Cycle Length = 190 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 470 and I-75 NB Ramp	Sumter County	4/3/1	
	CR 470 and I-75 SB Ramp	Sumter County	4/3/1	
	SR 44 and I-75 SB Ramp	Sumter County	4/3/1	
	SR 44 and I-75 NB Ramp	Sumter County	4/3/1	

District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 321.5 (CR 470) to MM 329.5 (SR 44)

Route 9 NB

Route 10 Timing Pattern

Route 10		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 44 and I-75 NB Ramp	Sumter County	4/4/1	
	SR 44 and I-75 SB Ramp	Sumter County	4/4/1	
	CR 470 and I-75 SB Ramp	Sumter County	4/4/1	
	CR 470 and I-75 NB Ramp	Sumter County	4/4/1	

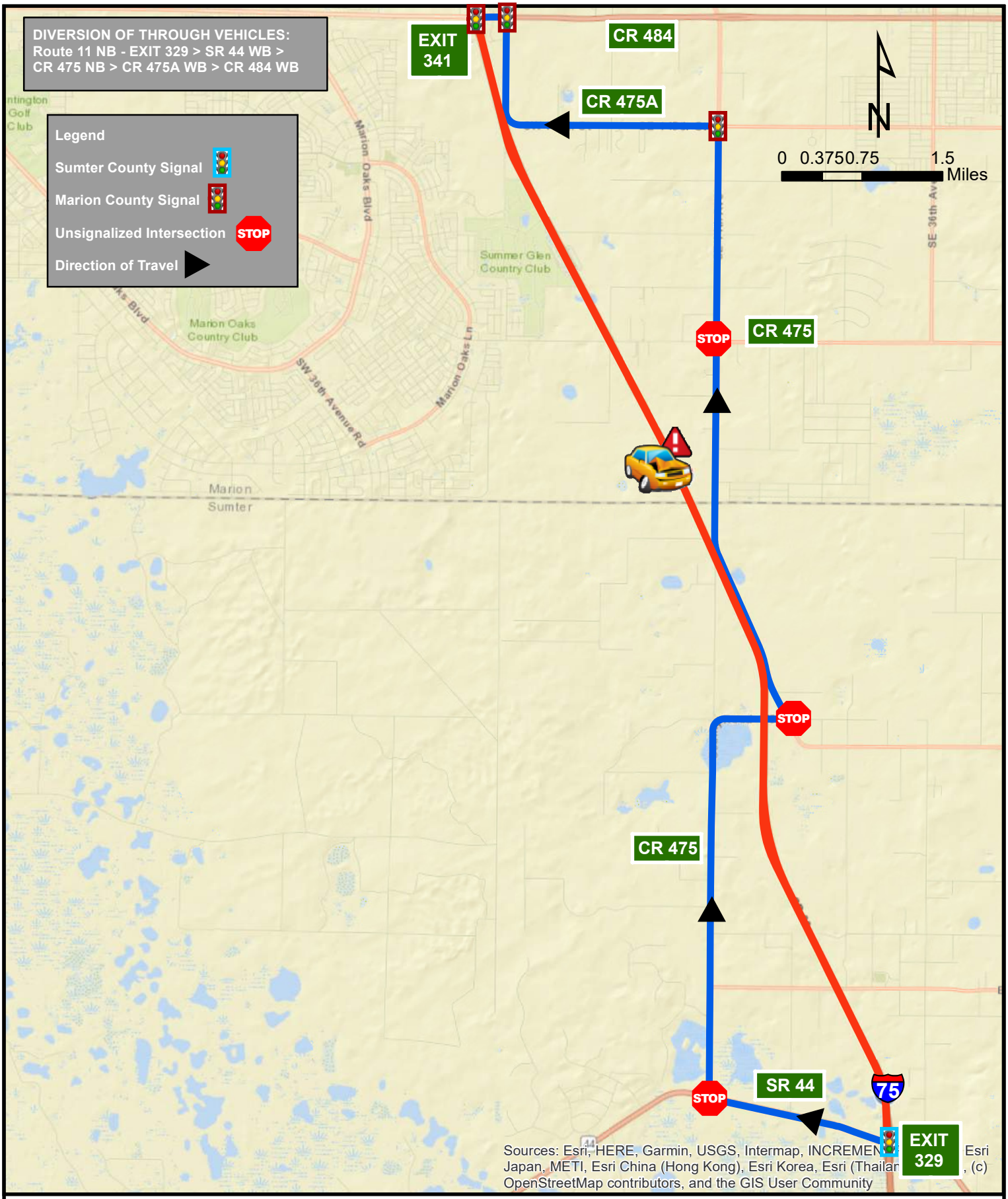
District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 329.5 (SR 44) to MM 321.5 (CR 470)

Route 10 SB

Route 11 Timing Pattern

Route 11		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 44 and I-75 NB Ramp	Sumter County	2/1/1	
	SR 44 and I-75 SB Ramp	Sumter County	2/1/1	
	CR 484 and SW 16th Ave	Marion County	1/2/1	
	CR 484 and I-75 NB Ramp	Marion County	1/2/1	
	CR 484 and I-75 SB Ramp	Marion County	1/2/1	



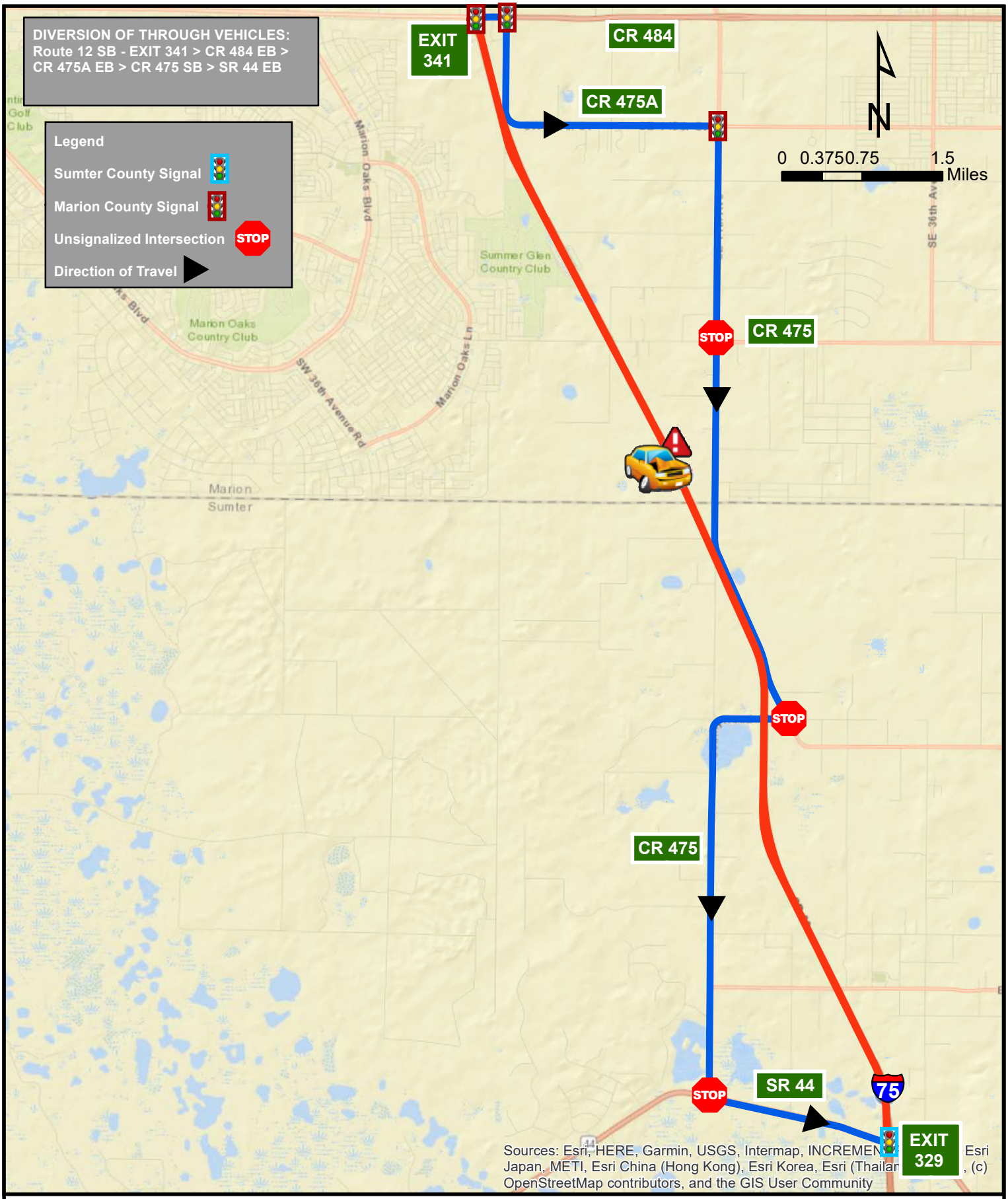
District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 329.5 (SR 44) to MM 341.5 (CR 484)

Route 11 NB

Route 12 Timing Pattern

Route 12		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 484 and I-75 SB Ramp	Marion County	2/2/1	
	CR 484 and I-75 NB Ramp	Marion County	2/2/1	
	CR 484 and SW 16th Ave	Marion County	2/2/1	
	SR 44 and I-75 SB Ramp	Sumter County	2/2/1	
	SR 44 and I-75 NB Ramp	Sumter County	2/2/1	



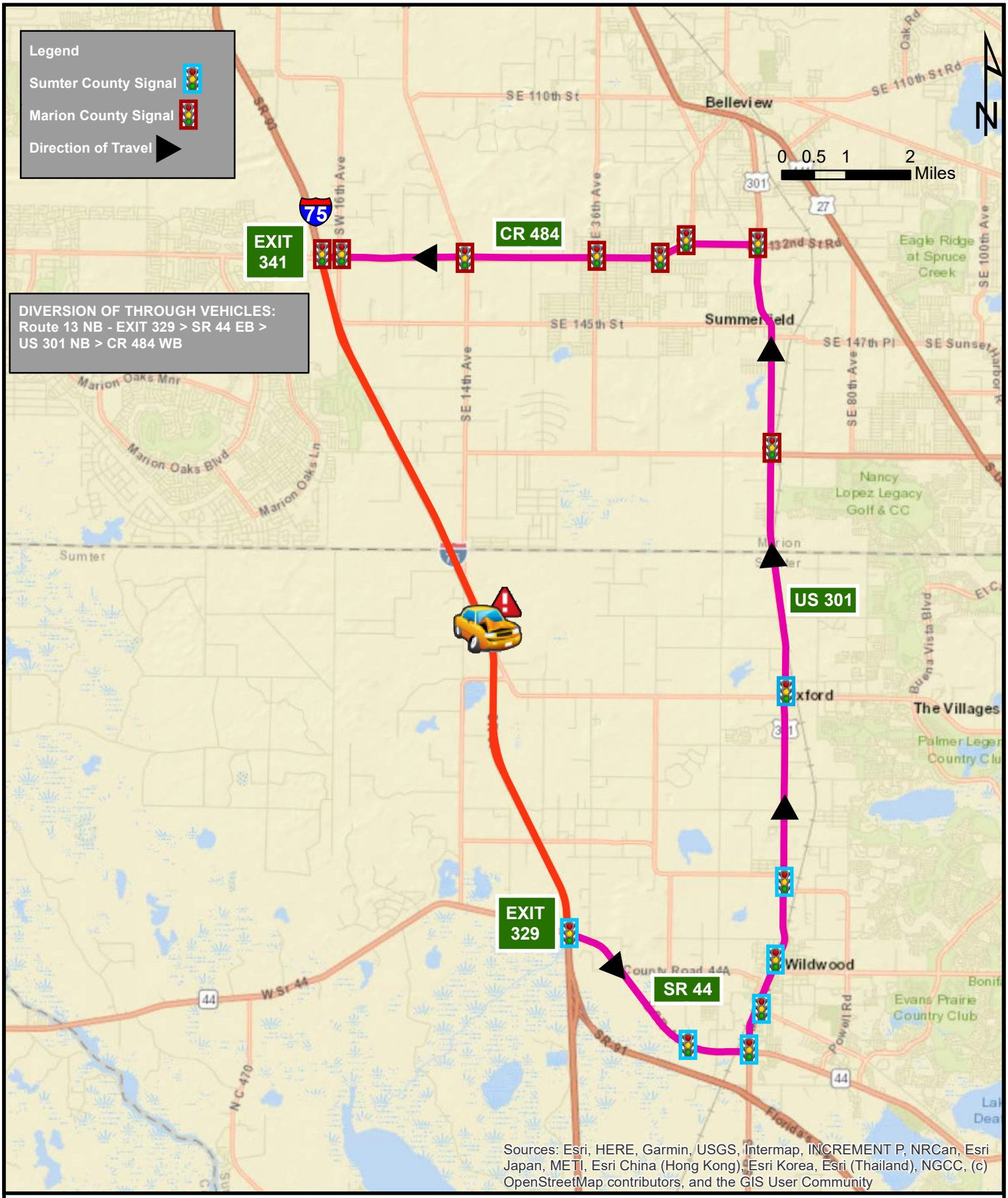
District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 341.5 (CR 484) to MM 329.5 (SR 44)

Route 12 SB

Route 13 Timing Pattern

Route 13		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 44 and I-75 SB Ramp	Sumter County	2/3/1	
	SR 44 and I-75 NB Ramp	Sumter County	2/3/1	
	SR 44 and Industrial Dr	Sumter County	2/3/1	
	SR 44 and US 301	Sumter County	50	
	US 301 and CR 44A	Sumter County	50	
	US 301 and CR 466A	Sumter County	50	
	US 301 and CR 462	Sumter County	50	
	US 301 and CR 466	Sumter County	50	
	US 301 and CR 42	Marion County	2/3/1	
	US 301 and SE 132nd St Rd	Marion County	2/3/1	
	CR 484 and SE 132nd Rd	Marion County	2/3/1	
	CR 484 and SE 47th Ave	Marion County	2/3/1	
	CR 484 and CR 467	Marion County	2/3/1	
	CR 484 and CR 475	Marion County	2/3/1	
	CR 484 and SW 16th Ave	Marion County	2/3/1	
	CR 484 and I-75 NB Ramp	Marion County	2/3/1	
	CR 484 and I-75 SB Ramp	Marion County	2/3/1	



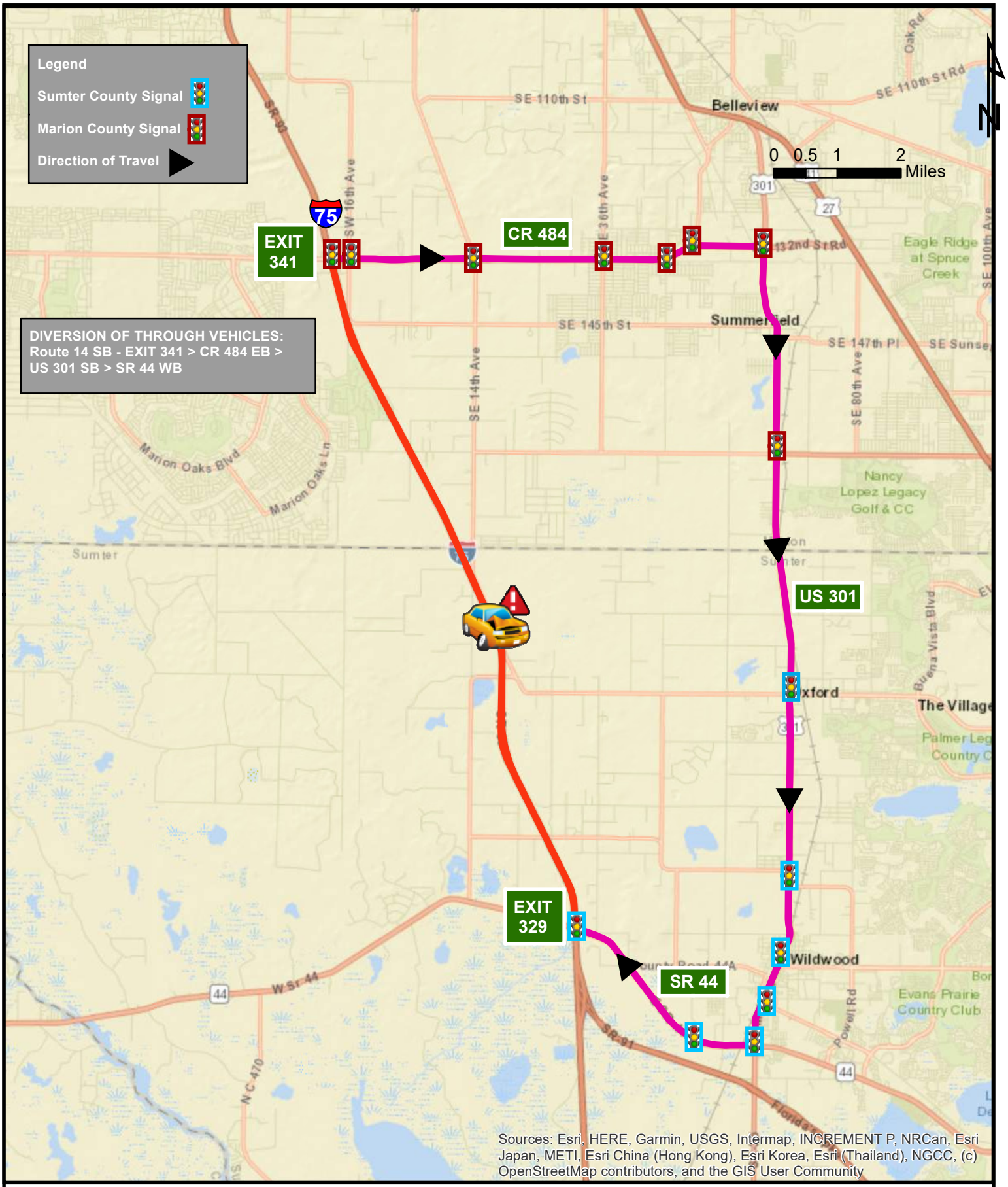
District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 329.5 (SR 44) to MM 341.5 (CR 484)

Route 13 NB

Route 14 Timing Pattern

Route 14		Cycle Length = 190 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 484 and I-75 SB Ramp	Marion County	2/4/1	
	CR 484 and I-75 NB Ramp	Marion County	2/4/1	
	CR 484 and SW 16th Ave	Marion County	2/4/1	
	CR 484 and CR 475	Marion County	2/4/1	
	CR 484 and CR 467	Marion County	2/4/1	
	CR 484 and SE 47th Ave	Marion County	2/4/1	
	CR 484 and SE 132nd Rd	Marion County	2/4/1	
	US 301 and SE 132nd St Rd	Marion County	2/4/1	
	US 301 and CR 42	Marion County	2/4/1	
	US 301 and CR 466	Sumter County	51	
	US 301 and CR 462	Sumter County	51	
	US 301 and CR 466A	Sumter County	51	
	US 301 and CR 44A	Sumter County	51	
	SR 44 and US 301	Sumter County	51	
	SR 44 and Industrial Dr	Sumter County	2/4/1	
	SR 44 and I-75 NB Ramp	Sumter County	2/4/1	
	SR 44 and I-75 SB Ramp	Sumter County	2/4/1	



District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 341.5 (CR 484) to MM 329.5 (SR 44)

Route 14 SB

Route 15 Timing Pattern

Route 15		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 484 and I-75 NB Ramp	Marion County	3//2/1	
	CR 484 and I-75 SB Ramp	Marion County	3/2/1	
	CR 484 and SW 20 Ave Rd	Marion County	3/2/1	
	CR 484 and Marion Oaks Blvd	Marion County	3/2/1	
	CR 484 and SW 45th Ave	Marion County	3/2/1	
	Marion Oaks Trail and SW 48th Ter	Marion County	3/2/1	
	SW 49th Ave and SW 103rd St Rd	Marion County	3/2/1	
	SW 49th Ave and SW 95th St	Marion County	3/2/1	
	SW 95th St Rd and SW 60th Ave	Marion County	3/2/1	
	SW 60th Ave and SW 85th St	Marion County	3/2/1	
	SR 200 and SW 60th Ave	Marion County	3/2/1	
	SR 200 and SW 66th St	Marion County	3/2/1	
227	SR 200 and SW 60th St/Tartan Rd	City of Ocala	16	HNTB_Route 15_Diversion
212	SR 200 and 48th Ave	City of Ocala	16	
230	SR 200 and SW 44th Ct	City of Ocala	16	
231	SR 200 and SW 43rd St	City of Ocala	16	
199	SR 200 and SW 38th Ct	City of Ocala	16	
200	SR 200 and I-75 SB Ramp	City of Ocala	16	
201	SR 200 and I-75 NB Ramp	City of Ocala	16	

Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 15> CTRL All signals> Right Click> Instant Pattern> 16> Duration 254>Download

De-active Flex Group

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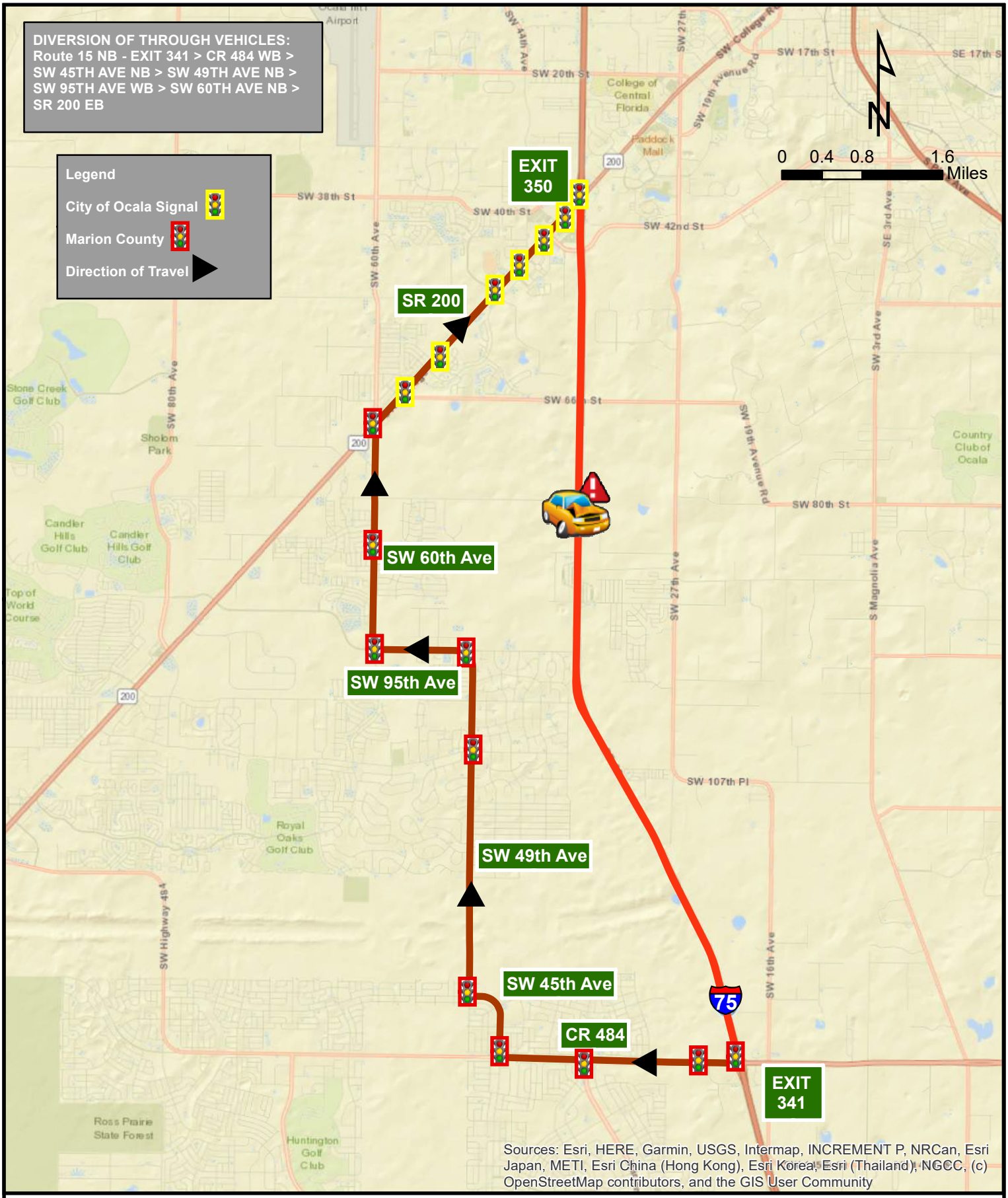

District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 341.5 (CR 484) to MM 350.5 (SR 200)

Route 15 NB

Route 16 Timing Pattern

Route 16		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
201	SR 200 and I-75 NB Ramp	City of Ocala	17	HNTB_Route 17_Diversion
200	SR 200 and I-75 SB Ramp	City of Ocala	17	
199	SR 200 and SW 38th Ct	City of Ocala	17	
231	SR 200 and SW 43rd St	City of Ocala	17	
230	SR 200 and SW 44th Ct	City of Ocala	17	
212	SR 200 and 48th Ave	City of Ocala	17	
227	SR 200 and SW 60th St/Tartan Rd	City of Ocala	17	
	SR 200 and SW 66th St	Marion County	4/2/1	
	SR 200 and SW 60th Ave	Marion County	4/2/1	
	SW 60th Ave and SW 85th St	Marion County	4/2/1	
	SW 95th St Rd and SW 60th Ave	Marion County	4/2/1	
	SW 49th Ave and SW 95th St	Marion County	4/2/1	
	SW 49th Ave and SW 103rd St Rd	Marion County	4/2/1	
	Marion Oaks Trail and SW 48th Ter	Marion County	4/2/1	
	CR 484 and SW 45th Ave	Marion County	4/2/1	
	CR 484 and Marion Oaks Blvd	Marion County	4/2/1	
	CR 484 and SW 20 Ave Rd	Marion County	4/2/1	
	CR 484 and I-75 SB Ramp	Marion County	4/2/1	
	CR 484 and I-75 NB Ramp	Marion County	4/2/1	

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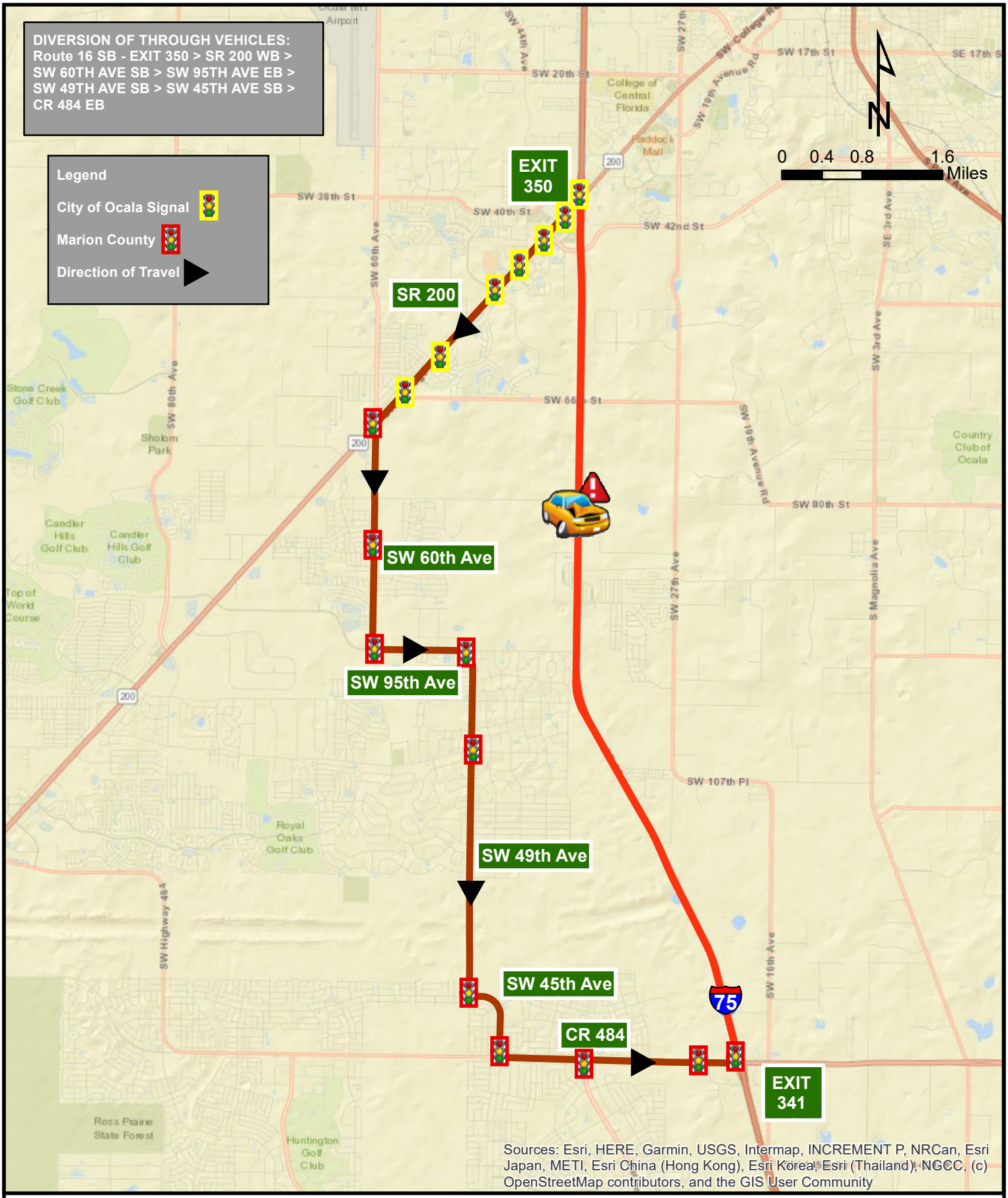

District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 350.5 (SR 200) to MM 341.5 (CR 484)

Route 16 SB

Route 17 Timing Pattern

Route 17		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 484 and I-75 SB Ramp	Marion County	3/3/1	
	CR 484 and I-75 NB Ramp	Marion County	3/3/1	
	CR 484 and SW 16th Ave	Marion County	3/3/1	
	CR 475A and SW 66th St	Marion County	3/3/1	
221	CR 475A/SW 27th Ave and SW 42nd St	City of Ocala	18	HNTB_Route 17_Diversion
232	SW 42nd St and SW 31st Ave	City of Ocala	18	
231	SR 200 and SW 43rd St	City of Ocala	18	
199	SR 200 and SW 38th Ct	City of Ocala	18	
200	SR 200 and I-75 SB Ramp	City of Ocala	18	
201	SR 200 and I-75 NB Ramp	City of Ocala	18	

Flex Group on ATMS. now

Activate Flex Group

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District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 341.5 (CR 484) to MM 350.5 (SR 200)

Route 17 NB

Route 18 Timing Pattern

Route 18		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
201	SR 200 and I-75 NB Ramp	City of Ocala	19	HNTB_Route 18_Diversion
200	SR 200 and I-75 SB Ramp	City of Ocala	19	
199	SR 200 and SW 38th Ct	City of Ocala	19	
231	SR 200 and SW 43rd St	City of Ocala	19	
232	SW 42nd St and SW 31st Ave	City of Ocala	19	
221	CR 475A/SW 27th Ave and SW 42nd St	City of Ocala	19	
	CR 475A and SW 66th St	Marion County	4/3/1	
	CR 484 and SW 16th Ave	Marion County	4/3/1	
	CR 484 and I-75 NB Ramp	Marion County	4/3/1	
	CR 484 and I-75 SB Ramp	Marion County	4/3/1	

Flex Group on ATMS. now

Activate Flex Group

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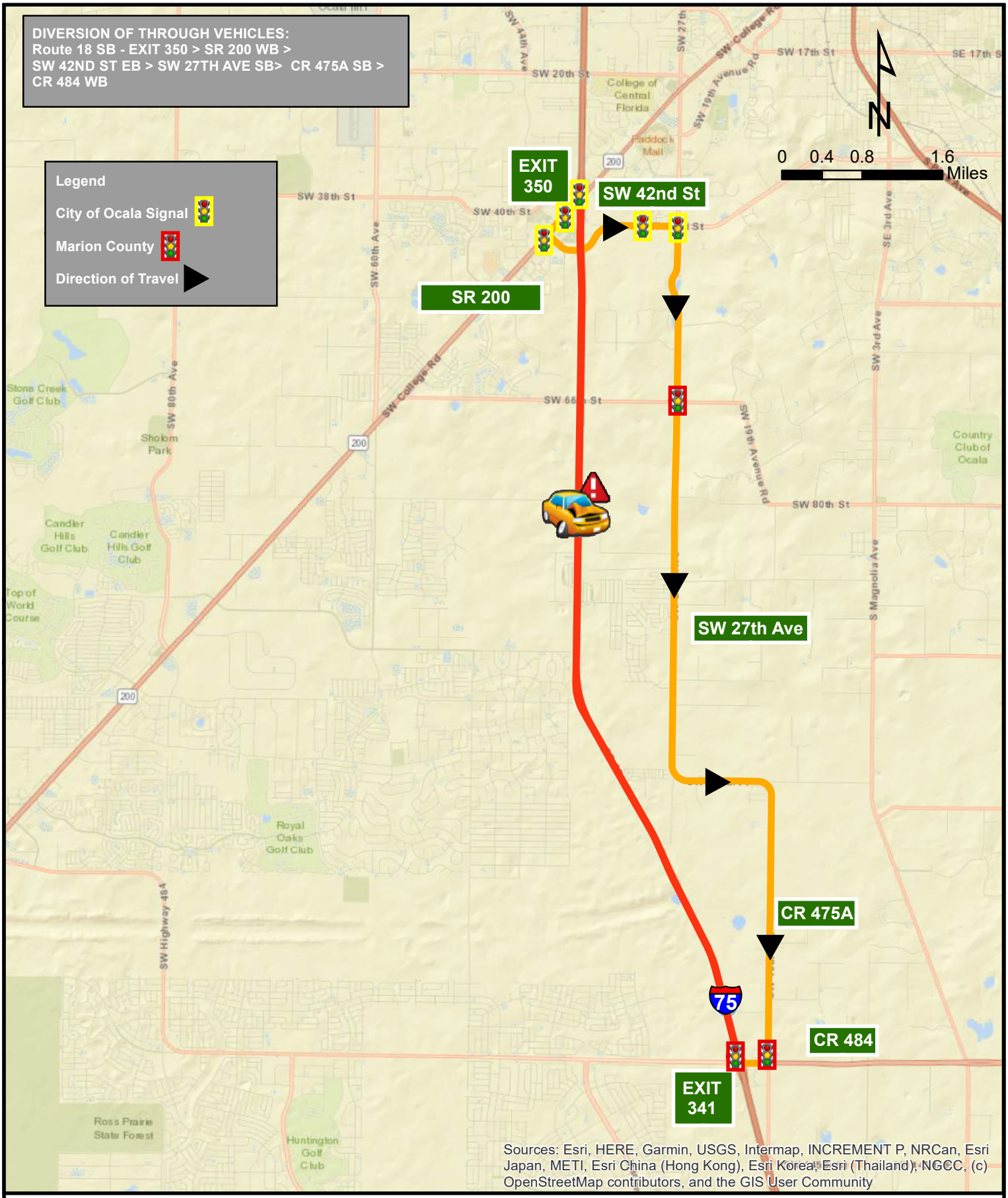

District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 350.5 (SR 200) to MM 341.5 (CR 484)

Route 18 SB

Route 19 Timing Pattern

Route 19		Cycle Length = 210 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
201	SR 200 and I-75 NB Ramp	City of Ocala	20	HNTB_Route 19_Diversion
200	SR 200 and I-75 SB Ramp	City of Ocala	20	
199	SR 200 and SW 38th Ct	City of Ocala	20	
231	SR 200 and SW 43rd St	City of Ocala	20	
230	SR 200 and SW 44th Ct	City of Ocala	20	
212	SR 200 and 48th Ave	City of Ocala	20	
227	SR 200 and SW 60th St/Tartan Rd	City of Ocala	20	
	SR 200 and SW 66th St	Marion County	1/4/1	
	SR 200 and SW 60th Ave	Marion County	1/4/1	
	SW 60th Ave and SW 38th St	Marion County	1/4/1	
223	SW 60th Ave and SW 20th St	City of Ocala	20	HNTB_Route 19_Diversion
220	SR 40 and SW 60th Ave	City of Ocala	20	
213	SR 40 and SW 52nd Ave	City of Ocala	20	
214	SR 40 and I-75 SB Ramp	City of Ocala	20	
215	SR 40 and I-75 NB Ramp	City of Ocala	20	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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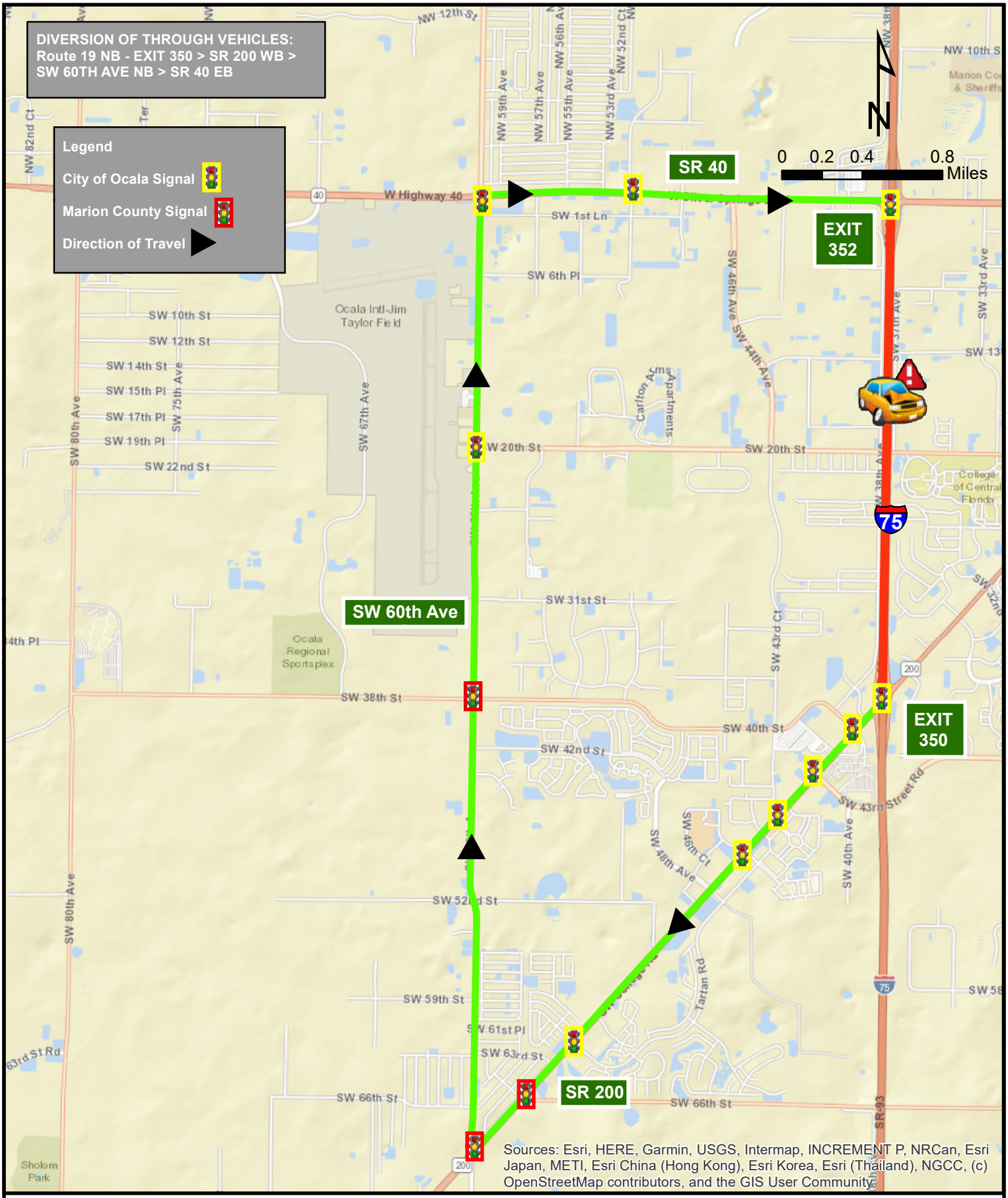

District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 350.5 (SR 200) to MM 352.5 (SR 40)

Route 19 NB

Route 20 Timing Pattern

Route 20		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
215	SR 40 and I-75 NB Ramp	City of Ocala	21	HNTB_Route 20_Diversion
214	SR 40 and I-75 SB Ramp	City of Ocala	21	
213	SR 40 and SW 52nd Ave	City of Ocala	21	
220	SR 40 and SW 60th Ave	City of Ocala	21	
223	SW 60th Ave and SW 20th St	City of Ocala	21	
	SW 60th Ave and SW 38th St	Marion County	2/4/1	
	SR 200 and SW 60th Ave	Marion County	2/4/1	
	SR 200 and SW 66th St	Marion County	2/4/1	
227	SR 200 and SW 60th St/Tartan	City of Ocala	21	HNTB_Route 20_Diversion
212	SR 200 and 48th Ave	City of Ocala	21	
230	SR 200 and SW 44th Ct	City of Ocala	21	
231	SR 200 and SW 43rd St	City of Ocala	21	
199	SR 200 and SW 38th Ct	City of Ocala	21	
200	SR 200 and I-75 SB Ramp	City of Ocala	21	
201	SR 200 and I-75 NB Ramp	City of Ocala	21	

Flex Group on ATMS. now

Activate Flex Group

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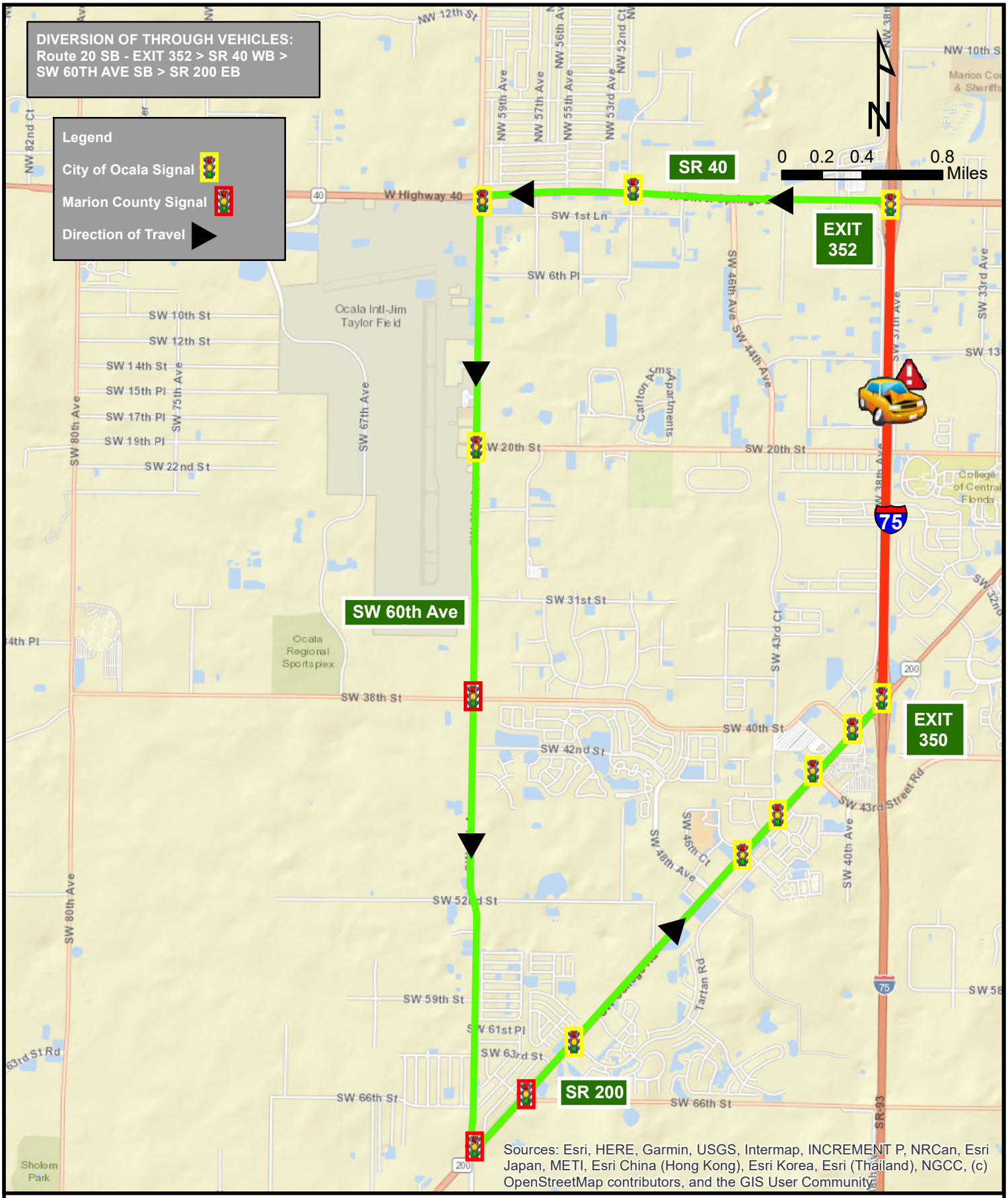
De-active Flex Group

Search> Flex Group HNTB_Route 20> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 352.5 (SR 40) to MM 350.5 (SR 200)

Route 20 SB

Route 21 Timing Pattern

Route 21		Cycle Length = 210 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	
200	SR 200 and I-75 SB Ramp	City of Ocala	22	HNTB_Route 21_Diversion
201	SR 200 and I-75 NB Ramp	City of Ocala	22	
202	SR 200 and SW 35th Ter	City of Ocala	22	
203	SR 200 and SW 34th Ave	City of Ocala	22	
204	SR 200 and SW 32nd Ave	City of Ocala	22	
205	SR 200 and SW 26th St	City of Ocala	22	
206	SR 200 and SW 27th Ave	City of Ocala	22	
218	SW 27th Ave and SW 20th St	City of Ocala	22	
219	SW 27th Ave and SW 10th St	City of Ocala	22	
75	SW 27th Ave and SR 40	City of Ocala	22	
216	SR 40 and SW 33rd Ave	City of Ocala	22	
215	SR 40 and I-75 NB Ramp	City of Ocala	22	
214	SR 40 and I-75 SB Ramp	City of Ocala	22	

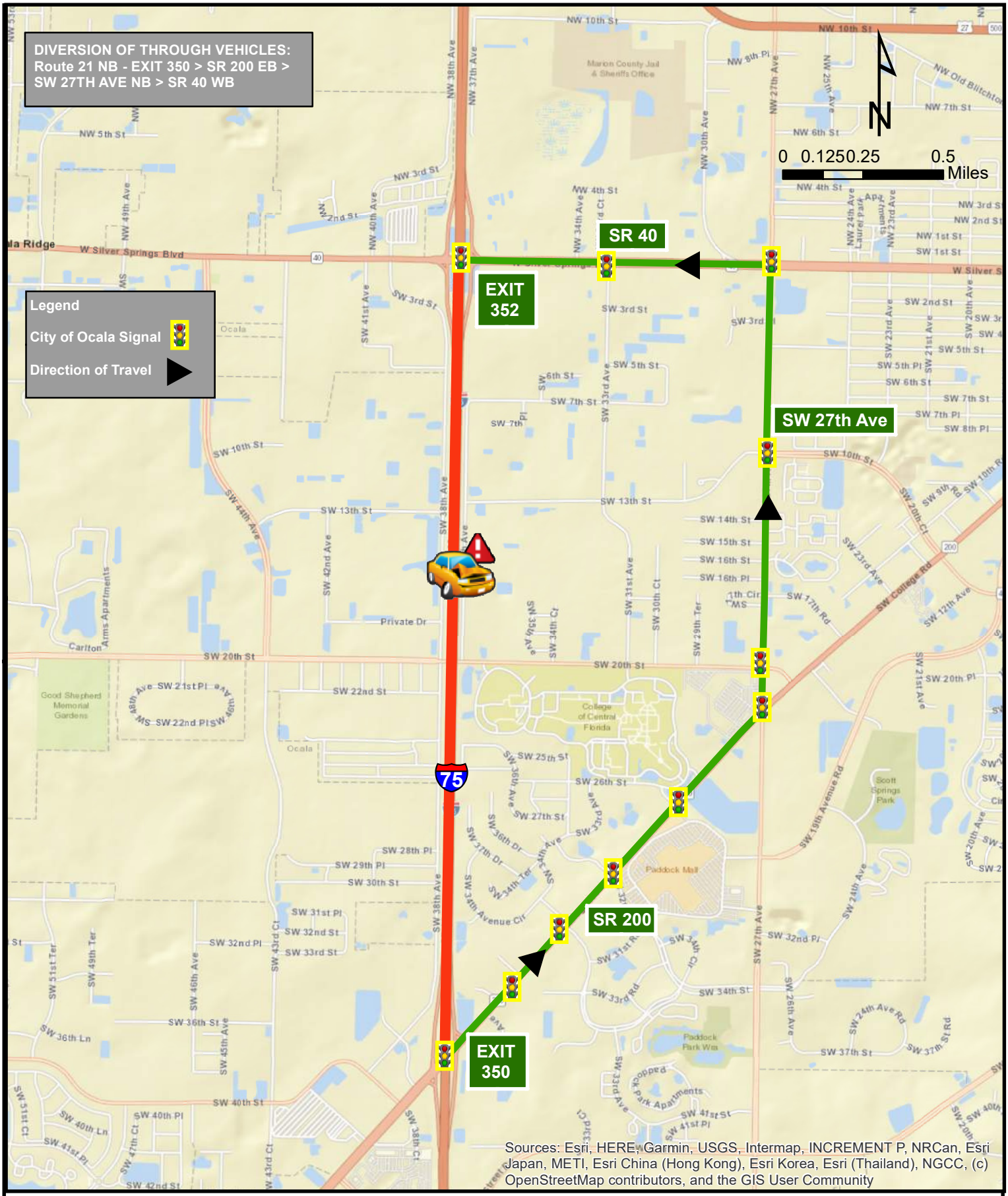
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 21> CTRL All signals> Right Click>Instant Pattern> 22> Duration 254> Download

De-active Flex Group

Search> Flex Group HNTB_Route 21> CTRL All signals> Right Click> Instant Pattern> Revert> Download



District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 350.5 (SR 200) to MM 352.5 (SR 40)

Route 21 NB

Route 22 Timing Pattern

Route 22		Cycle Length = 210 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Flex Group**
214	SR 40 and I-75 SB Ramp	City of Ocala	23	HNTB_Route 22_Diversion
215	SR 40 and I-75 NB Ramp	City of Ocala	23	
216	SR 40 and SW 33rd Ave	City of Ocala	23	
75	SW 27th Ave and SR 40	City of Ocala	23	
219	SW 27th Ave and SW 10th St	City of Ocala	23	
218	SW 27th Ave and SW 20th St	City of Ocala	23	
206	SR 200 and SW 27th Ave	City of Ocala	23	
205	SR 200 and SW 26th St	City of Ocala	23	
204	SR 200 and SW 32nd Ave	City of Ocala	23	
203	SR 200 and SW 34th Ave	City of Ocala	23	
202	SR 200 and SW 35th Ter	City of Ocala	23	
201	SR 200 and I-75 NB Ramp	City of Ocala	23	
200	SR 200 and I-75 SB Ramp	City of Ocala	23	

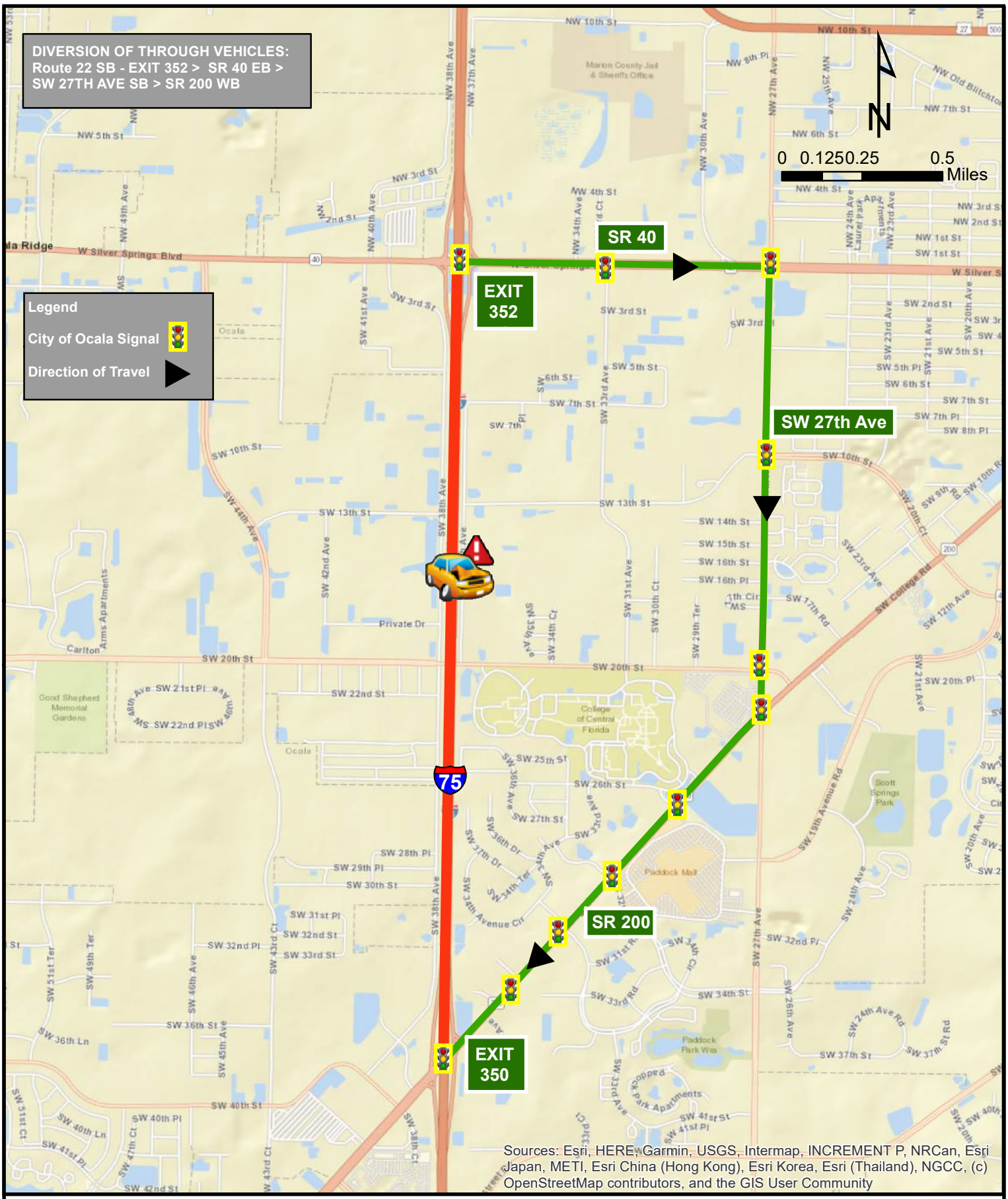
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 22> CTRL All signals> Right Click>Instant Pattern> 23> Duration 254> Download

De-active Flex Group

Search> Flex Group HNTB_Route 22> CTRL All signals> Right Click> Instant Pattern> Revert> Download



District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 352.5 (SR 40) to MM 350.5 (SR 200)

Route 22 SB

Route 23 Timing Pattern

Route 23		Length Cycle = 190 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Flex Group**
215	SR 40 and I-75 NB Ramp	City of Ocala	15	HNTB_Route 23_Diversion
214	SR 40 and I-75 SB Ramp	City of Ocala	15	
76	US 27 and I-75 SB Ramp	City of Ocala	15	
77	US 27 and I-75 NB Ramp	City of Ocala	15	

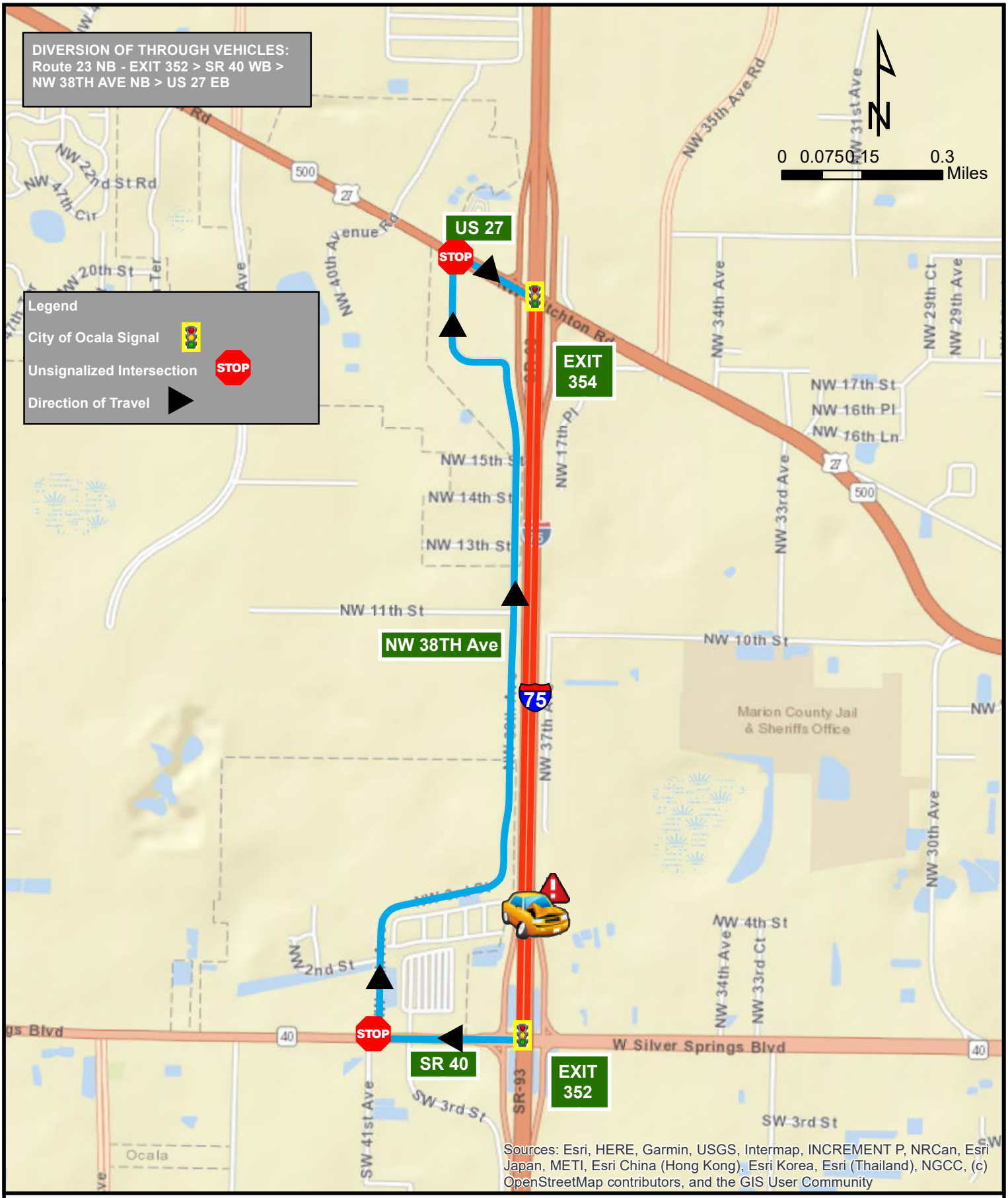
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 23> CTRL All signals> Right Click>Instant Pattern> 15> Duration 254> Download

De-active Flex Group

Search> Flex Group HNTB_Route 23> CTRL All signals> Right Click> Instant Pattern> Revert> Download



District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 352.5 (SR 40) to MM 354.5 (US 27)

Route 23 NB

Route 24 Timing Pattern

Route 24		Length Cycle = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Flex Group**
77	US 27 and I-75 NB Ramp	City of Ocala	24	HNTB_Route 24_Diversion
76	US 27 and I-75 SB Ramp	City of Ocala	24	
214	SR 40 and I-75 SB Ramp	City of Ocala	24	
215	SR 40 and I-75 NB Ramp	City of Ocala	24	

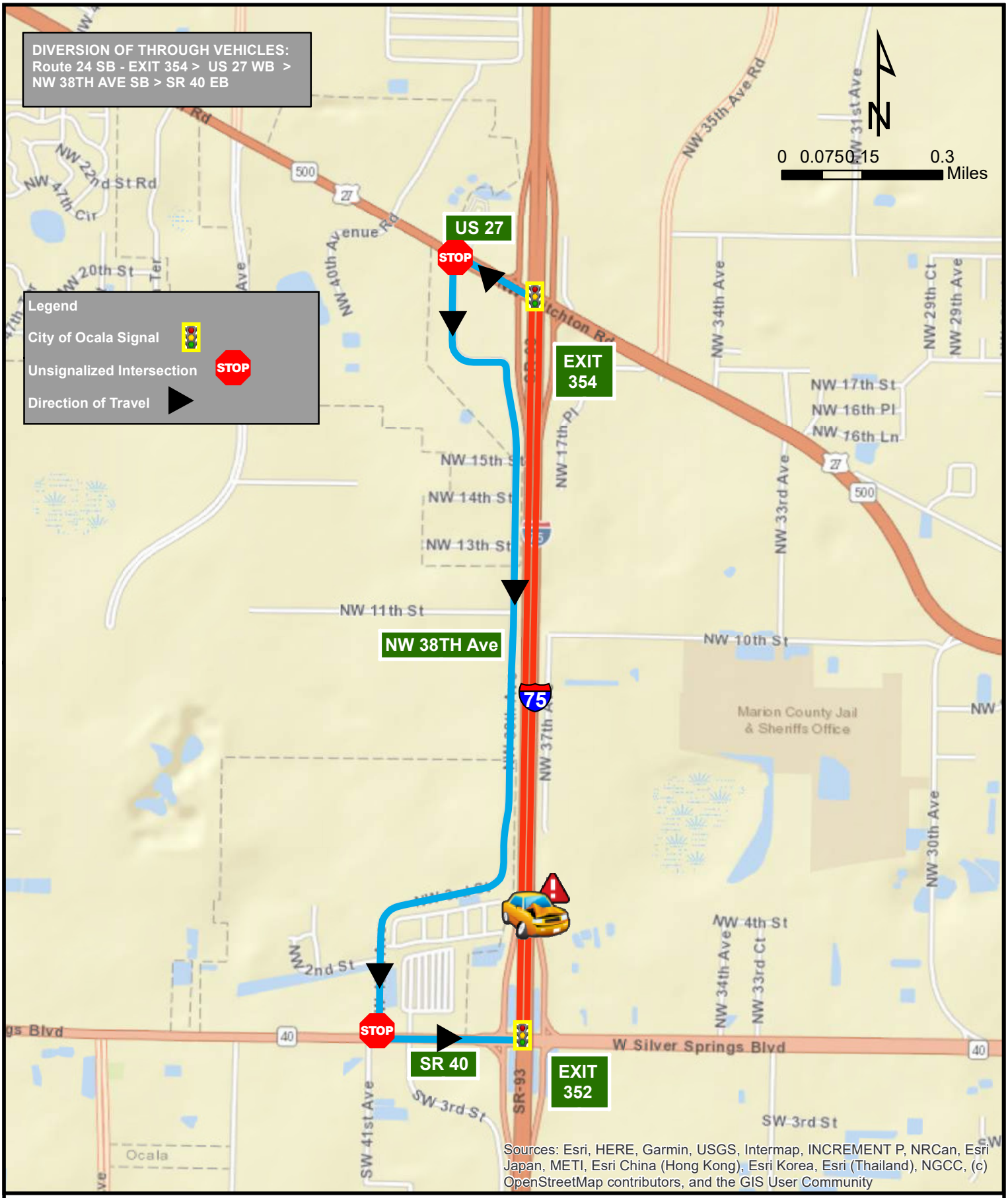
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 24> CTRL All signals> Right Click>Instant Pattern> 24> Duration 254> Download

De-active Flex Group

Search> Flex Group HNTB_Route 24> CTRL All signals> Right Click> Instant Pattern> Revert> Download



District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 354.5 (US 27) to MM 352.5 (SR 40)

Route 24 SB

Route 25 Timing Pattern

Route 25		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
215	SR 40 and I-75 NB Ramp	City of Ocala	25	HNTB_Route 25_Diversion
214	SR 40 and I-75 SB Ramp	City of Ocala	25	
213	SR 40 and SW 52nd Ave	City of Ocala	25	
220	SR 40 and SW 60th Ave	City of Ocala	25	
	NW 60th Ave and NW 21st St	Marion County	1/1/1	
	NW 60th Ave and US 27	Marion County	1/1/1	
	US 27 and NW 49th Ave	Marion County	1/1/1	
	US 27 and NW 44th Ave	Marion County	1/1/1	
76	US 27 and I-75 SB Ramp	City of Ocala	25	HNTB_Route 25_Diversion
77	US 27 and I-75 NB Ramp	City of Ocala	25	

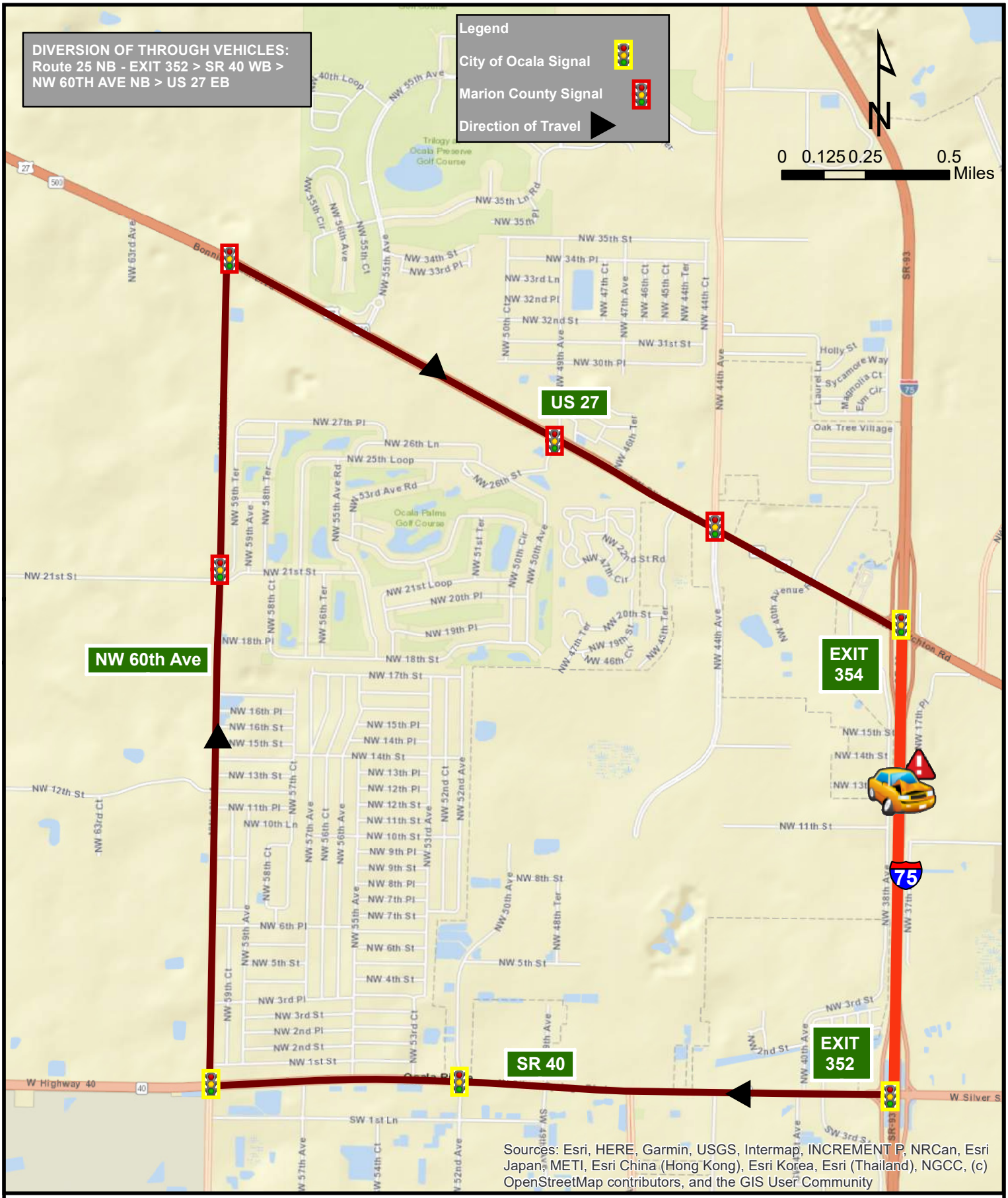
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 25> CTRL All signals> Right Click>Instant Pattern> 25> Duration 254> Download

De-active Flex Group

Search> Flex Group HNTB_Route 25> CTRL All signals> Right Click> Instant Pattern> Revert> Download



District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 352.5 (SR 40) to MM 354.5 (US 27)

Route 25 NB

Route 26 Timing Pattern

Route 26		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
77	US 27 and I-75 NB Ramp	City of Ocala	26	HNTB_Route 26_Diversion
76	US 27 and I-75 SB Ramp	City of Ocala	26	
	US 27 and NW 44th Ave	Marion County	2/1/1	
	US 27 and NW 49th Ave	Marion County	2/1/1	
	NW 60th Ave and US 27	Marion County	2/1/1	
	NW 60th Ave and NW 21st St	Marion County	2/1/1	
220	SR 40 and SW 60th Ave	City of Ocala	26	HNTB_Route 26_Diversion
213	SR 40 and SW 52nd Ave	City of Ocala	26	
214	SR 40 and I-75 SB Ramp	City of Ocala	26	
215	SR 40 and I-75 NB Ramp	City of Ocala	26	

Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 26> CTRL All signals> Right Click>Instant Pattern> 26> Duration 254> Download

De-active Flex Group

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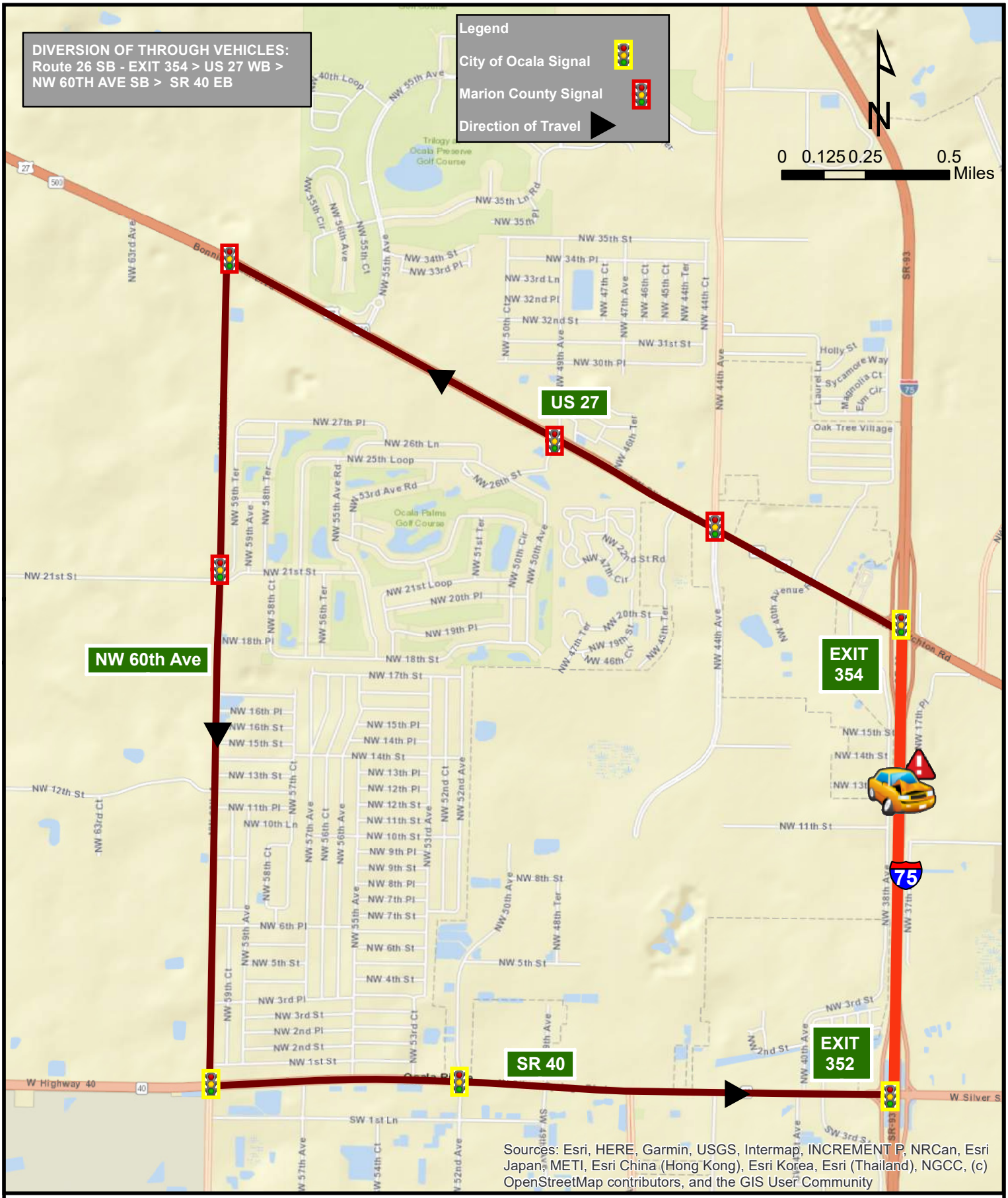


District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 354.5 (US 27) to MM 352.5 (SR 40)

Route 26 SB

Route 27 Timing Pattern

Route 27		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Flex Group**
214	SR 40 and I-75 SB Ramp	City of Ocala	27	HNTB_Route 27_Diversion
215	SR 40 and I-75 NB Ramp	City of Ocala	27	
216	SR 40 and SW 33rd Ave	City of Ocala	27	
75	SR 40 and SW 27th Ave	City of Ocala	27	
78	US 27 and NW 27th Ave	City of Ocala	27	
81	US 27 and NW 35th Ave	City of Ocala	27	
77	US 27 and I-75 NB Ramp	City of Ocala	27	
76	US 27 and I-75 SB Ramp	City of Ocala	27	

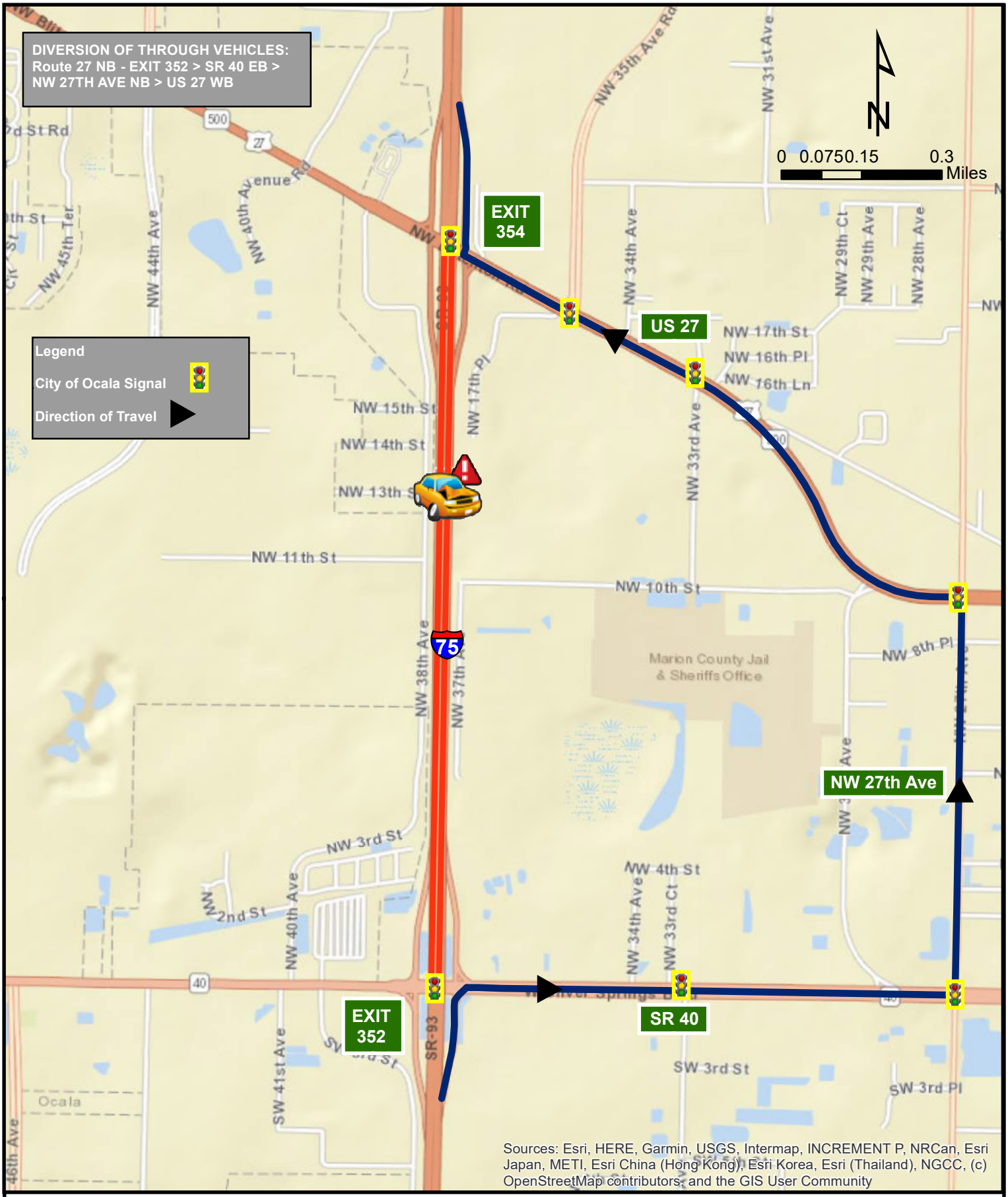
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 27> CTRL All signals> Right Click>Instant Pattern> 27> Duration 254> Download

De-active Flex Group

Search> Flex Group HNTB_Route 27> CTRL All signals> Right Click> Instant Pattern> Revert> Download



District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 352.5 (SR 40) to MM 354.5 (US 27)

Route 27 NB

Route 28 Timing Pattern

Route 28		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Flex Group**
76	US 27 and I-75 SB Ramp	City of Ocala	28	HNTB_Route 28_Diversion
77	US 27 and I-75 NB Ramp	City of Ocala	28	
81	US 27 and NW 35th Ave	City of Ocala	28	
78	US 27 and NW 27th Ave	City of Ocala	28	
75	SR 40 and SW 27th Ave	City of Ocala	28	
216	SR 40 and SW 33rd Ave	City of Ocala	28	
215	SR 40 and I-75 NB Ramp	City of Ocala	28	
214	SR 40 and I-75 SB Ramp	City of Ocala	28	

Flex Group on ATMS. now

Activate Flex Group

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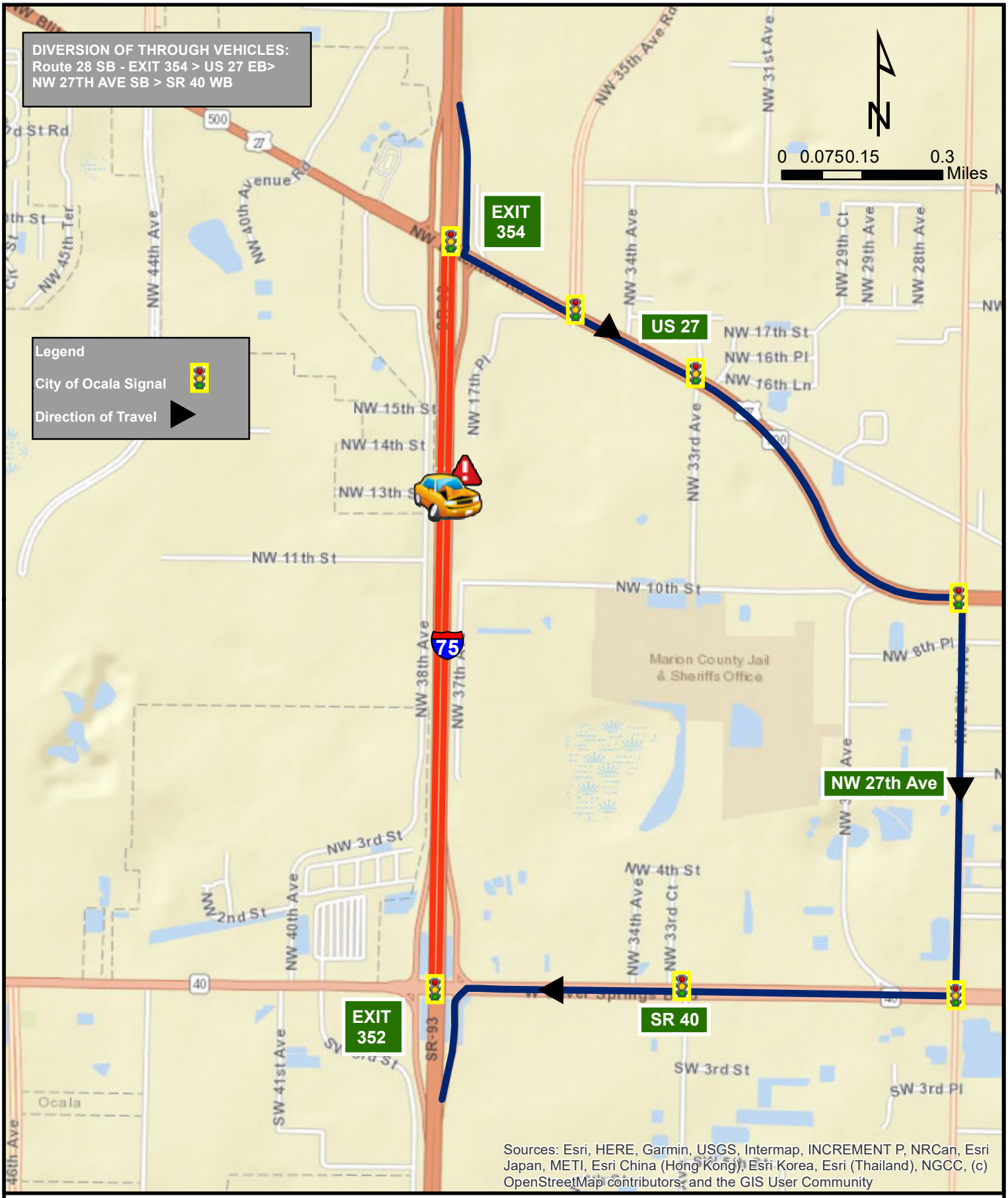
De-active Flex Group

Search> Flex Group HNTB_Route 28> CTRL All signals> Right Click> Instant Pattern> Revert> Download



District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 354.5 (US 27) to MM 352.5 (SR 40)

Route 28 SB

Route 29 Timing Pattern

Route 29		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
77	US 27 and I-75 NB Ramp	City of Ocala	29	HNTB_Route 29_Diversion
76	US 27 and I-75 SB Ramp	City of Ocala	29	
	US 27 and NW 44th Ave	Marion County	1/2/1	
	CR 326 and NW 44th Ave/ SB Off Ramp	Marion County	1/2/1	
	CR 326 and I-75 NB Ramp	Marion County	1/2/1	

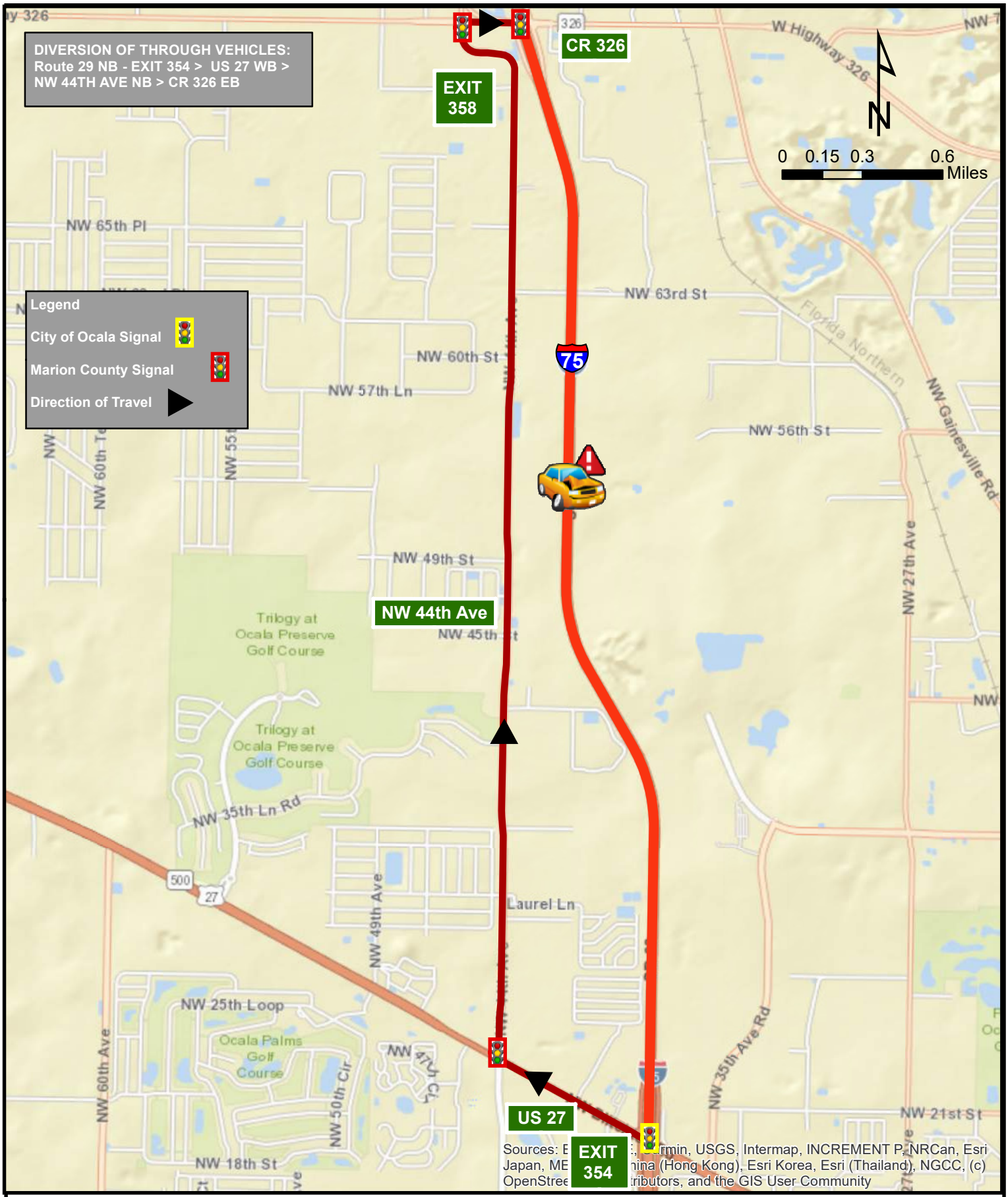
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 29> CTRL All signals> Right Click>Instant Pattern> 29> Duration 254> Download

De-active Flex Group

Search> Flex Group HNTB_Route 29> CTRL All signals> Right Click> Instant Pattern> Revert> Download



District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 354.5 (US 27) to MM 358.5 (CR 326)

Route 29 NB

Route 30 Timing Pattern

Route 30		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 326 and NW 44th Ave/ SB Off Ramp	Marion County	3/2/1	
	US 27 and NW 44th Ave	Marion County	3/2/1	
76	US 27 and I-75 SB Ramp	City of Ocala	30	HNTB_Route 30_Diversion
77	US 27 and I-75 NB Ramp	City of Ocala	30	

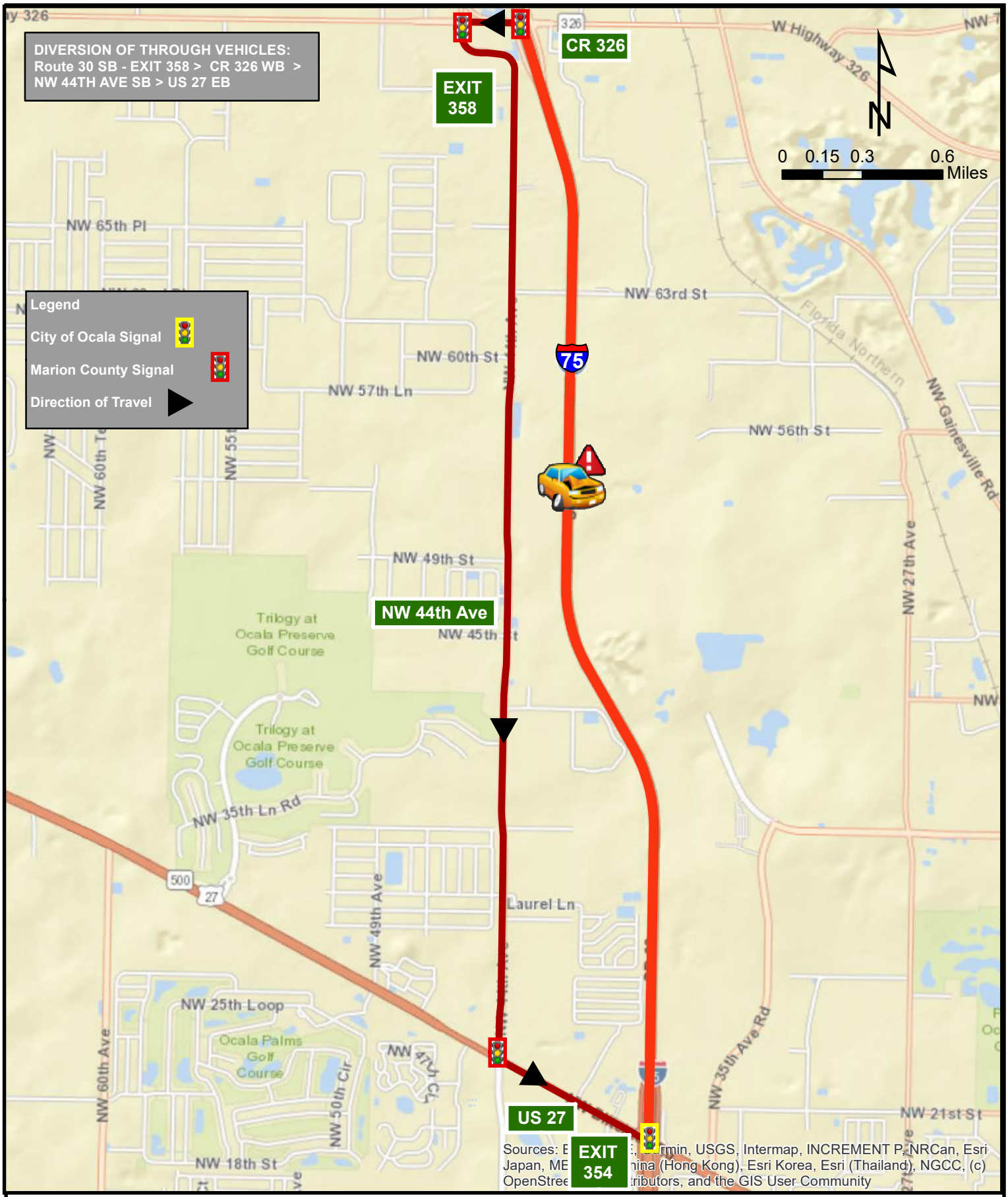
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 30> CTRL All signals> Right Click>Instant Pattern> 30> Duration 254> Download

De-active Flex Group

Search> Flex Group HNTB_Route 30> CTRL All signals> Right Click> Instant Pattern> Revert> Download



District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 358.5 (CR 326) to MM 354.5 (US 27)

Route 30 SB

Route 31 Timing Pattern

Route 31		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
76	US 27 and I-75 SB Ramp	City of Ocala	31	HNTB_Route 31_Diversion
77	US 27 and I-75 NB Ramp	City of Ocala	31	
81	US 27 and NW 35th Ave	City of Ocala	31	
78	US 27 and NW 27th Ave	City of Ocala	31	
73	US 27 and Martin Luther King	City of Ocala	31	
	US 441 and US 27	City of Ocala	31	
	US 441 and NW 20th St	Marion County		
71	US 441 and NW 28th St	City of Ocala	31	
79	US 441 and NW 35th St	City of Ocala	31	
	US 441 and CR 326	Marion County	3/2/1	
	CR 326 and CR 25A	Marion County	3/2/1	
	CR 326 and I-75 NB Ramp	Marion County	3/2/1	

Flex Group on ATMS. now

Activate Flex Group

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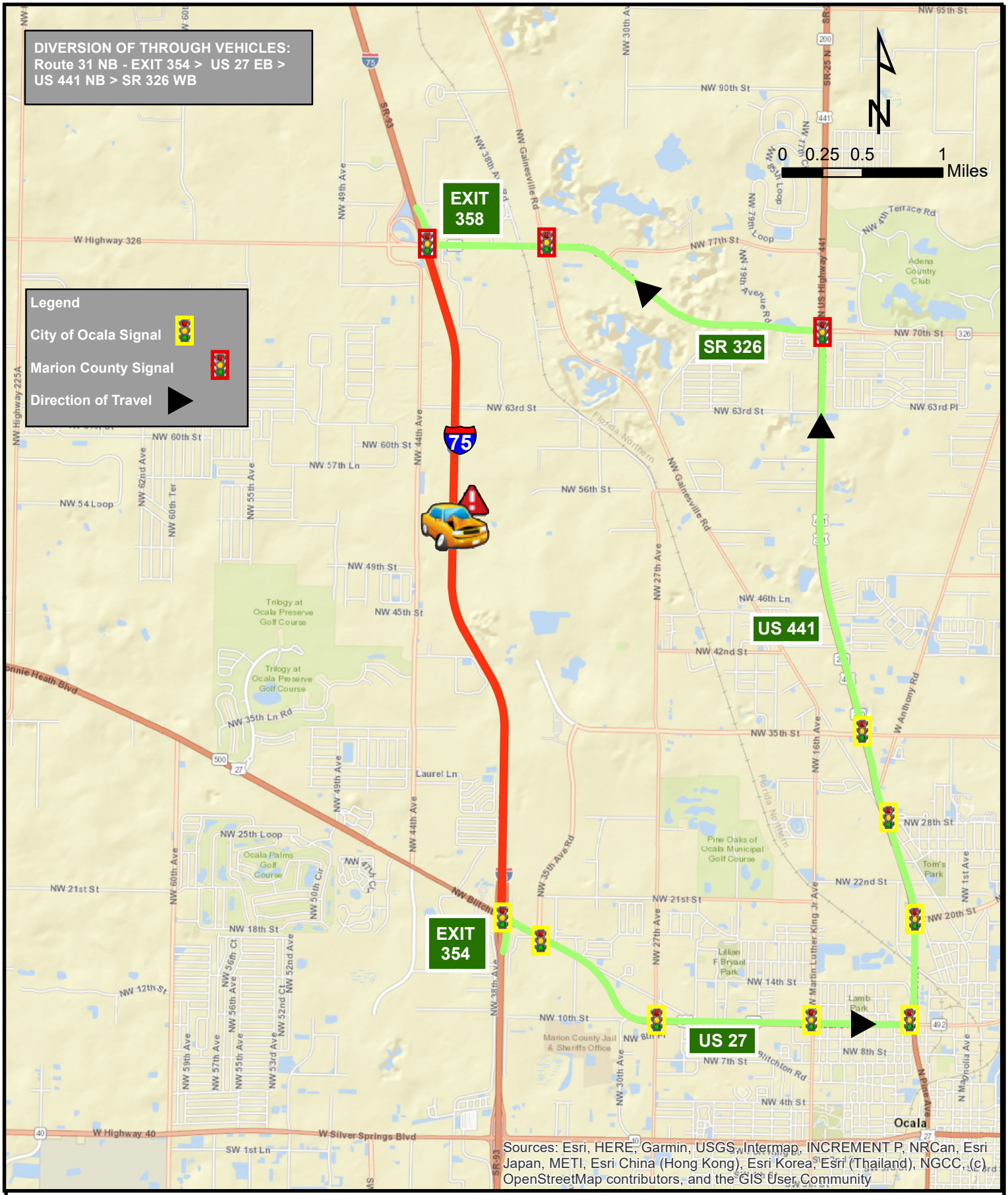
De-active Flex Group

Search> Flex Group HNTB_Route 31> CTRL All signals> Right Click> Instant Pattern> Revert



District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 354.5 (US 27) to MM 358.5 (SR 326)

Route 31 NB

Route 32 Timing Pattern

Route 32		Cycle Length = 220 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 326 and NW 44th Ave	Marion County	4/2/1	
	CR 326 and I-75 NB Ramp	Marion County	4/2/1	
	CR 326 and CR 25A	Marion County	4/2/1	
	US 441 and CR 326	Marion County	4/2/1	
79	US 441 and NW 35th St	City of Ocala	32	HNTB_Route 32_Diversion
71	US 441 and NW 28th St	City of Ocala	32	
74	US 441 and NW 20th St	Marion County		
	US 441 and US 27	City of Ocala	32	
73	US 27 and NW Martin Luther King	City of Ocala	32	
78	US 27 and NW 27th Ave	City of Ocala	32	
81	US 27 and NW 35th Ave	City of Ocala	32	
77	US 27 and I-75 NB Ramp	City of Ocala	32	
76	US 27 and I-75 SB Ramp	City of Ocala	32	

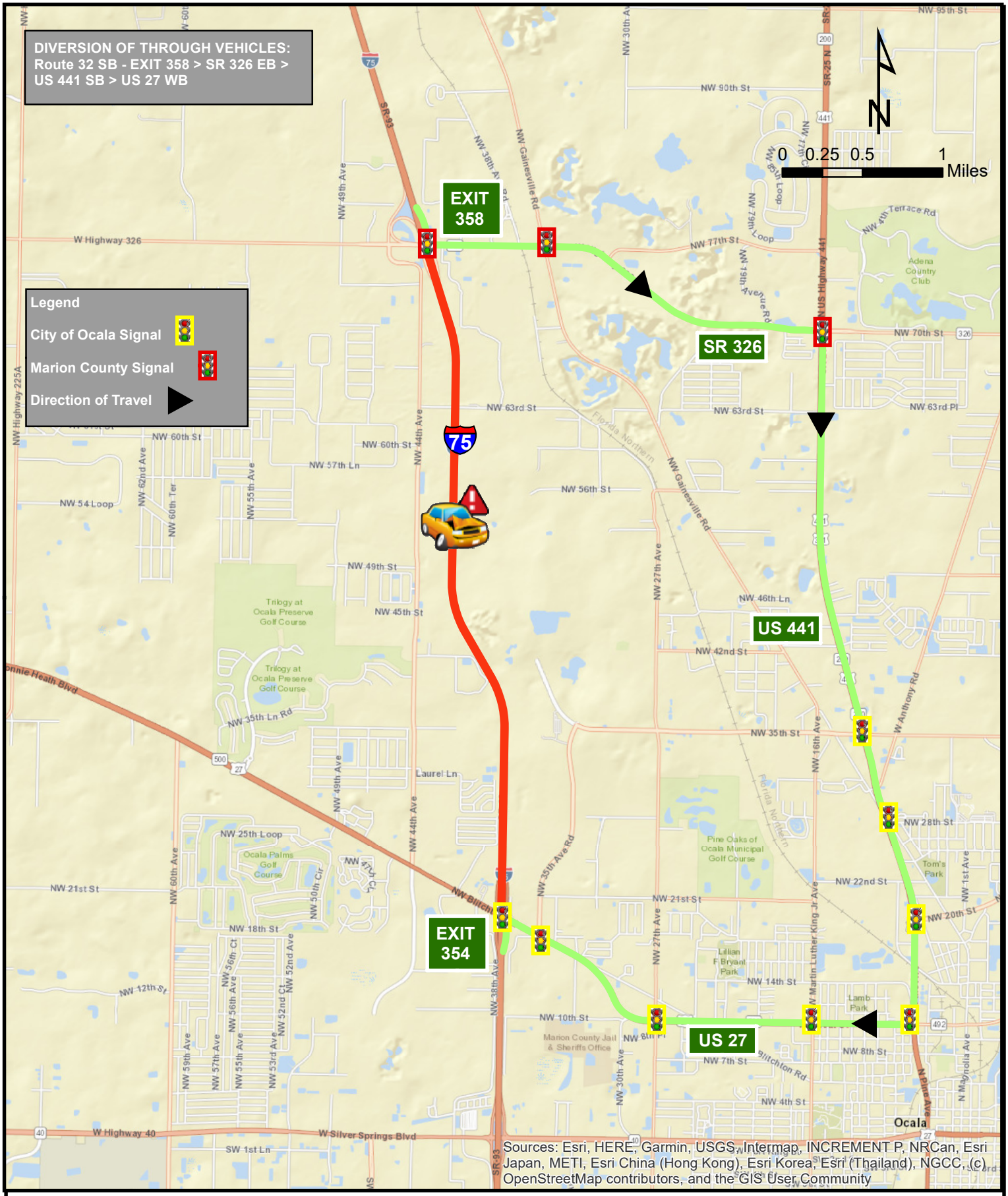
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 32> CTRL All signals> Right Click>Instant Pattern> 32> Duration 254

De-active Flex Group

Search> Flex Group HNTB_Route 32> CTRL All signals> Right Click> Instant Pattern> Revert



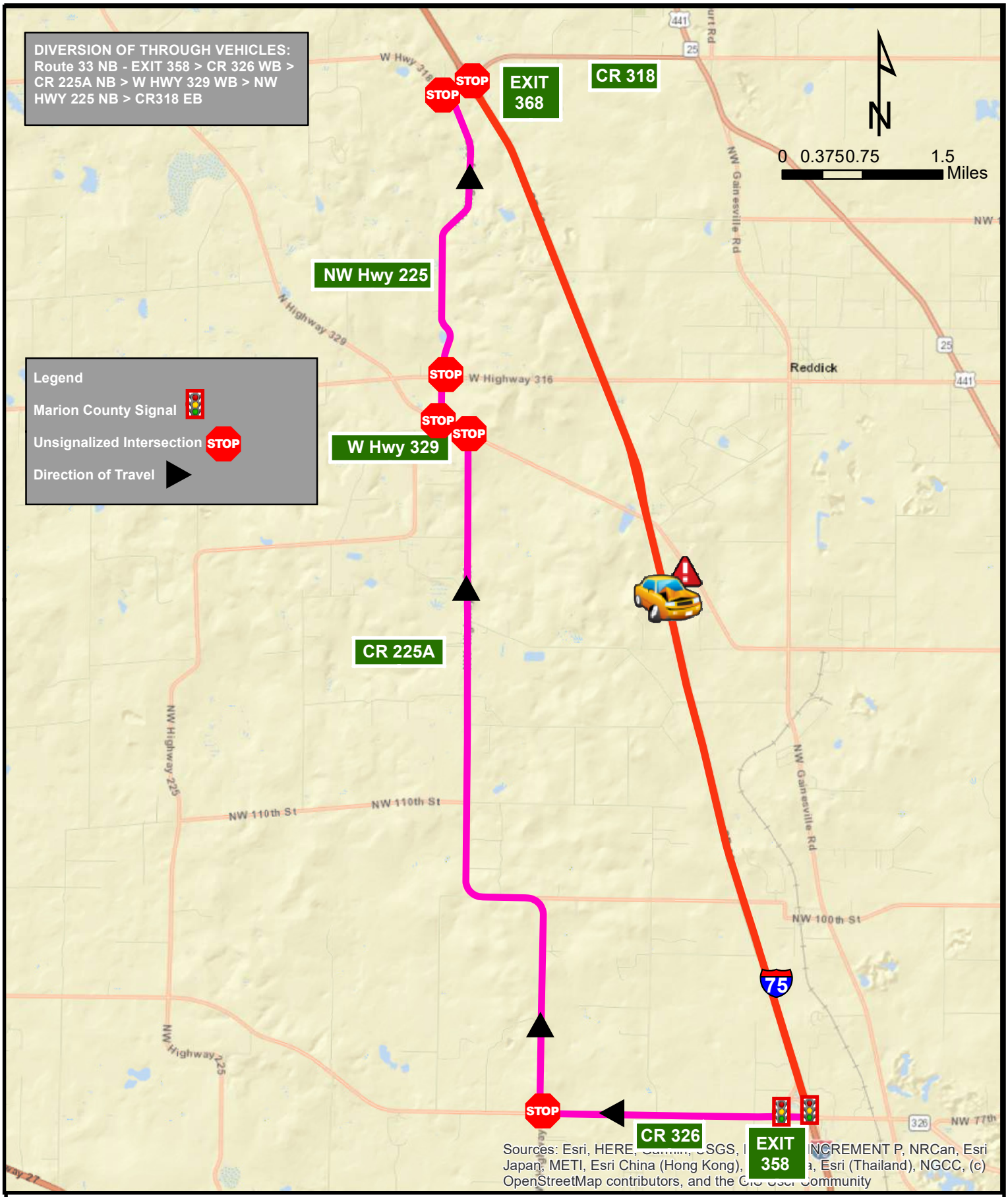
District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 358.5 (SR 326) to MM 354.5 (US 27)

Route 32 SB

Route 33 Timing Pattern

Route 33		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 326 and I-75 NB Ramp	Marion County	1/3/1	
	CR 326 and NW 44th Ave	Marion County	1/3/1	



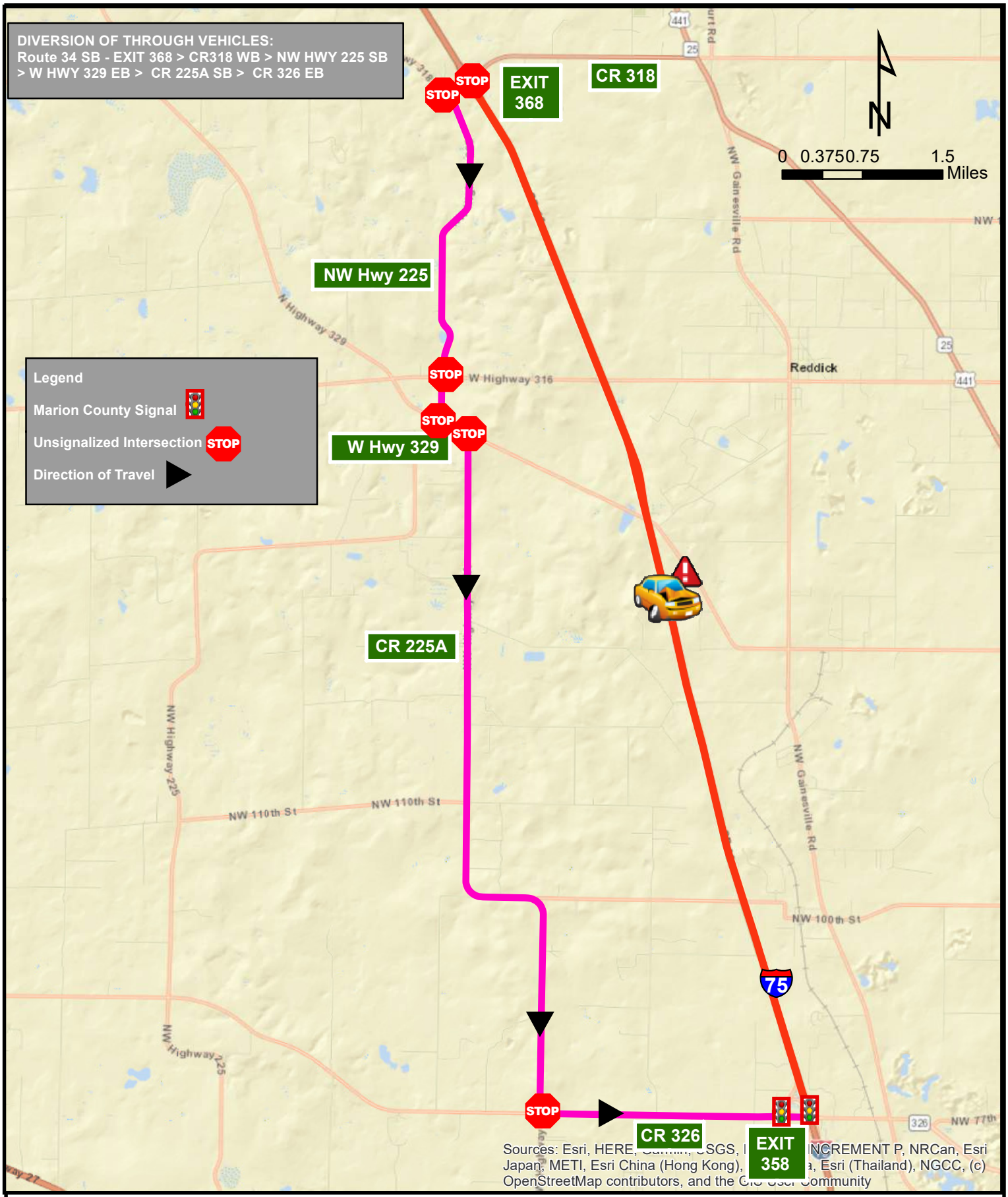
District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 358.5 (CR326) to MM 368.5 (CR 318)

Route 33 NB

Route 34 Timing Pattern

Route 34		Cycle Length = 180 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 326 and NW 44th Ave	Marion County	2/3/1	
	CR 326 and I-75 SB on Ramp	Marion County	2/3/1	



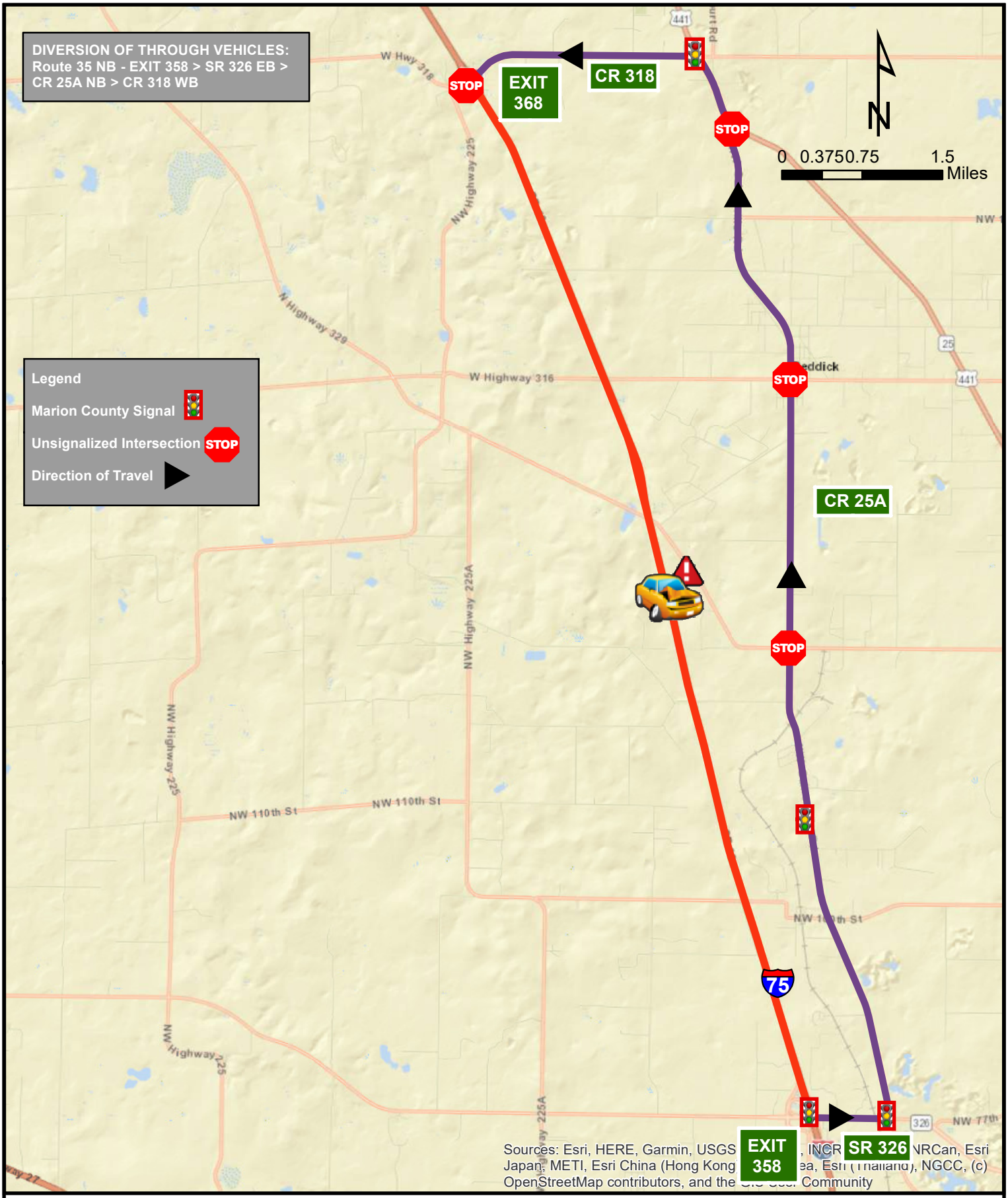
District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 368.5 (CR 318) to MM 358.5 (CR326)

Route 34 SB

Route 35 Timing Pattern

Route 35		Cycle Length = 190 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 326 and I-75 NB Ramp	Marion County	3/3/1	
	CR 326 and CR 25A	Marion County	3/3/1	
	CR 25A and Lowell Correctional Institution	Marion County	3/3/1	
	US 441 and CR 318	Marion County	3/3/1	



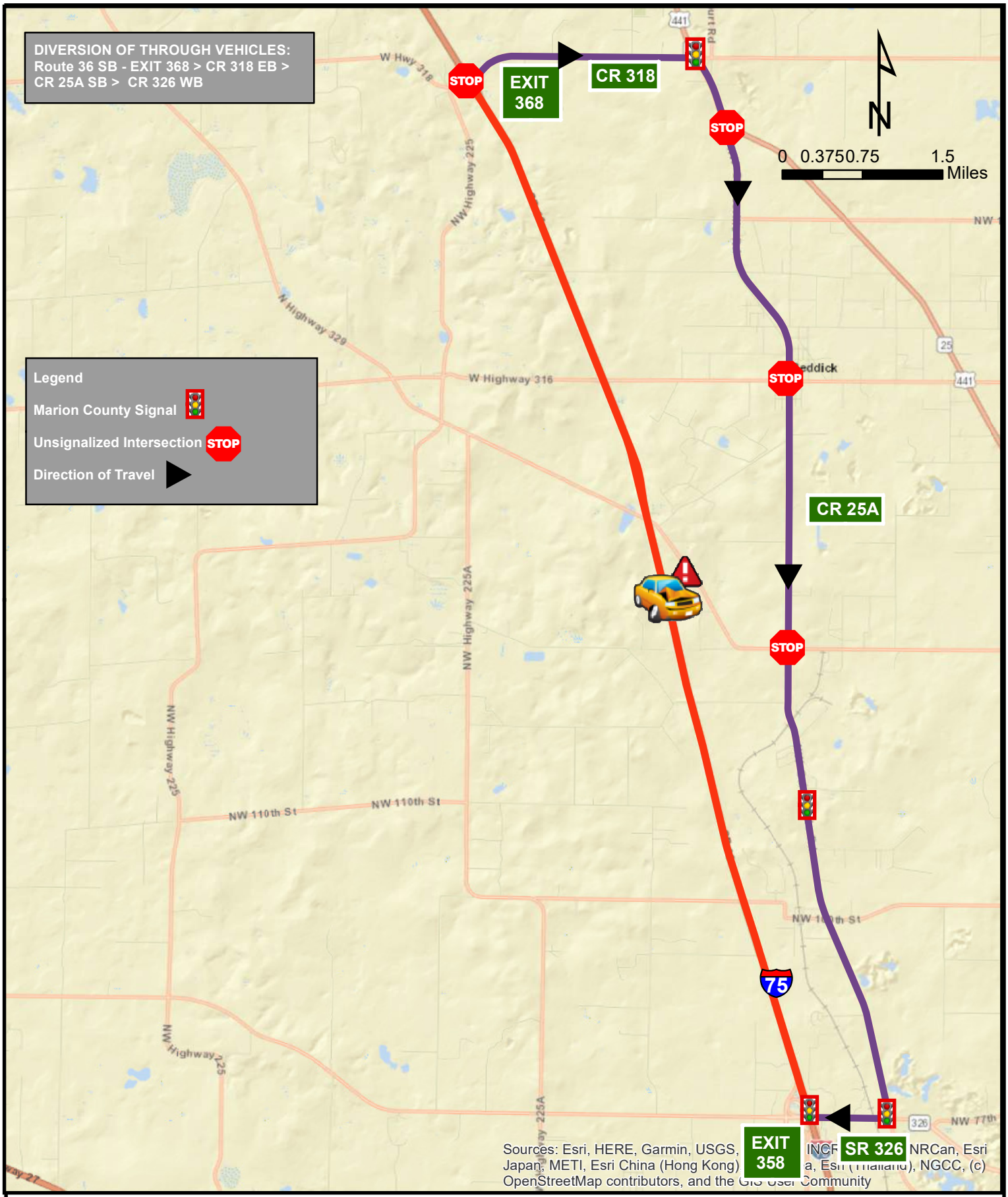
District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 358.5 (SR 326) to MM 368.5 (CR 318)

Route 35 NB

Route 36 Timing Pattern

Route 36		Cycle Length = 190 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	US 441 and CR 318	Marion County	4/3/1	
	CR 25A and Lowell Correctional Institution	Marion County	4/3/1	
	CR 326 and CR 25A	Marion County	4/3/1	
	CR 326 and I-75 NB Ramp	Marion County	4/3/1	
	CR 326 and I-75 SB On Ramp	Marion County	4/3/1	



District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 368.5 (CR 318) to MM 358.5 (SR 326)

Route 36 SB

Route 37 Timing Pattern

Route 37		Cycle Length = None		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 318 and I-75 NB Ramp	Marion County	Unsignalized	
	CR 318 and CR 329	Marion County	Unsignalized	
	CR 329 to CR 320	Marion County	Unsignalized	
	CR 234 and I-75 NB Ramp	Alachua County	Unsignalized	

District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 368.5 (CR 318) to MM 374.5 (CR 234)

Route 37 NB

Route 38 Timing Pattern

Route 38		Cycle Length = None		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	CR 234 and I-75 SB Ramp	Alachua County	Unsignalized	
	CR 329 and CR 320	Marion County	Unsignalized	
	CR 318 and CR 329	Marion County	Unsignalized	
	CR 318 and I-75 SB Ramp	Marion County	Unsignalized	

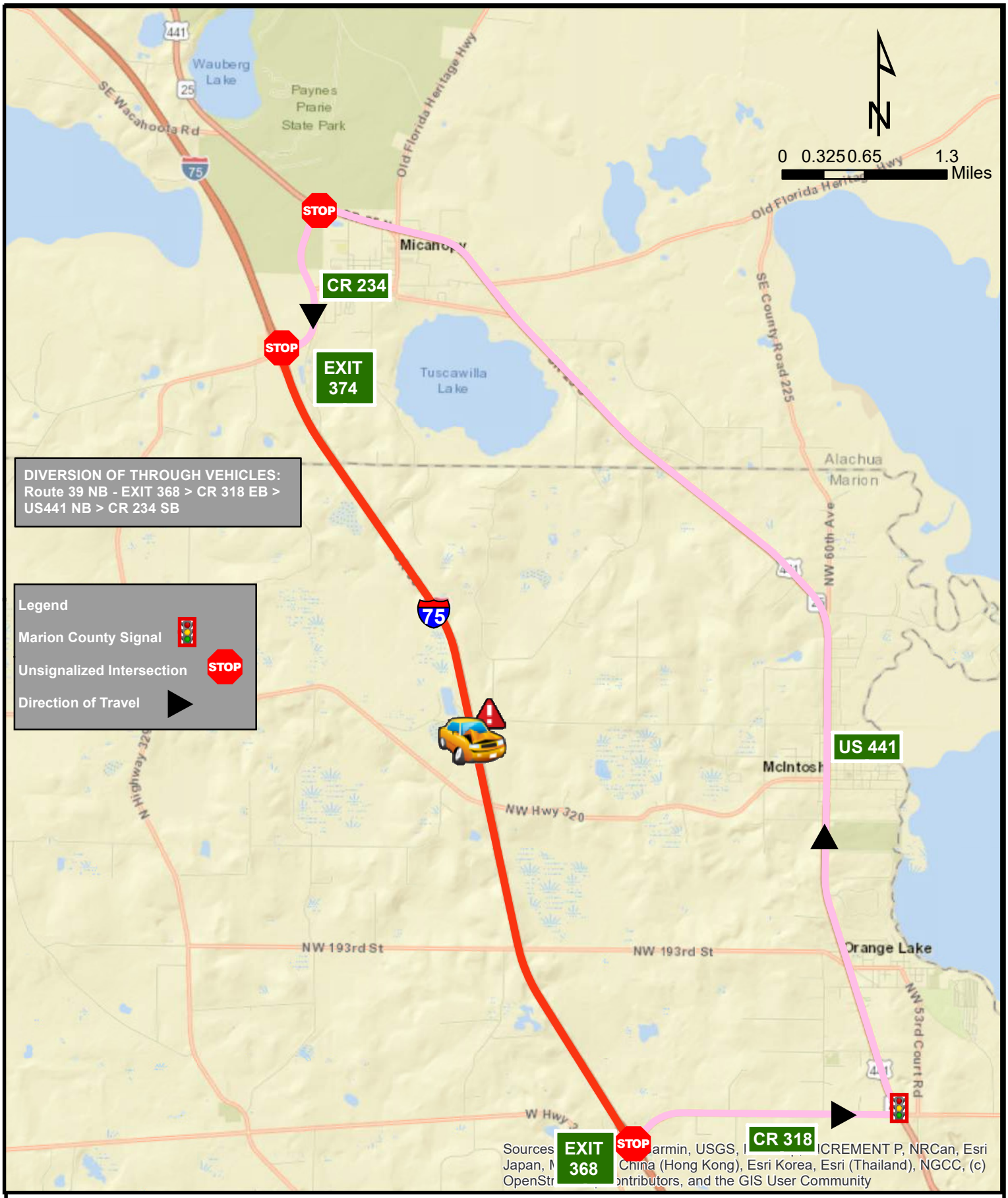
District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 374.5 (CR 234) to MM 368.5 (CR 318)

Route 38 SB

Route 39 Timing Pattern

Route 39		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	US 441 and CR 318	Marion County	1/1/1	



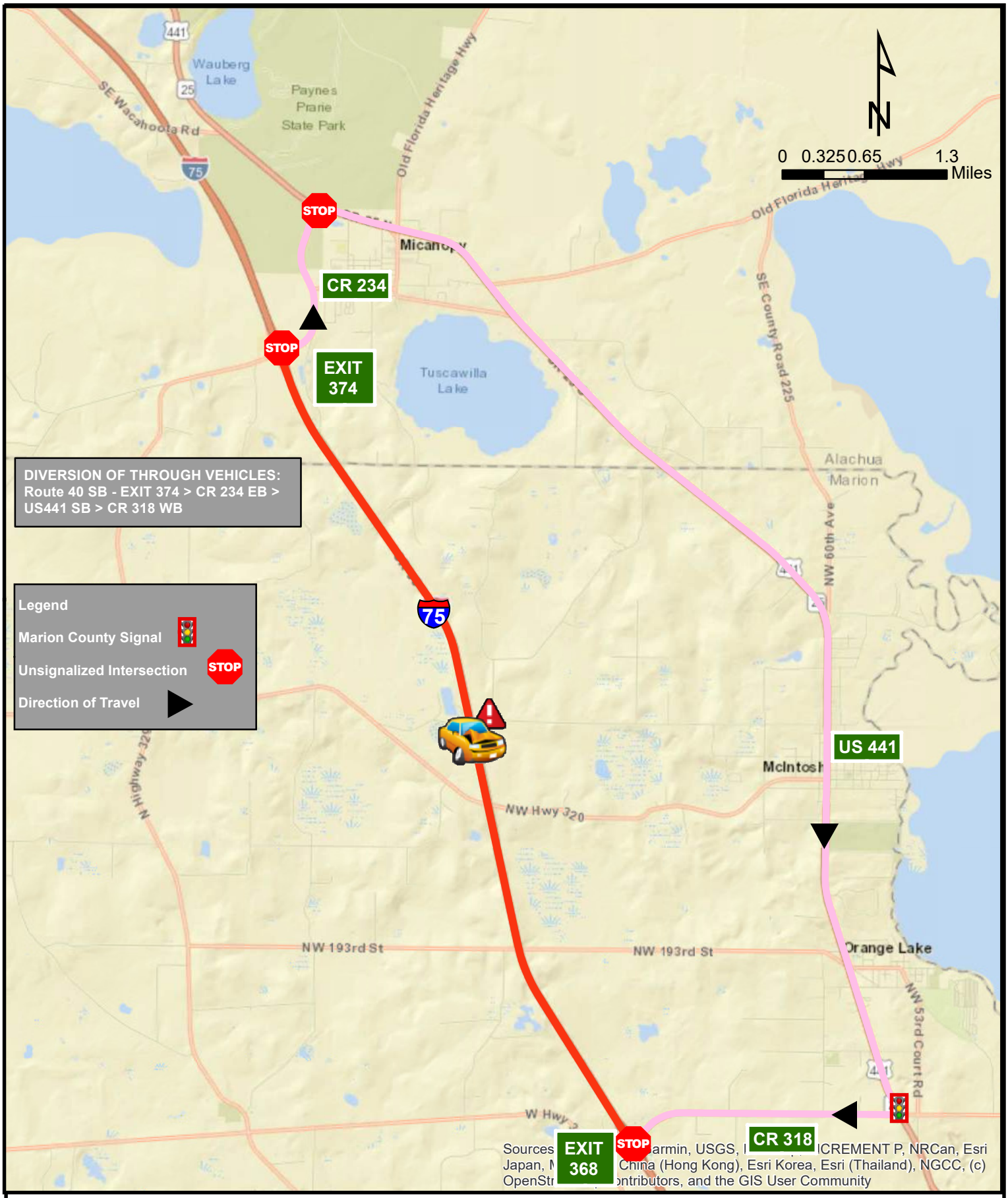
District 5 Integrated Corridor Management

I-75 Northbound Closure Between
MM 368.5 (CR 318) to MM 374.5 (CR 324)

Route 39 NB

Route 40 Timing Pattern

Route 40		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	US 441 and CR 318	Marion County	2/1/1	



District 5 Integrated Corridor Management

I-75 Southbound Closure Between
MM 374.5 (CR 324) to MM 368.5 (CR 318)

Route 40 SB

Route AA

Route 40		Cycle Length =		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
201	SR 200 and I-75 NB Ramp	City of Ocala		Construction of this road is not complete when finished, timings will be implemented, and table updated accordingly.
200	SR 200 and I-75 SB Ramp	City of Ocala		
199	SR 200 and SW 38 Ct	City of Ocala		
231	SR 200 and SW 43rd St	City of Ocala		
	SR 200 and SW 43rd Ct	City of Ocala	Unsignalized	
	SW 43rd Ct and SW 40th St	City of Ocala	Unsignalized	
	SW 43rd Ct and SW 20th St	City of Ocala	Not finished	
	SW 46th Ave and SR 40	City of Ocala	Unsignalized	
214	SR 40 and I-75 SB Ramp	City of Ocala		
215	SR 40 and I-75 NB Ramp	City of Ocala		

Route AA

Route BB

Route 40		Cycle Length =		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
201	SR 200 and I-75 NB Ramp	City of Ocala		Construction of this road is not complete when finished, timings will be implemented, and table updated accordingly.
200	SR 200 and I-75 SB Ramp	City of Ocala		
199	SR 200 and SW 38 Ct	City of Ocala		
231	SR 200 and SW 43rd St	City of Ocala		
	SR 200 and SW 43rd Ct	City of Ocala	Unsignalized	
	SW 43rd Ct and SW 40th St	City of Ocala	Unsignalized	
	SW 43rd Ct and SW 20th St	City of Ocala	Not finished	
	SW 46th Ave and SR 40	City of Ocala	Unsignalized	
214	SR 40 and I-75 SB Ramp	City of Ocala		
215	SR 40 and I-75 NB Ramp	City of Ocala		

Route BB

Appendix P

I-95 Diversion Routes Draft

INTEGRATED CORRIDOR MANAGEMENT DIVERSION ROUTES SIGNAL TIMING IMPLEMENTATION GUIDE

Brevard County

Draft Report

Financial Project ID: 435443-5-82-01
HNTB No.: 67012-PL-011
Task Work Order: 011

Prepared by:
HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, Florida 32746

November 23, 2020

Professional Engineer:
Camila Amaya

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Introduction

The Diversion Route Timing Pattern Implementation Guide was developed to standardized and document traffic signal control measures to assist in incident management along I-95 throughout District Five, as part of the District Integrated Corridor Management. A diversion traffic signal timing patterns has been designed, programmed, and tested in order to minimize the surface street impacts of traffic being diverted from closures or major incidents along I-95.

This Implementation Guide is designed and intended to be used as a working document for the deployment of diversion timing patterns during emergency conditions. Every incident or event is unique; factors such as time of day, day of week, and season of the year, all reflect different traffic volume demands, and the location and expected duration of the incident or event impact the strategies used. As such, these timing patterns are designed as a starting point; particularly in longer term situations, fine turning for the specific condition is likely to be needed for optimal performance.

The support provided by the RTMC play a major role in the implementation of these diversion routes. Traffic management staff will be able to actively monitor traffic conditions along both the freeway and the surface streets, provide current traffic information about delays to motorists, and implement traffic signal timings patterns to best accommodate the increased demands. Law enforcement officers' efforts will include issues at the incident scene, as well as traffic control at four way stops and protected-permissive left turn favoring the diversion route.

When to Implement Diversion Timing Patterns

The decision to implement a diversion route timing plan is based upon a comparison of the advantages and disadvantages of implementing the plan. In other words, will the implementation help or hurt the overall situation? The Traffic Incident Management Team has defined three levels of incidents on the Interstate system, based on their severity and impacts on traffic:

- Level 1 (Minor): Impact to the traveled roadway is estimated to be less than 25 minutes, with no lane blockage or minor lane blockage.
- Level 2 (Intermediate): Impact to the traveled roadway is estimated to be 25 minutes to 50 minutes with lane blockages but not a full closure of the roadway.
- Level 3 (Major): Impact to the traveled roadway is estimated to be more than 50 minutes and/or the roadway is fully closed in any single direction. Significant area-wide congestion can be expected.

The severity and expected duration of the incident will be based on an assessment of conditions at the scene. In a Level 1 incident, as the impact on traffic is limited to minor main line delays, the amount of diversion to the surface street system will be minimal. There would be no need to implement a diversion timing pattern.

A Level 2 incident will create a greater level of delay on the interstate, for a longer period time. Depending on the number of lanes close, the mainline will continue to flow but with a limited capacity. Preferred diversion routes will be suggested on the variable massage signs, with an approximate travel time. In this case, the need to implement a diversion route timing patter is necessary.

The most severe incident, Level 3, will result in an impact for more 90 minutes or the closure of the roadway. With an extended impact, mainline queues will develop to the point that travel times will seem excessive to many, who will then attempt to exit and find the alternate route to avoid the congestion. Implementation of the appropriate diversion timings is necessary to manage the additional volumes on the surface streets. Active monitoring of current conditions on the alternate route, using video cameras and real time vehicular travel time data, should be performed as part of this decision process.

In the worst case of a Level 3 incident, a full closure of one direction of the interstate, the need for a diversion route timing plan is better justified. Except for a middle of the night incident, a complete closure will warrant a diversion plan implementation. As in a less severe Level 3 incident, current condition along the diversion route should be monitored and reviewed to ensure there are no other incidents on the alternate route, construction lane closures, or lack of communication to signals along a key part of the route.

Table 1: Implementation Matrix

Maintaining Agency	Level of Implementation Authority	TMC Contact Information
Brevard County	RTMC advises on diversion route implementation to the Maintaining Agency and proceed to make all timing changes.	Corrina Gumm/ Rich Ataman 321-633-2077

Implementation Process

It is the role of the Local Agency signal timing engineer (or designee) to identify, analyze, recommend and implement the appropriate action in accordance with the Implementation Authority Matrix. After determining implementation of a diversion route timing pattern is the appropriate course of action, the RTMC staff will select the appropriate traffic signal system groups and pattern numbers for the intersections along the route using this guide.

Diversion route timing patterns have been previously deployed into the local controller databases. The corridor management staff will download the pattern command to the appropriate signals. The ATMS will then be monitored to verify the status of the download to ensure the intersections transition into the desired diversion route pattern.

RTMC staff will verify the appropriate sequence, cycle length, offset, and split are running in the traffic controllers. This will confirm the intersection are operating correctly. RTMC staff should advise the local agency when the diversion route pattern had been implemented.

While monitoring the implementation of the diversion route patterns, RTMC staff will note any preemption events, pedestrian push button actuations or any other such activities that could cause any of the intersections within the group to transition out of coordination.

Once the diversion route pattern has been implemented, there is an opportunity to fine-tune the patterns based on observed conditions. Fine-tuning the pattern should be done on a location specific basis, and not done globally. Fine turning might include, but not be limited to, changes in offsets, splits, sequences, and cycle lengths, or placing one or more intersections in free operation to balance queues at large intersections. If fine turning is required, this will be performed by the professional engineer and any changes will be communicated with the local agency.

When to Discontinue Diversion Timing Patterns

At the conclusion of an incident, traffic starting on the route should be given sufficient time to complete the route. For some routes, this could be an hour or more after the incident cleared and main line traffic starts flowing again, or after the closure has been removed.

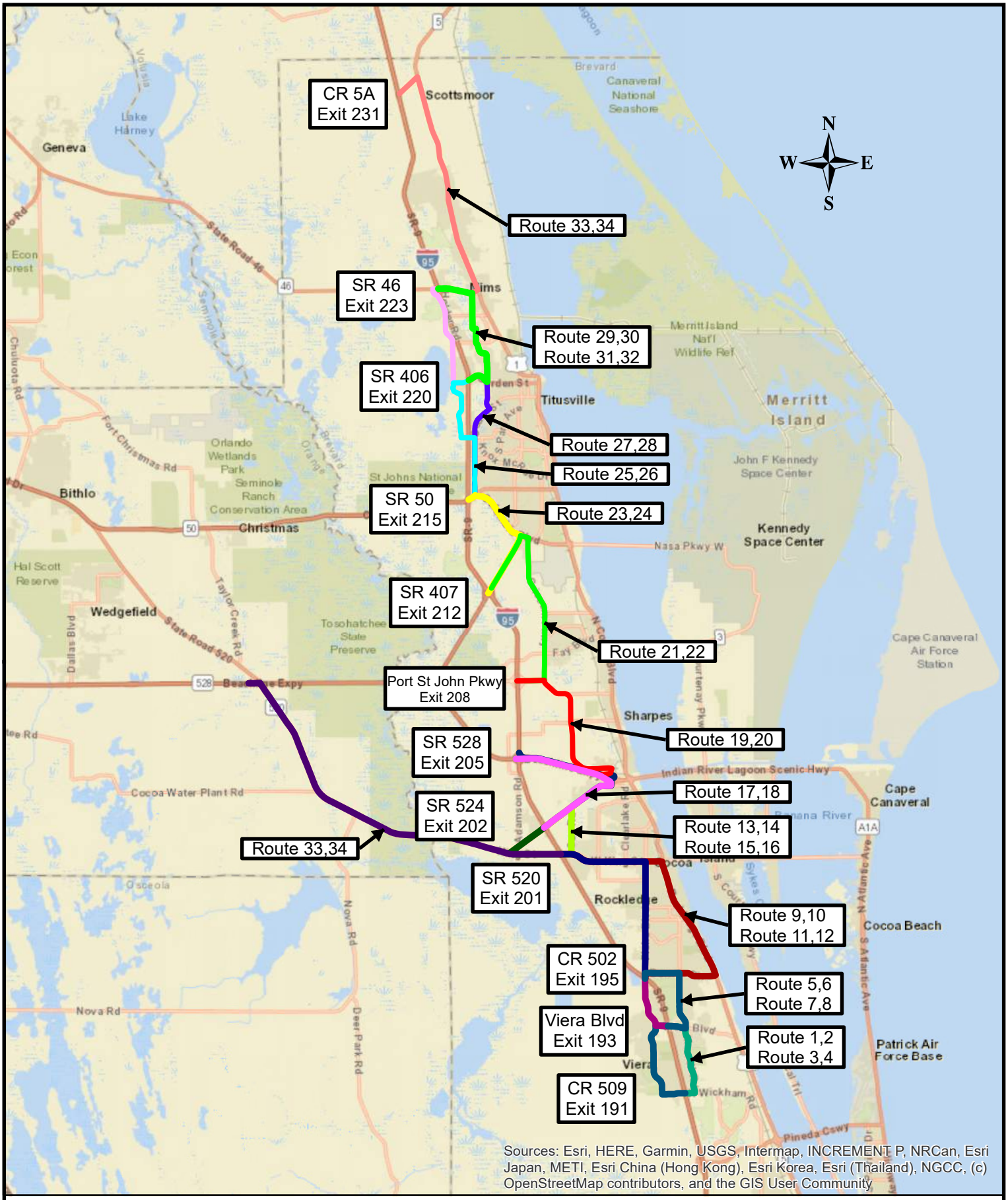
During this period, the alternate route should be monitored using video and travel time data (if available) to determine if vehicular queues are clearing earlier than expected. A goal should be to return to normal time of day operation as soon as possible after diverted traffic has cleared a section of the route.

Upon termination of the diversion route, RTMC staff will download the appropriate command to the signal group. This will return the signals to their standard operations. RTMC staff should be familiar with the standard programming and monitor the appropriate ATMS platform to verify the status of the download and make sure the intersections transition back to pre-diversion route conditions, ensuring there are no issues following the download, such as flashing intersections, incorrect coordination patterns, coordination failures, or inappropriate signal sequences.

Appendix A – I-95 Diversion Route Quick Guide

I-75 Diversion Routes

Route	To-From	Flex Group	Detail Page
1	CR 509/Wickham to Viera Blvd	HNTB_Route 1_ Diversion	10-11
2	Viera Blvd to CR 509/Wickham	HNTB_ Route 2_Diversion	12-13
3	CR 509/Wickham to Viera Blvd	HNTB_Route 3_Diversion	14-15
4	Viera Blvd to CR 509/Wickham	HNTB_ Route 4_Diversion	16-17
5	Viera Blvd to CR 519/ Fiske Blvd	HNTB_Route 5_Diversion	18-19
6	CR 519/ Fiske Blvd to Viera Blvd	HNTB_Route 6_Diversion	20-21
7	Viera Blvd to CR 519/Fiske Blvd	HNTB_Route7_Diversion	22-23
8	CR 519/Fiske Blvd to Viera Blvd	HNTB_Route 8_Diversion	24-25
9	CR 519/Fiske Blvd to SR 520	HNTB_ Route 9_Diversion	26-27
10	SR 520 to CR 519/Fiske Blvd	HNTB_Route 10_Diversion	28-29
11	CR 519/Fiske Blvd to SR 520	HNTB_Route 11_Diversion	30-31
12	SR 520 to CR 519/Fiske Blvd	HNTB_Route 12_Diversion	32-33
13	SR 520 to SR 524	HNTB_Route 13_Diversion	34-35
14	SR 524 to SR 520	HNTB_Route 14_Diversion	36-37
15	SR 520 to SR 524	HNTB_Route 15_Diversion	38-39
16	SR 524 to SR 520	HNTB_Route 16_Diversion	40-41
17	SR 524 to SR 528	HNTB_Route 17_Diversion	42-43
18	SR 528 to SR 524	HNTB_Route 18_Diversion	44-45
19	SR 528 to Port Saint John Pkwy	HNTB_Route 19_Diversion	46-47
20	Port Saint John Pkwy to SR 528	HNTB_Route 20_Diversion	48-49
21	Port Saint John Pkwy to SR 407	HNTB_Route 21_Diversion	50-51
22	SR 407 to Port Saint John Pkwy	HNTB_Route 22_Diversion	52-53
23	SR 407 to SR 50	HNTB_Route 23_Diversion	54-55
24	SR 50 to SR 407	HNTB_Route 24_Diversion	56-57
25	SR 50 to SR 406	HNTB_Route 25_Diversion	58-59
26	SR 406 to SR 50	HNTB_Route 26_Diversion	60-61
27	SR 50 to SR 406	HNTB_Route 27_Diversion	62-63
28	SR 406 to SR 50	HNTB_Route 28_Diversion	64-65
29	SR 406 to SR 46	HNTB_Route 29_Diversion	66-67
30	SR 46 to SR 406	HNTB_Route 30_Diversion	68-69
31	SR 406 to SR 46	HNTB_Route 31_Diversion	70-71
32	SR 46 to SR 406	HNTB_Route 32_Diversion	72-73
33	SR 46 to CR 5A	HNTB_Route 33_Diversion	74-75
34	CR 5A to SR 46	HNTB_Route 34_Diversion	76-77
35	SR 528 to SR 520	HNTB_Route 35_Diversion	78-79
36	SR 520 to SR 528	HNTB_Route 36_Diversion	80-81
A	SR 404 to Wickham Rd	HNTB_Route A_Diversion	82-83
B	Wickham Rd to SR 404	HNTB_Route B_Diversion	84-85
C	SR 518 to SR 404	HNTB_Route C_Diversion	86-87
D	SR 404 to SR 518	HNTB_Route D_Diversion	88-89



District 5 Integrated Corridor Management
I-95 Diversion Routes

Route 1 Timing Pattern

Route 1		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
304	CR 509 and I-95 NB Ramp	Brevard Co	28	HNTB_Route1_Diversion
230	CR 509 and I-95 SB Ramp	Brevard Co	28	
262	CR 509 and Sheriff Dr	Brevard Co	28	
233	CR 509 and Murrell Rd	Brevard Co	28	
323	Murrell Rd and Spyglass Hill Rd	Brevard Co	28	
329	Murrell Rd and Old glory Blvd	Brevard Co	28	
315	Viera Blvd and Murrell Rd	Brevard Co	28	
434	Viera Blvd and Star Rush Dr	Brevard Co	28	
409	Viera Blvd and I-95 SB Ramp	Brevard Co	28	
410	Viera Blvd and I-95 NB Ramp	Brevard Co	28	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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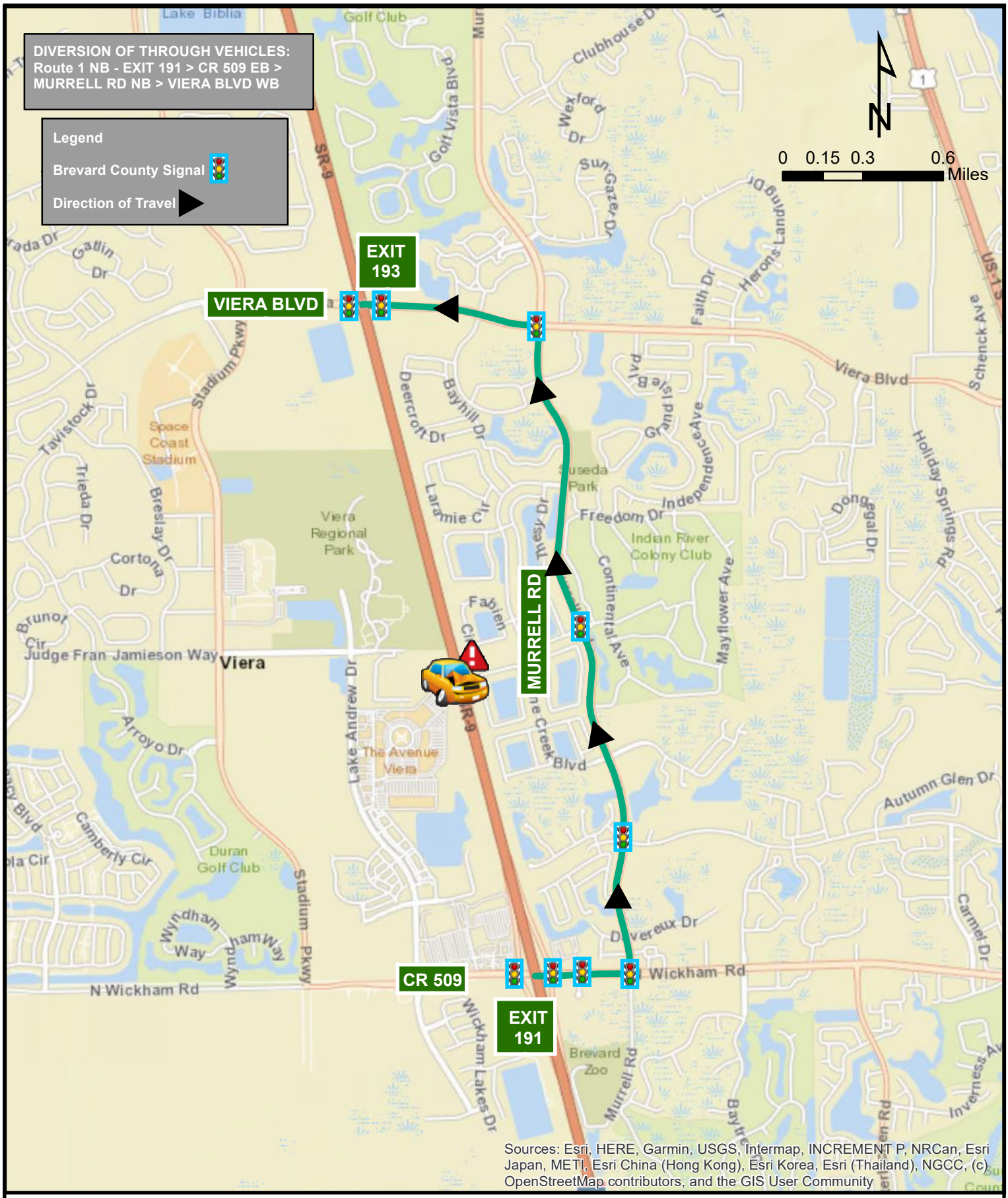

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 191 (CR 509) to MM 193 (Viera Blvd)

Route 1 NB

Route 2 Timing Pattern

Route 2		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
409	Viera Blvd and I-95 SB Ramp	Brevard Co	29	HNTB_Route 2_Diversion
410	Viera Blvd and I-95 NB Ramp	Brevard Co	29	
434	Viera Blvd and Star Rush Dr	Brevard Co	29	
315	Viera Blvd and Murrell Rd	Brevard Co	29	
329	Murrell Rd and Old Glory Blvd	Brevard Co	29	
323	Murrell Rd and Spyglass Hill Rd	Brevard Co	29	
233	CR 509 and Murrell Rd	Brevard Co	29	
262	CR 509 and Sheriff Dr	Brevard Co	29	
304	CR 509 and I-95 NB Ramp	Brevard Co	29	
230	CR 509 and I-95 SB Ramp	Brevard Co	29	

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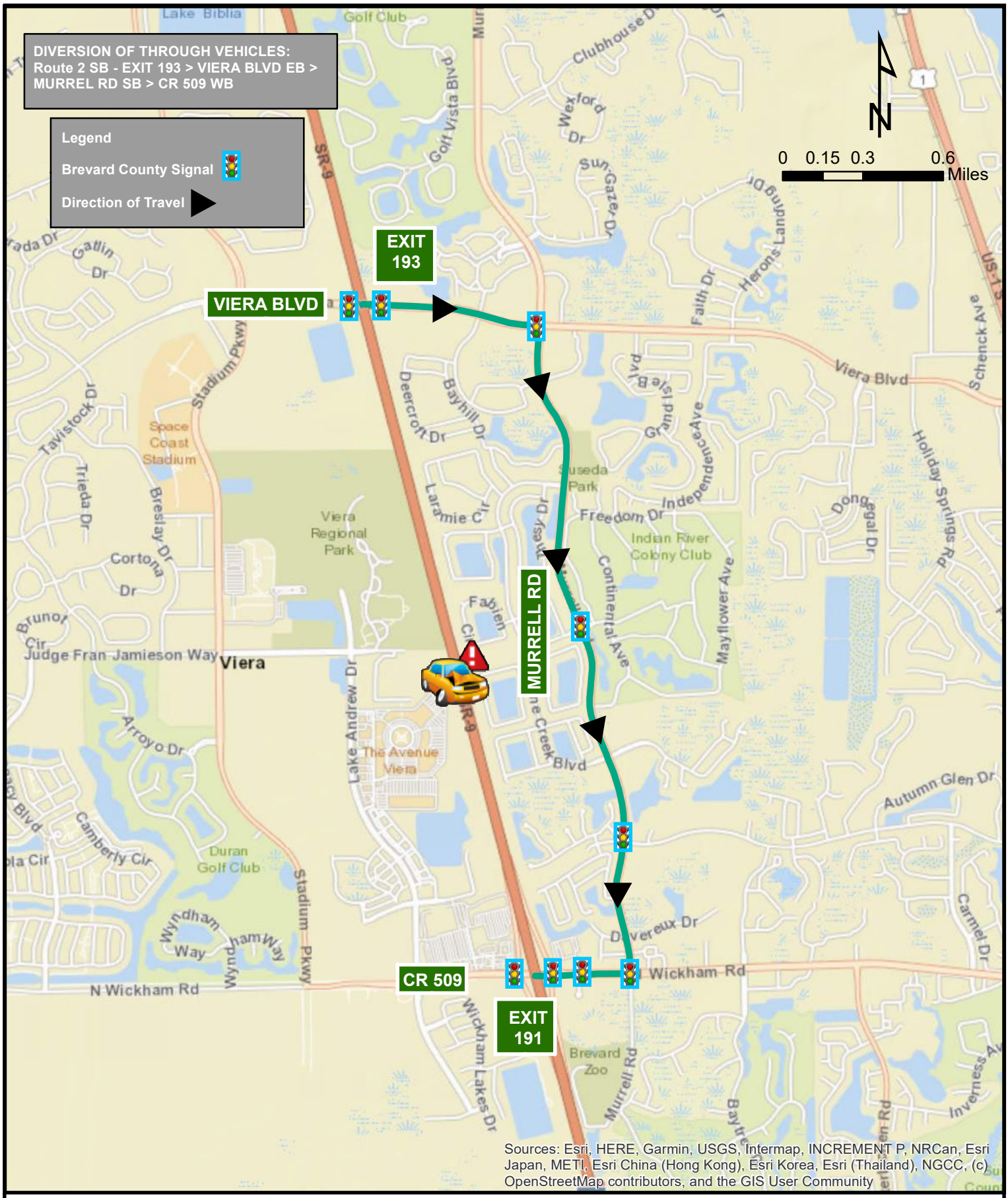

District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 193 (Viera Blvd) to MM 191 (CR 509)

Route 2 SB

Route 3 Timing Pattern

Route 3		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
304	CR 509 and I-95 NB Ramp	Brevard Co	9	HNTB_Route 3_Diversion
230	CR 509 and I-95 SB Ramp	Brevard Co	9	
311	CR 509 and Shoppes Dr	Brevard Co	9	
402	CR 509 and Stadium Pkwy	Brevard Co	9	
338	Stadium Pkwy and Judge Fran Jamieson Way	Brevard Co	9	
347	Stadium Pkwy and Viera Blvd	Brevard Co	9	
409	Viera Blvd and I-95 SB Ramp	Brevard Co	9	
410	Viera Blvd and I-95 NB Ramp	Brevard Co	9	

Flex Group on ATMS. now

Activate Flex Group

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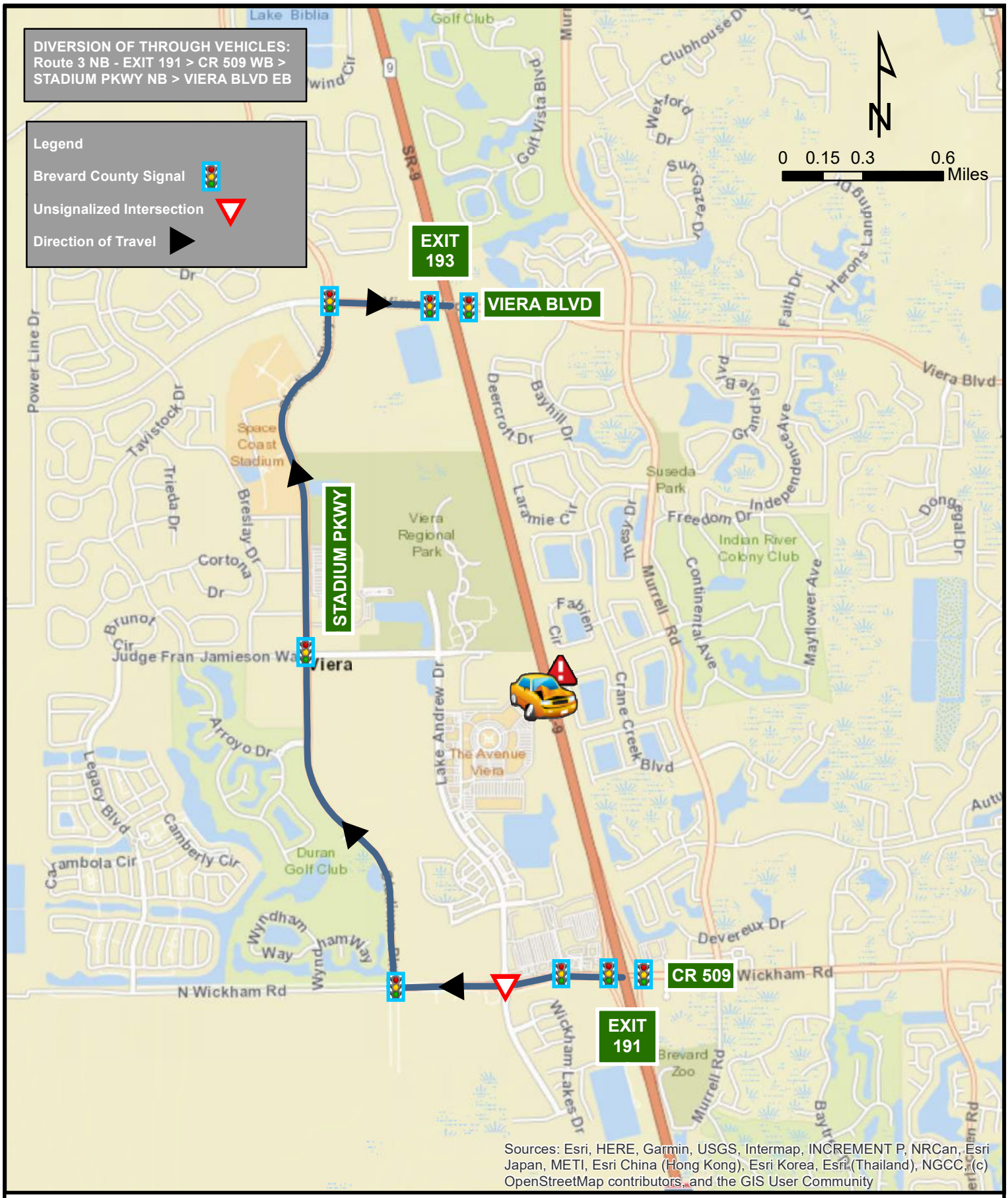

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 191 (CR 509) to MM 193 (Viera Blvd)

Route 3 NB

Route 4 Timing Pattern

Route 4		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
409	Viera Blvd and I-95 SB Ramp	Brevard Co	11	HNTB_Route 4_Diversion
410	Viera Blvd and I-95 NB Ramp	Brevard Co	11	
347	Stadium Pkwy and Viera Blvd	Brevard Co	11	
338	Stadium Pkwy and Judge Fran Jamieson Way	Brevard Co	11	
402	CR 509 and Stadium Pkwy	Brevard Co	11	
311	CR 509 and Shoppes Dr	Brevard Co	11	
304	CR 509 and I-95 NB Ramp	Brevard Co	11	
230	CR 509 and I-95 SB Ramp	Brevard Co	11	

Flex Group on ATMS. now

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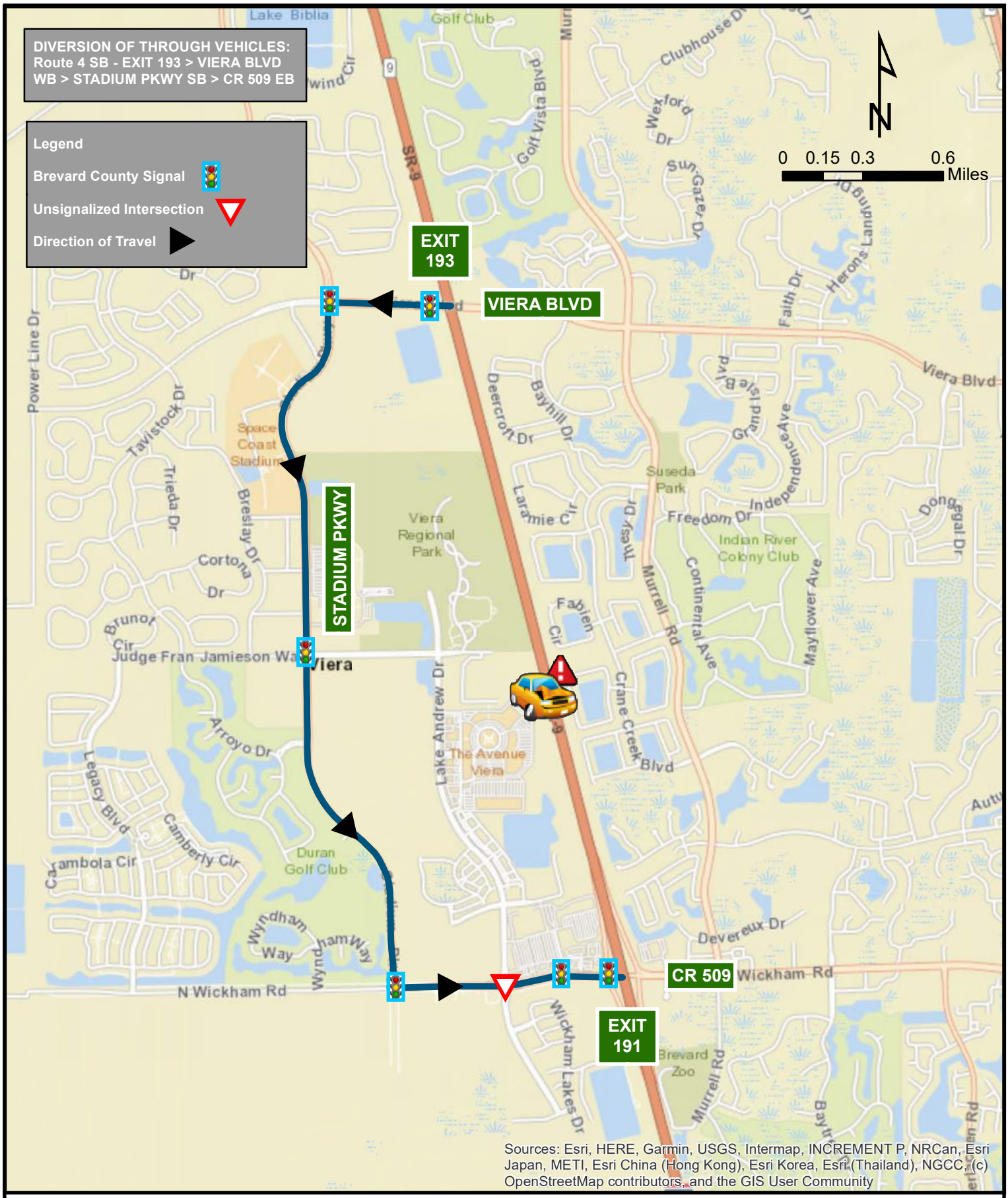

District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 193 (Viera Blvd) to MM 191 (CR 509)

Route 4 SB

Route 5 Timing Pattern

Route 5		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
410	Viera Blvd and I-95 NB Ramp	Brevard Co	6	HNTB_Route 5_Diversion
409	Viera Blvd and I-95 SB Ramp	Brevard Co	6	
434	Viera Blvd and Star Rush Dr	Brevard Co	6	
315	Viera Blvd and Murrell Rd	Brevard Co	6	
312	Murrell Rd and Clubhouse Dr	Brevard Co	6	
247	SR 502/Barnes Blvd and Murrell Rd	Brevard Co	6	
332	SR 502/Barnes Blvd and Three Meadows Dr	Brevard Co	6	
395	SR 502/Barnes Blvd and Playa del Sol Dr	Brevard Co	6	
186	SR 519/Fiske and I-95 NB Ramp	Brevard Co	6	

Flex Group on ATMS. now

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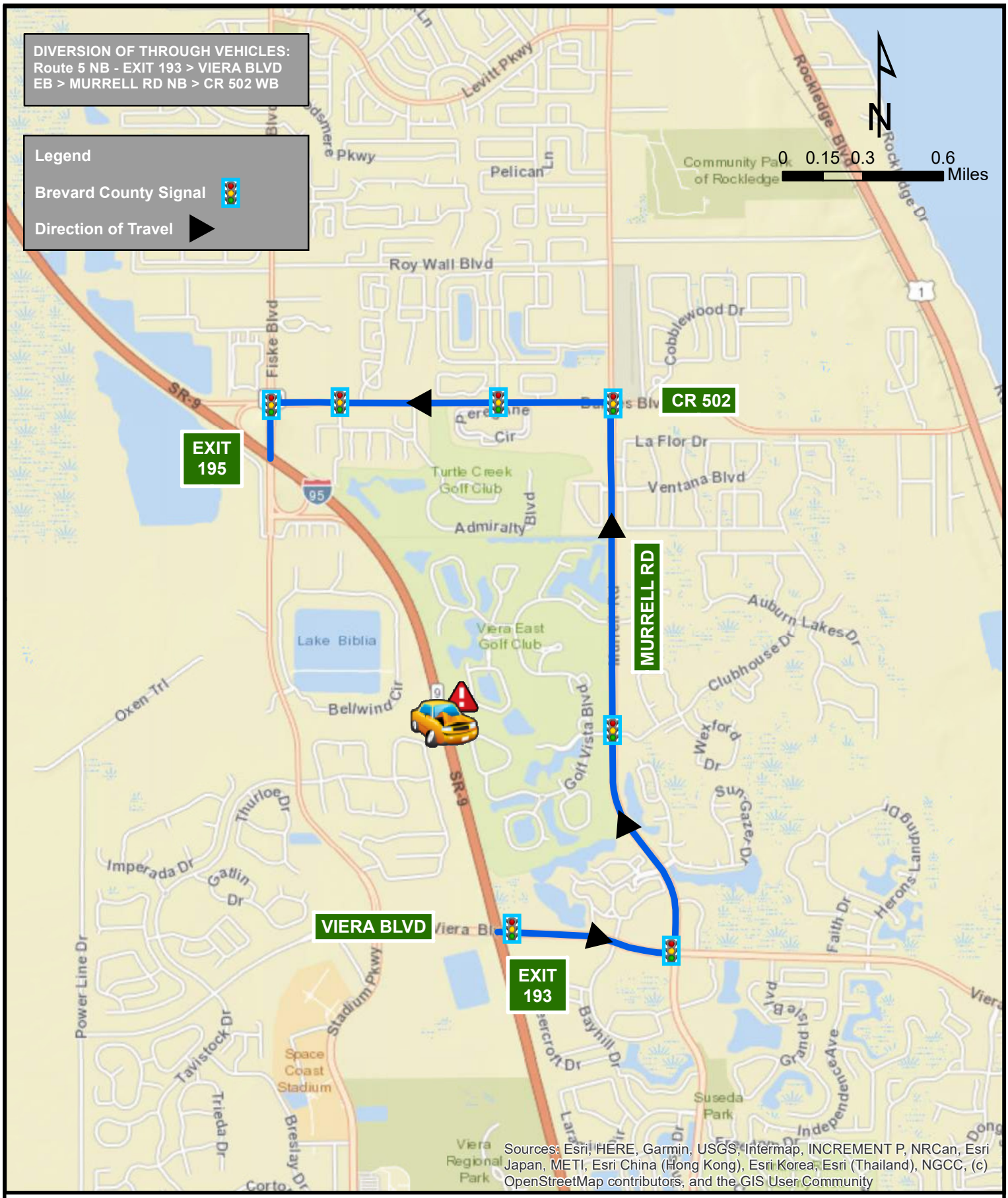

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 193 (Viera Blvd) to MM 195 (CR 502)

Route 5 NB

Route 6 Timing Pattern

Route 6		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
327	SR 519/ Fiske Blvd and I-95 SB Ramp	Brevard Co	7	HNTB_Route 6_Diversion
186	SR 519/Fiske Blvd and I-95 NB Ramp	Brevard Co	7	
395	SR 502/Barnes Blvd and Playa del Sold Dr	Brevard Co	7	
332	SR 502/Barnes Blvd and Three Meadows Dr	Brevard Co	7	
247	SR 502/Barnes Blvd and Murrell Rd	Brevard Co	7	
312	Murrell Rd and Clubhouse Dr	Brevard Co	7	
315	Viera Blvd and Murrell Rd	Brevard Co	7	
434	Viera Blvd and Star Rush Dr	Brevard Co	7	
410	Viera Blvd and I-95 NB Ramp	Brevard Co	7	
409	Viera Blvd and I-95 SB Ramp	Brevard Co	7	

Flex Group on ATMS. now

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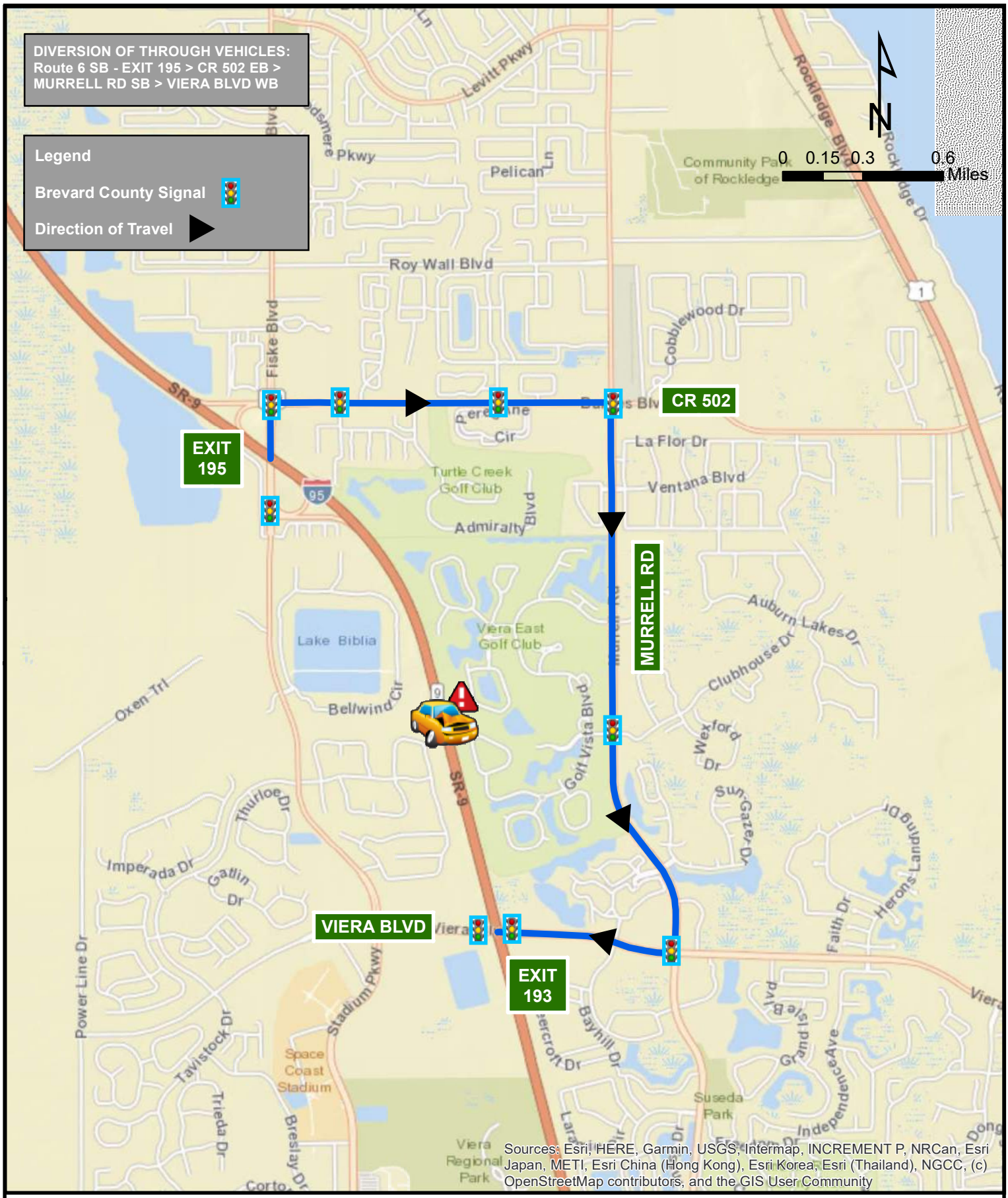

District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 195 (CR 502) to MM 193 (Viera Blvd)

Route 6 SB

Route 7 Timing Pattern

Route 7		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
410	Viera Blvd and I-95 NB Ramp	Brevard Co	8	HNTB_Route 7_Diversion
409	Viera Blvd and I-95 SB Ramp	Brevard Co	8	
347	Stadium Pkwy and Viera Blvd	Brevard Co	8	
377	Stadium Pkwy and Stadium Corners/Rosemount Dr	Brevard Co	8	
400	Stadium Pkwy and Travistock Dr/Sonoma Way	Brevard Co	8	
327	SR 519/ Fiske Blvd I-95 SB Ramp	Brevard Co	8	
186	SR 519/ Fiske and I-95 NB Ramp	Brevard Co	8	

Flex Group on ATMS. now

Activate Flex Group

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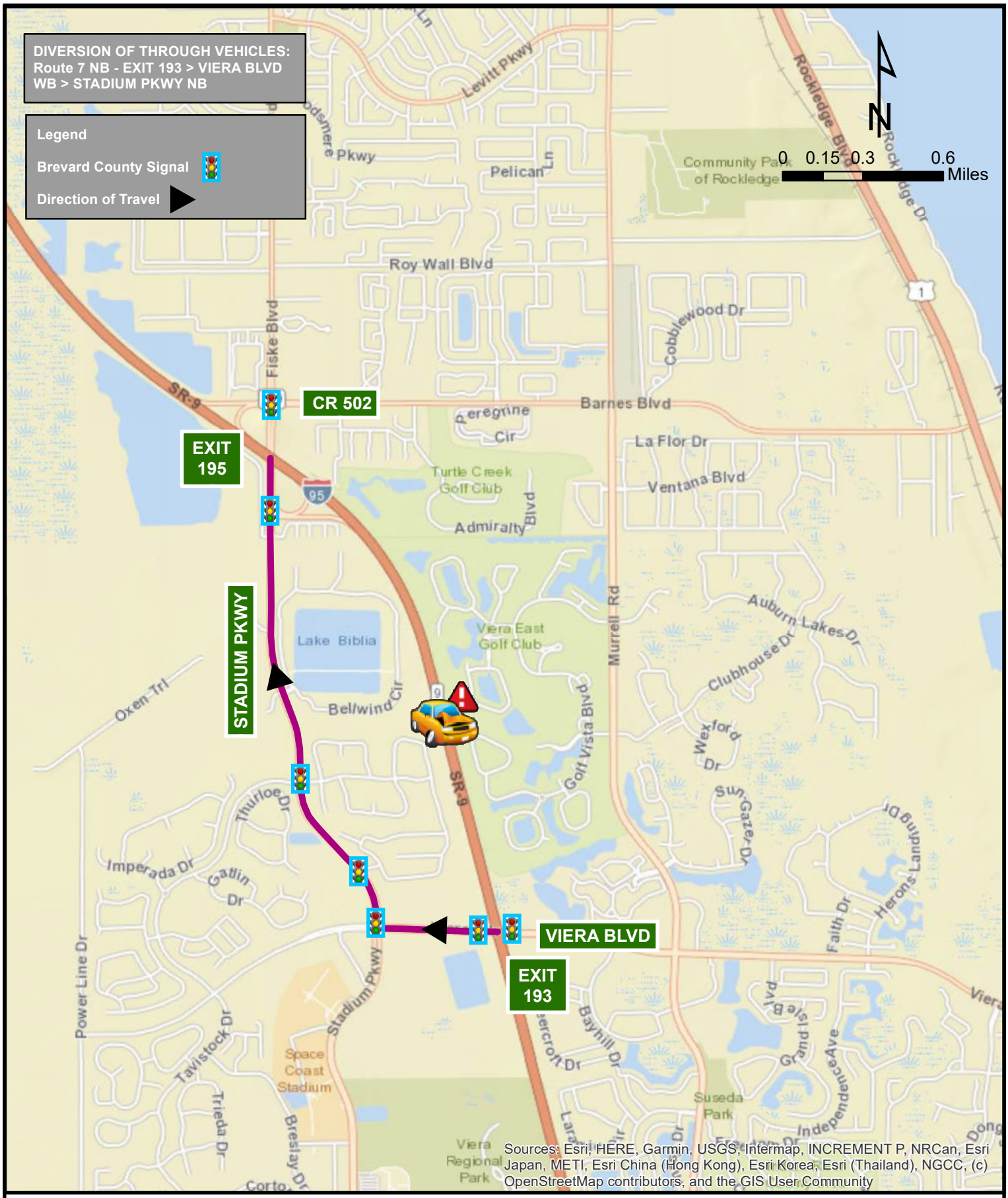

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 193 (Viera Blvd) to MM 195 (CR 502)

Route 7 NB

Route 8 Timing Pattern

Route 8		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
327	SR 519/ Fiske Blvd and I-95 SB Ramp	Brevard Co	10	HNTB_Route 8_Diversion
400	Stadium Pkwy and Travistock Dr/Sonoma Way	Brevard Co	10	
377	Stadium Pkwy and Stadium Corners/ Rosemount Dr	Brevard Co	10	
347	Stadium Pkwy and Viera Blvd	Brevard Co	10	
410	Viera Blvd and I-95 NB Ramp	Brevard Co	10	
409	Viera Blvd and I-95 SB Ramp	Brevard Co	10	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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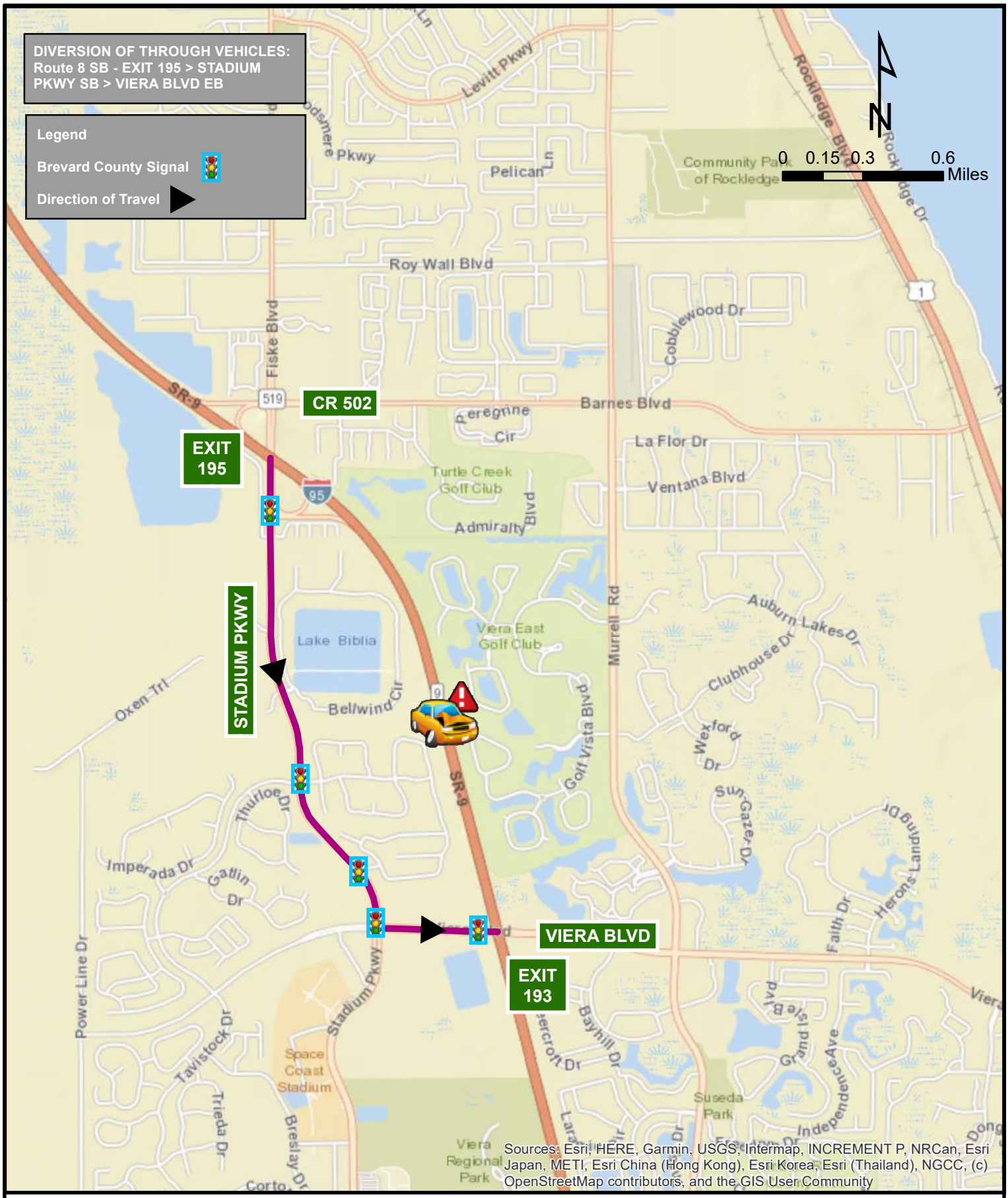

District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 195 (CR 502) to MM 193 (Viera Blvd)

Route 8 SB

Route 9 Timing Pattern

Route 9		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
186	SR 519/ Fiske Blvd and I-95 NB Ramp	Brevard Co	17	HNTB_Route 9_Diversion
5009	SR 519/ Fiske and Eyster Blvd	Brevard Co	17	
5008	SR 519 and Fiske Blvd Barton Blvd	Brevard Co	17	
5011	SR 519/ Fiske and St Andrews Dr	Brevard Co	17	
5012	SR 519/ Fiske and Pluckebaum Rd	Brevard Co	17	
1026	SR 519/Fiske and Rosa L Jones Blvd	Brevard Co	17	
1014	SR 520 and SR 519/Fiske Blvd	Brevard Co	26	HNTB_Event 5 West_Diversion**
1016	SR 520 and Varr Ave	Brevard Co	26	
79	SR 520 and SR 501/Clearlake Rd	Brevard Co	26	
88	SR 520 and Range Rd	Brevard Co	26	
93	SR 520 and S Burnett Rd	Brevard Co	26	
374	SR 520 and Cox Rd/ A Lane	Brevard Co	26	
355	SR 520 and Townsend Rd	Brevard Co	26	
102	SR 520 and I-95 SB Ramp	Brevard Co	26	
103	SR 520 and I-95 NB Ramp	Brevard Co	26	

Flex Group on ATMS. now

Activate Flex Group

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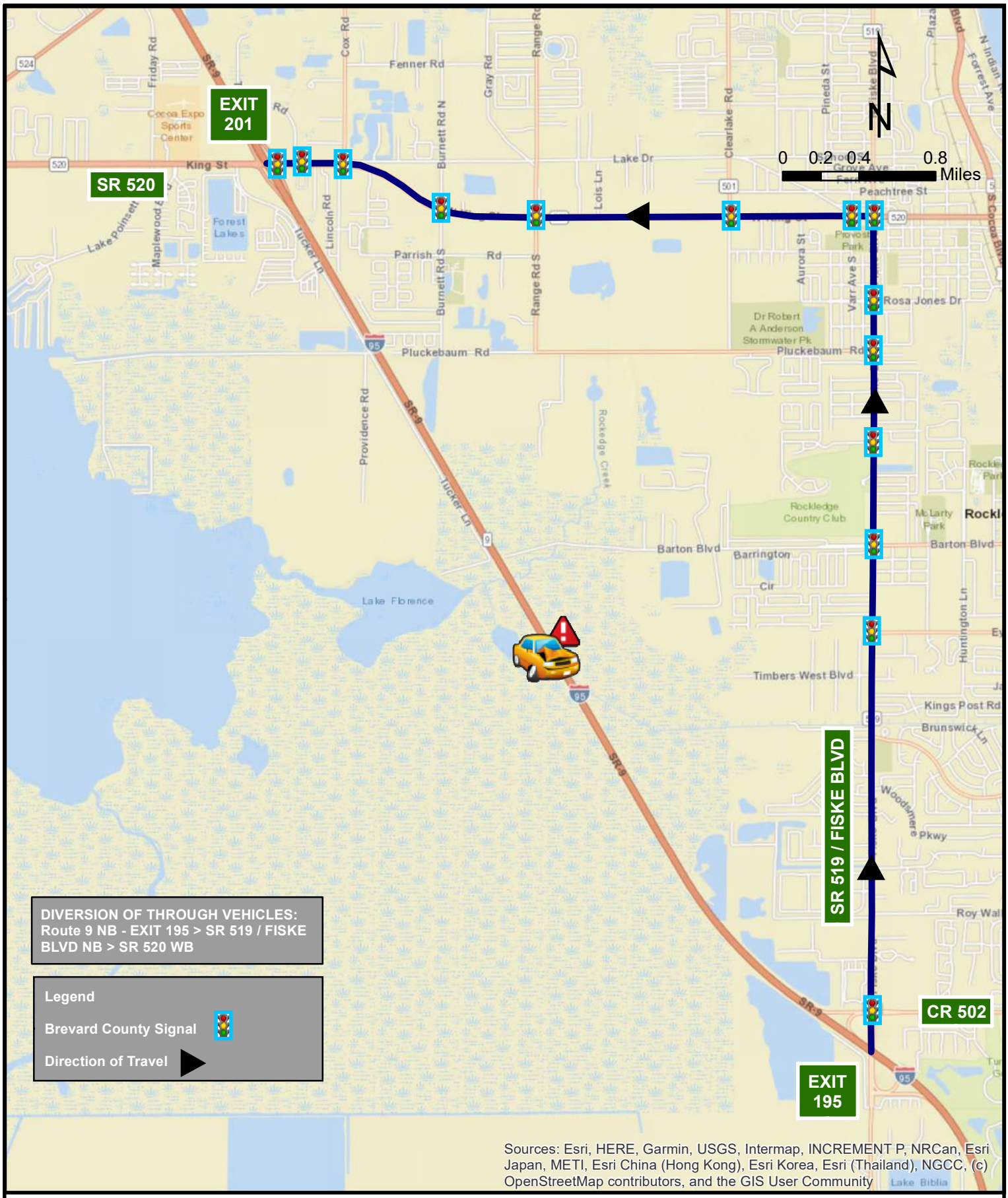
De-active Flex Group

Search> Flex Group HNTB_Route 9> CTRL All signals> Right Click> Instant Pattern> Revert>Download



DIVERSION OF THROUGH VEHICLES:
Route 9 NB - EXIT 195 > SR 519 / FISKE BLVD NB > SR 520 WB

Legend

Brevard County Signal

Direction of Travel

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

FDOT

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 195 (CR 502) to MM 201 (SR 520)

Route 9 NB

Route 10 Timing Pattern

Route 10		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
406	SR 520 and Friday Rd/ Lk Poinsett Rd	Brevard Co	26	HNTB_Event 5 West_Diversion**
102	SR 520 and I-95 SB Ramp	Brevard Co	26	
103	SR 520 and I-95 NB Ramp	Brevard Co	26	
355	SR 520 and Townsend Rd	Brevard Co	26	
374	SR 520 and Cox rd/A lane	Brevard Co	26	
93	SR 520 and S Burnett Rd	Brevard Co	26	
88	SR 520 and Ranger Rd	Brevard Co	26	
79	SR 520 and SR 501/ Clearlake Rd	Brevard Co	26	
1016	SR 520 and S Varr Ave/ Lake Dr	Brevard Co	26	
1014	SR 520 and SR 519/ Fiske Blvd	Brevard Co	26	
1026	SR 519/ Fiske Blvd and Rosa L Jones Blvd	Brevard Co	18	HNTB_Route 10_Diversion
5012	SR 519/ Fiske Blvd and Pluckebaum Rd	Brevard Co	18	
5011	SR 519/ Fiske Blvd and St Andrews Dr	Brevard Co	18	
5008	SR 519/ Fiske Blvd and Barton Blvd	Brevard Co	18	
5009	SR 519/ Fiske Blvd and Eyster Blvd	Brevard Co	18	
186	I-95 NB/ SR 502/ Barnes Blvd and SR 519/ Fiske Blvd	Brevard Co	18	
327	I-95 SB and SR 519/ Fiske Blvd	Brevard Co	18	

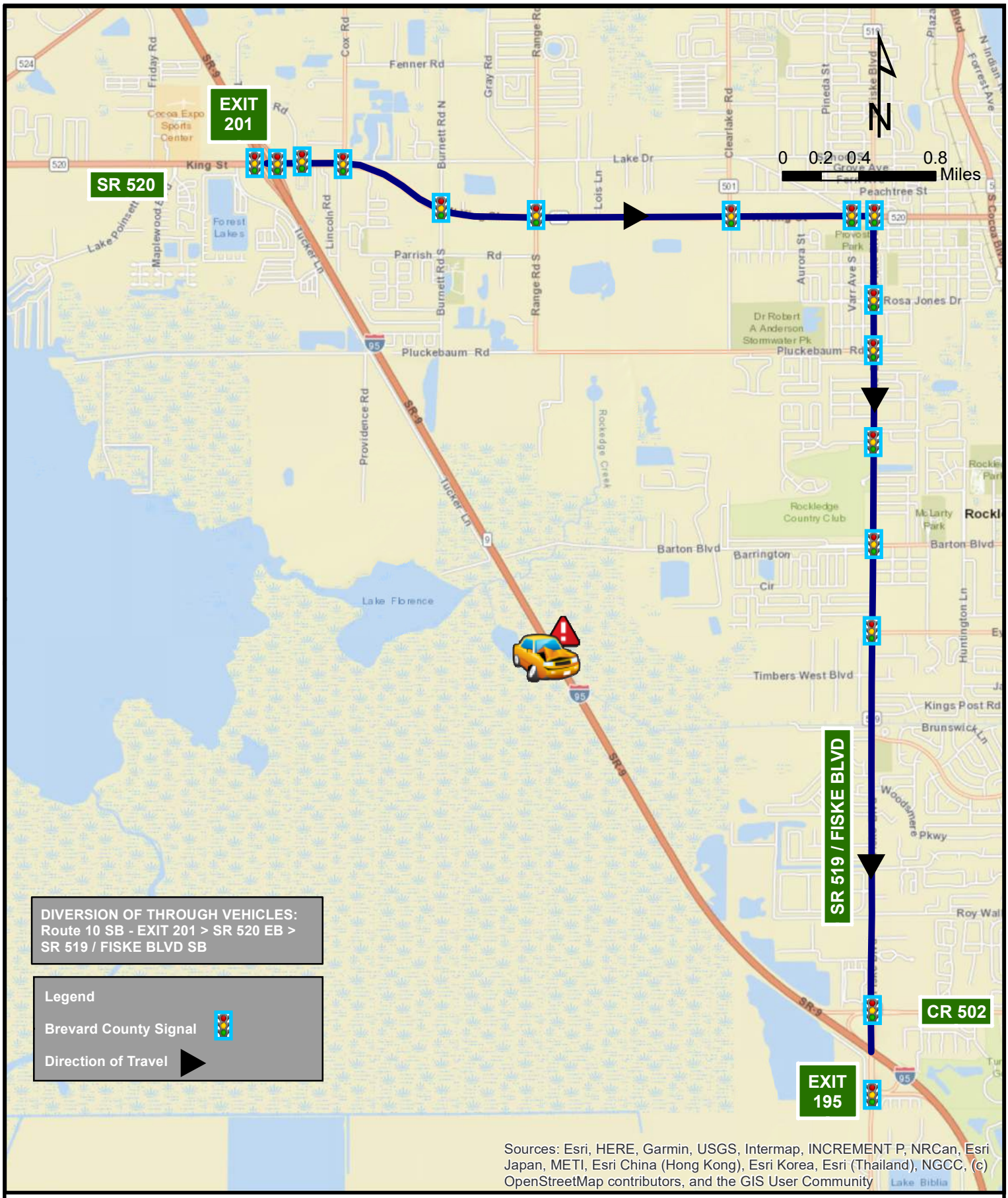
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 10> CTRL All signals> Right Click> Instant Pattern> 18> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 10> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 201(SR 520) to MM 195 (CR 502)

Route 10 SB

Route 11 Timing Pattern

Route 11		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
186	SR 519 and I-95 NB Ramp	Brevard Co	20	HNTB_Route 11_Diversion
395	SR 502 and Playa del Sol Dr	Brevard Co	20	
332	SR 502/ Barnes Blvd and Three Meadows Dr	Brevard Co	20	
247	SR 502/Barnes Blvd and Murrell Rd	Brevard Co	20	
94	US 1 and SR 502/ Barnes Blvd	Brevard Co	20	
5003	US 1 and Eyster Blvd	Brevard Co	20	
5024	US 1 and Rockledge Sq.	Brevard Co	20	
5001	US 1 and Barton Blvd	Brevard Co	20	
5026	US 1 and Longwood Ave	Brevard Co	20	
5002	US 1 and Florida Ave	Brevard Co	20	
1011	US 1 and Rosa L Jones Blvd	Brevard Co	20	
1008	US 1 and SR 520	Brevard Co	26	HNTB_Event 5 West_Diversion
1015	SR 520 and Blake Ave	Brevard Co	26	
1014	SR 520 and SR 519/Fiske	Brevard Co	26	
1016	SR 520 and Varr Ave	Brevard Co	26	
79	SR 520 and SR 501/ Clearlake Rd	Brevard Co	26	
88	SR 520 and Ranger Rd	Brevard Co	26	
93	SR 520 Burnett Rd	Brevard Co	26	
374	SR 520 and Cox Rd/ A Ln	Brevard Co	26	
355	SR 520 and Townsend Rd	Brevard Co	26	
103	SR 520 and I-95 NB Ramp	Brevard Co	26	
102	SR 520 and I-95 SB Ramp	Brevard Co	26	
406	SR 520 and Friday Rd/ Lk Poinsett Rd	Brevard Co	26	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 195 (CR 502) to MM 201 (SR 520)

Route 11 NB

Route 12 Timing Pattern

Route 12		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
406	SR 520 and Friday Rd/ Lk Poinsett Rd	Brevard Co	26	HNTB_Event 5 West_Diversion
102	SR 520 and I-95 SB Ramp	Brevard Co	26	
103	SR 520 and I-95 NB Ramp	Brevard Co	26	
355	SR 520 and Townsend Rd	Brevard Co	26	
374	SR 520 and Cox Rd/ A Ln	Brevard Co	26	
93	SR 520 and Burnett Rd	Brevard Co	26	
88	SR 520 and Ranger Rd	Brevard Co	26	
79	SR 520 and SR 501/ Clearlake Rd	Brevard Co	26	
1016	SR 520 and Varr Ave	Brevard Co	26	
1014	SR 520 SR 519/ Fiske Blvd	Brevard Co	26	
1015	SR 520 and Blake Ave	Brevard Co	26	
1008	US 1 and SR 520	Brevard Co	26	
1011	US 1 and Rosa L Jones Blvd	Brevard Co	21	HNTB_Route 12_Diversion
5002	US 1 and Florida Ave	Brevard Co	21	
5026	US 1 and Longwood Ave	Brevard Co	21	
5001	US 1 and Barton Blvd	Brevard Co	21	
5024	US 1 and Rockledge Sq	Brevard Co	21	
5003	US 1 and Eyster Blvd	Brevard Co	21	
94	US 1 and SR 502/Barnes Blvd	Brevard Co	21	
247	SR 502/Barnes Blvd and Murrell Rd	Brevard Co	21	
332	SR 502/ Barnes Blvd and Three Meadows Dr	Brevard Co	21	
395	SR 502/Barnes Blvd and Playa del Sol Dr	Brevard Co	21	
186	SR 519/ Fiske and I-95 NB Ramp	Brevard Co	21	
327	SR 519/Fiske and I-95 SB Ramp	Brevard Co	21	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

Search> Flex Group HNTB_Route 12> CTRL All signals> Right Click> Instant Pattern> Revert>Download

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 201 (SR 520) to MM 195 (CR 502)

Route 12 SB

Route 13 Timing Pattern

Route 13		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
103	SR 520 and I-95 NB Ramp	Brevard Co	26	HNTB_Event 5 West_Diversion**
102	SR 520 and I-95 SB Ramp	Brevard Co	26	
355	SR 520 and Townsend Rd	Brevard Co	26	
374	SR 520 and Cox Rd/ A Ln	Brevard Co	26	
185	SR 524 and Cox Rd	Brevard Co	23	HNTB_Route 13_Diversion
1038	SR 524 and Walmart Distribution Center	Brevard Co	23	
1035	SR 524 and Friday Rd	Brevard Co	23	
1036	SR 524 and I-95 SB Ramp	Brevard Co	23	
1037	SR 524 and I-95 NB Ramp	Brevard Co	23	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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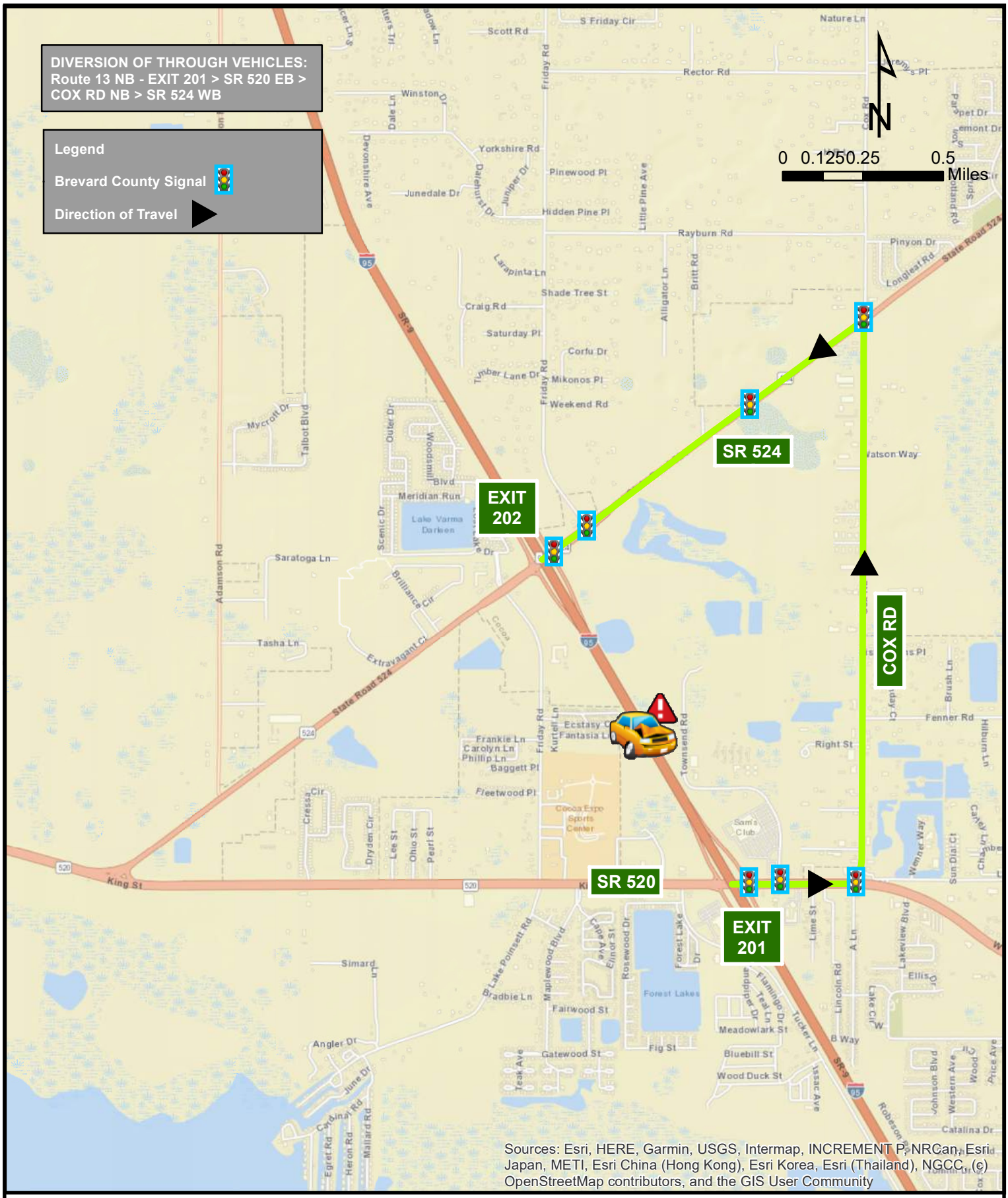

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 201(SR 520) to MM 202 (SR 524)

Route 13 NB

Route 14 Timing Pattern

Route 14		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
1036	SR 524 and I-95 SB Ramp	Brevard Co	24	HNTB_Route 14_Diversion
1037	SR 524 and I-95 NB Ramp	Brevard Co	24	
1035	SR 524 and Friday Rd	Brevard Co	24	
1038	SR 524 and Walmart Distribution Center	Brevard Co	24	
185	SR 524 and Cox Rd	Brevard Co	24	
374	SR 520 and Cox Rd/ A Ln	Brevard Co	26	HNTB_Event 5 West_Diversion**
355	SR 520 and Townsend Rd	Brevard Co	26	
103	SR 520 and I-95 NB Ramp	Brevard Co	26	
102	SR 520 and I-95 SB Ramp	Brevard Co	26	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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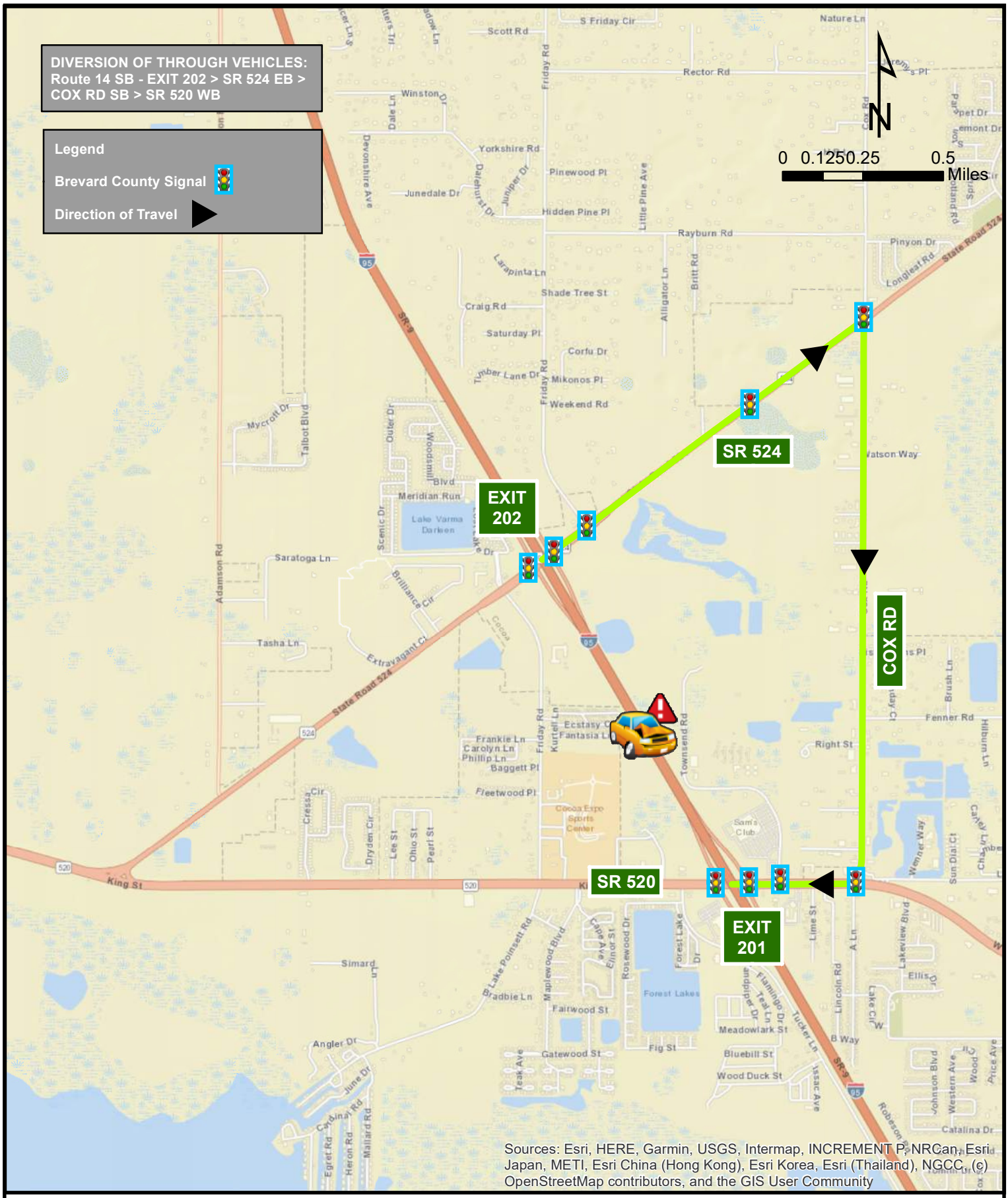

District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 202 (SR 524) to MM 201(SR 520)

Route 14 SB

Route 15 Timing Pattern

Route 15		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
103	SR 520 and I-95 NB Ramp	Brevard Co	15	HNTB_Route 15_Diversion
102	SR 520 and I-95 SB Ramp	Brevard Co	15	
406	SR 520 and Friday Rd/Lk Poinsett Rd	Brevard Co	15	
1036	SR 524 and I-95 SB Ramp	Brevard Co	15	
1037	SR 524 and I-95 NB Ramp	Brevard Co	15	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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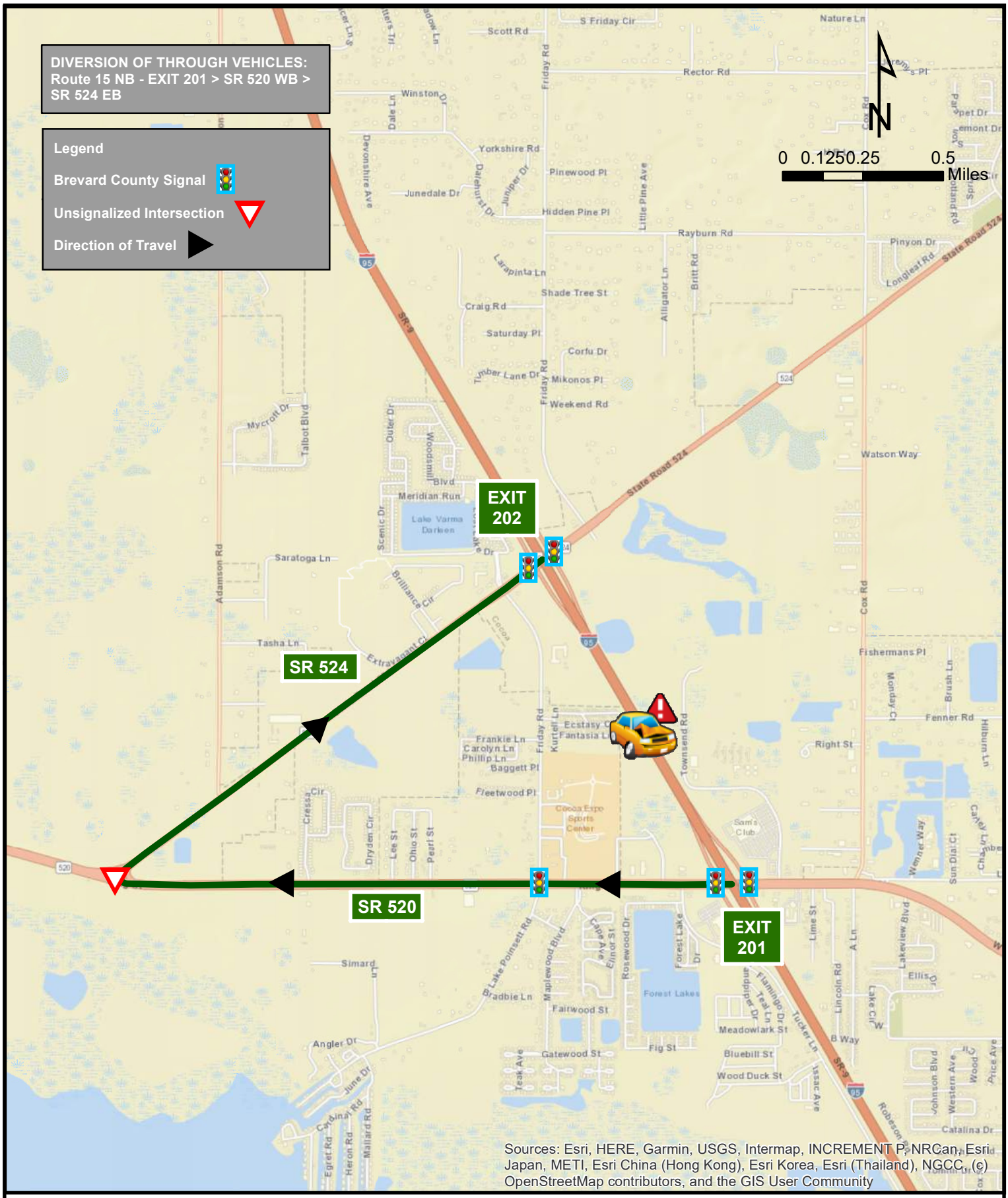

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 201 (SR 520) to MM 524 (SR 524)

Route 15 NB

Route 16 Timing Pattern

Route 16		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
1036	SR 524 and I-95 SB Ramp	Brevard Co	16	HNTB_Route 16_Diversion
1037	SR 524 and I-95 NB Ramp	Brevard Co	16	
406	SR 520 and Friday Rd/Lk Poinsett Rd	Brevard Co	16	
103	SR 520 and I-95 NB Ramp	Brevard Co	16	
102	SR 520 and I-95 SB Ramp	Brevard Co	16	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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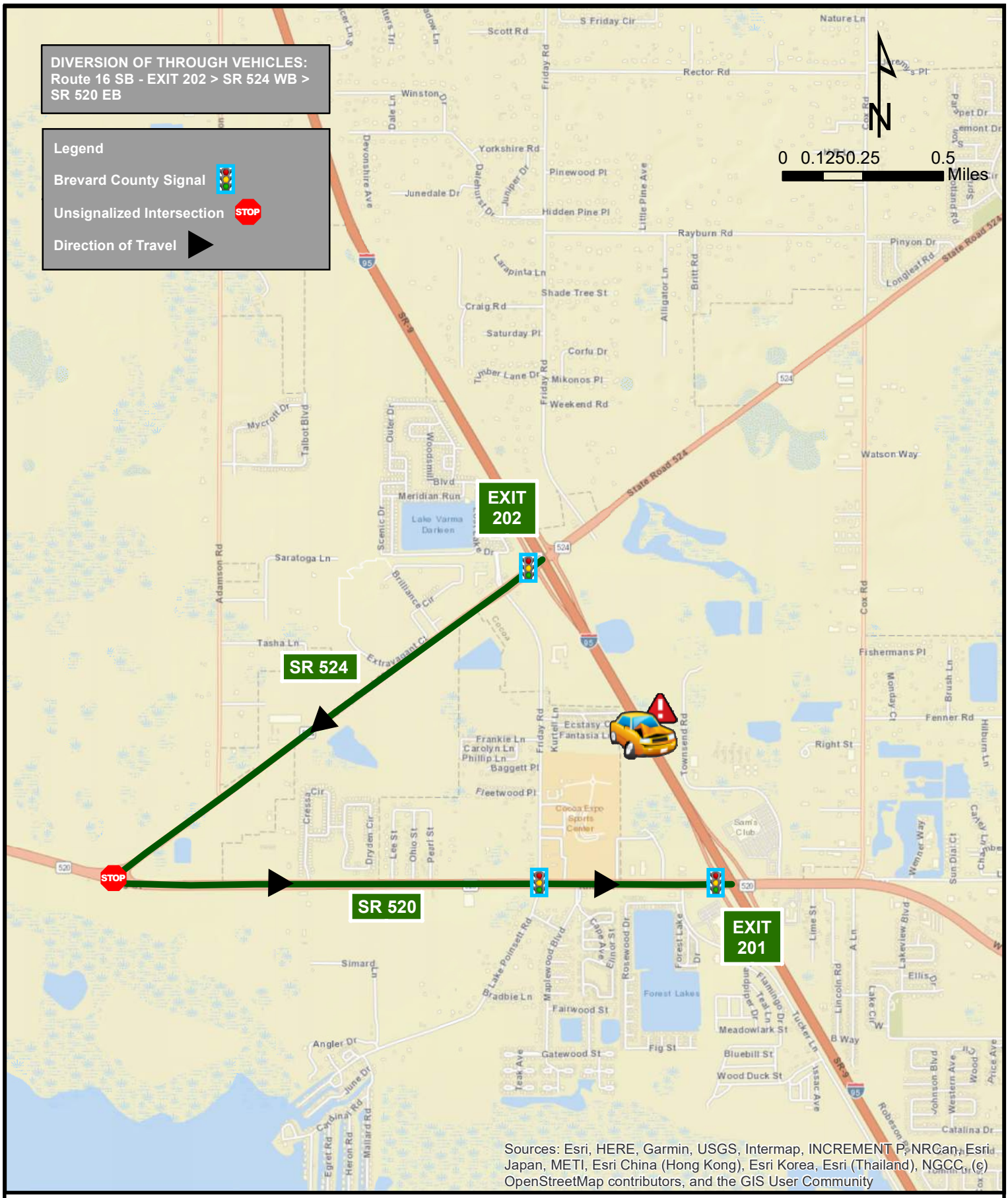

District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 202 (SR 524) to MM 201 (SR 520)

Route 16 SB

Route 17 Timing Pattern

Route 17		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
1037	SR 524 and I-95 NB Ramp	Brevard Co	17	HNTB_Route 17_Diversion
1036	SR 524 and I-95 SB Ramp	Brevard Co	17	
1035	SR 524 and Friday Rd	Brevard Co	17	
1038	SR 524 and Walmart Distribution Center	Brevard Co	17	
185	SR 524 and Cox Rd	Brevard Co	17	
1019	SR 524 and London Blvd	Brevard Co	17	
	SR 524 and Cocoa Comm	Brevard Co	17	
1018	SR 524 and E Industry Rd	Brevard Co	17	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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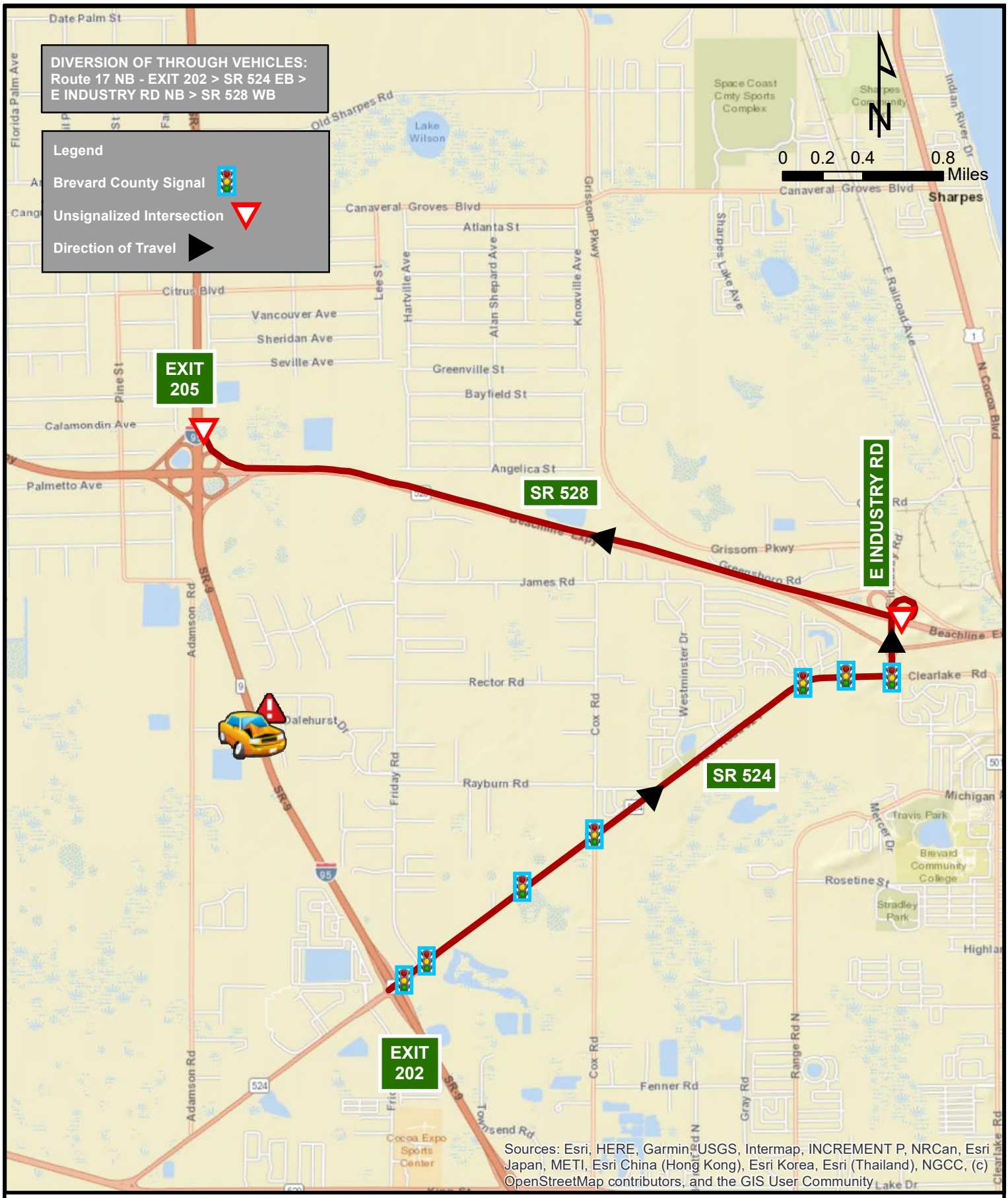

FDOT

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 202 (SR 524) to MM 205 (SR 528)

Route 17 NB

Route 18 Timing Pattern

Route 18		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
1018	SR 524 and E Industry Rd	Brevard Co	18	HNTB_Route 18_Divesion
	SR 524 and Cocoa Comm	Brevard Co	18	
1019	SR 524 and London Blvd	Brevard Co	18	
185	SR 524 and Cox Rd	Brevard Co	18	
1038	SR 524 and Walmart Distribution Center	Brevard Co	18	
1035	SR 524 and Friday Rd	Brevard Co	18	
1037	SR 524 and I-95 NB Ramp	Brevard Co	18	
1036	SR 524 and I-95 SB Ramp	Brevard Co	18	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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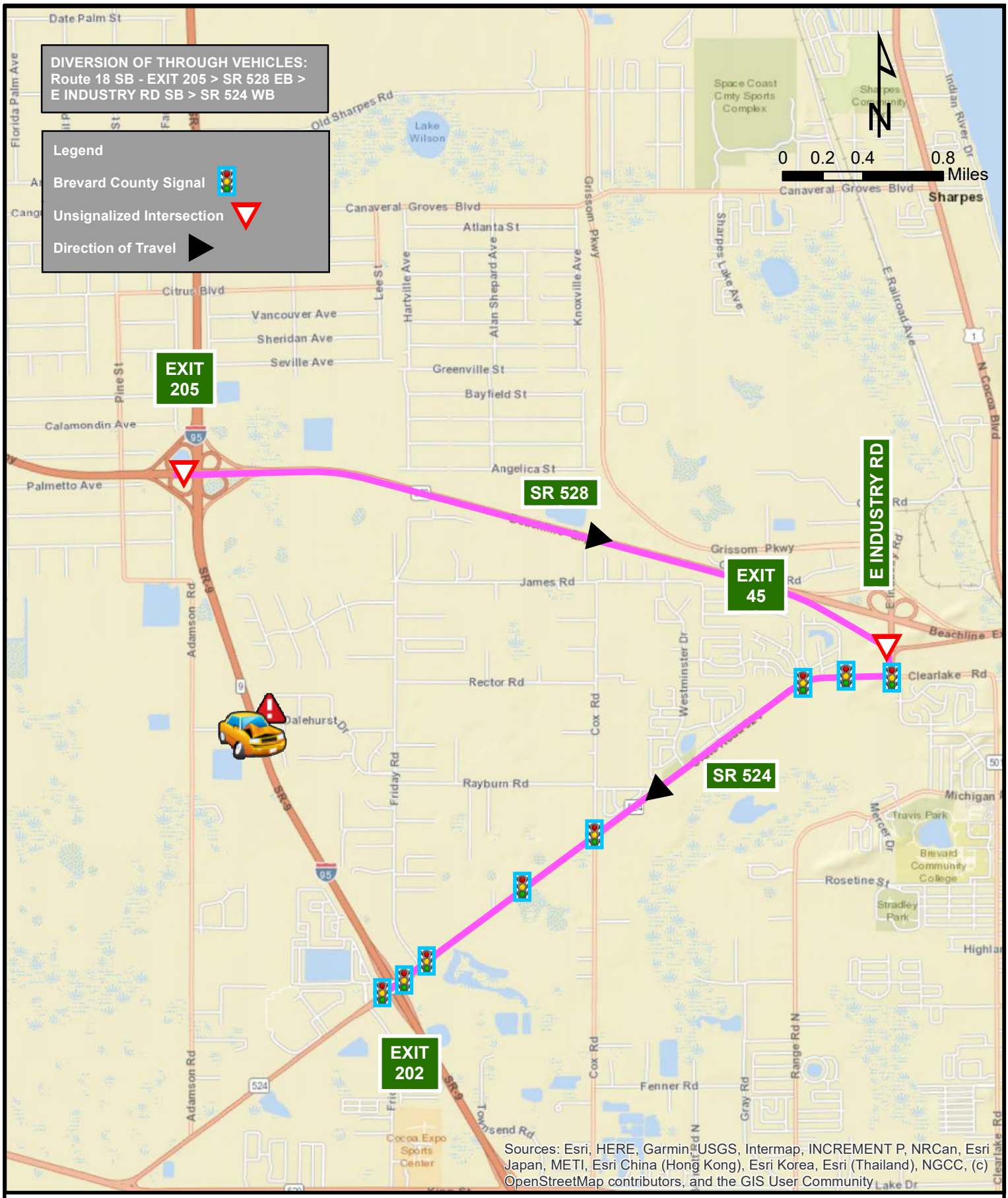

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

FDOT

District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 205 (SR 528) to MM 202 (SR 524)

Route 18 SB

Route 19 Timing Pattern

Route 19		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
89	E Industry Rd and Grissom Pkwy	Brevard Co	19	HNTB_Route 19_Diversion
209	Grissom Pkwy and Canaveral Groves Blvd	Brevard Co	19	
285	Port Saint John Pkwy and Grissom Pkwy	Brevard Co	19	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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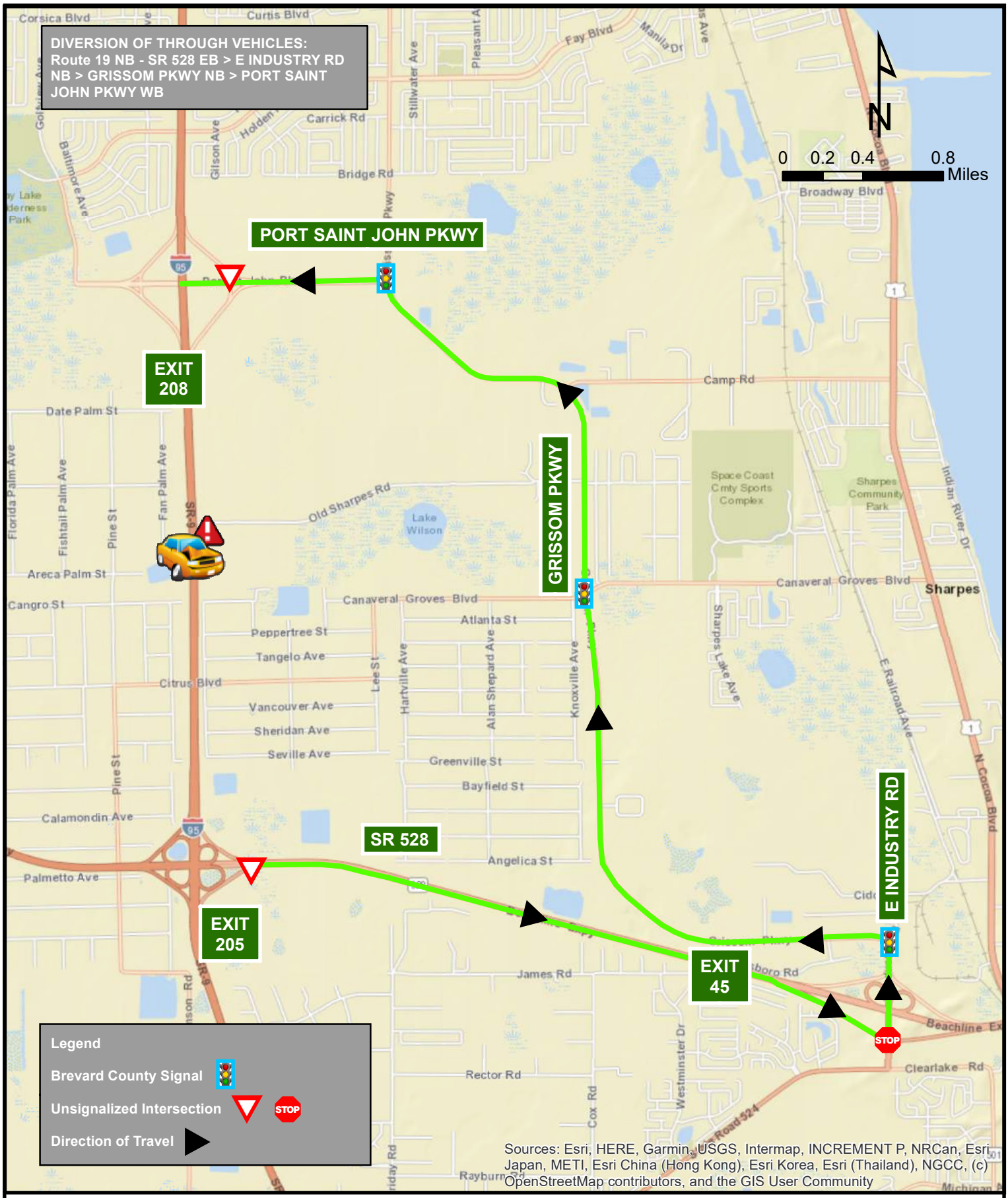

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 205 (SR 528) to MM 208 (PORT SAINT JOHN PKWY)

Route 19 NB

Route 20 Timing Pattern

Route 20		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
285	Port Saint John Pkwy and Grissom Pkwy	Brevard Co	20	HNTB_Route 20_Diversion
209	Grissom Pkwy and Canaveral Groves Blvd	Brevard Co	20	
89	E Industry Rd and Grissom Pkwy	Brevard Co	20	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 208 (PORT SAINT JOHN PKWY) to MM 205 (SR 528)

Route 20 SB

Route 21 Timing Pattern

Route 21		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	
285	Port Saint John Pkwy and Grissom Pkwy	Brevard Co	21	HNTB_Route 21_Diversion
141	Grissom Pkwy and Fay Blvd	Brevard Co	21	
352	Grissom Pkwy and Curtis Blvd	Brevard Co	21	
351	Grissom Pkwy and Falcon Blvd	Brevard Co	21	
243	Grissom Pkwy and Kings Hwy	Brevard Co	21	
140	SR 405 and Grissom Pkwy	Brevard Co	21	
147	SR 405 and SR 407	Brevard Co	21	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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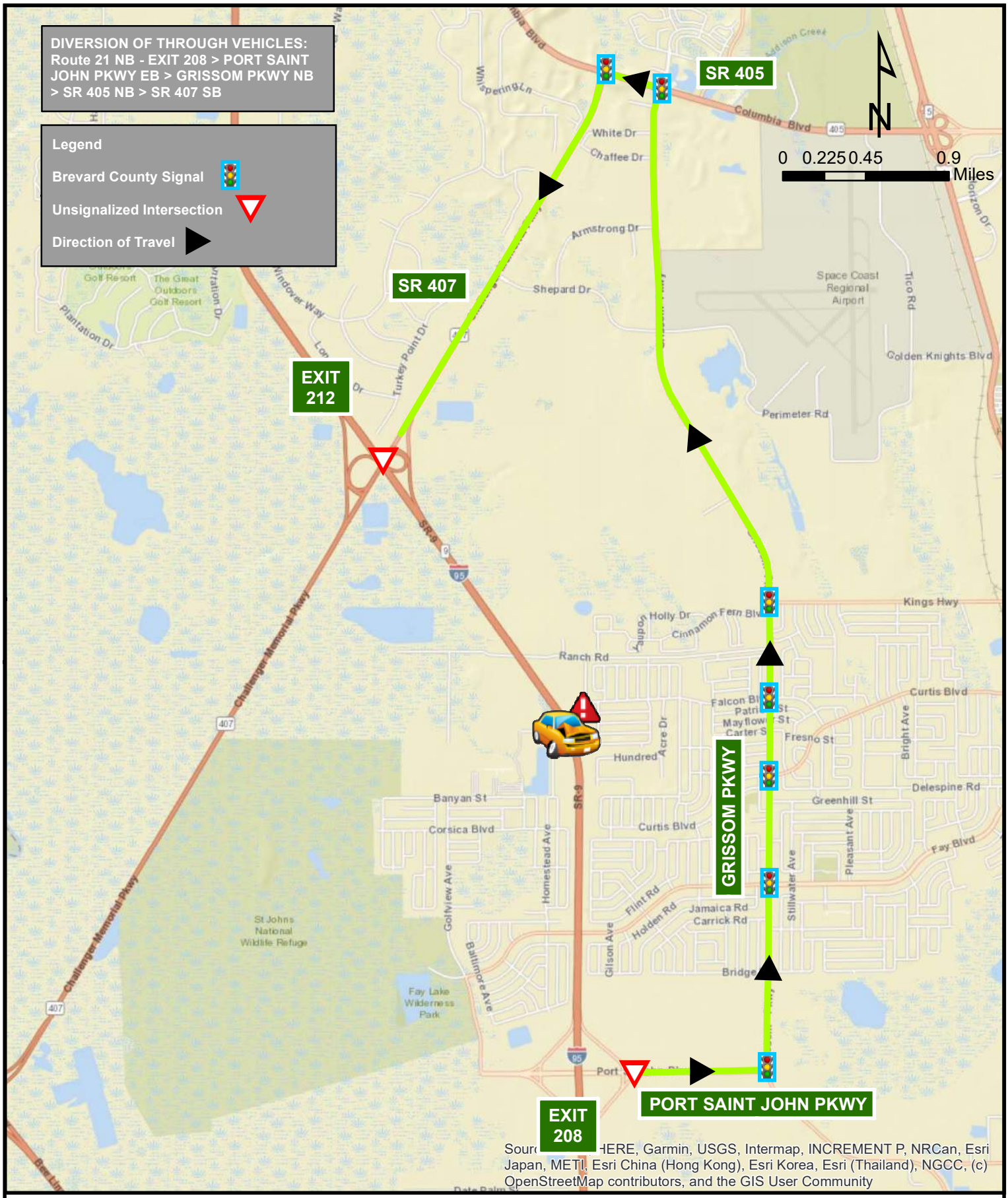

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 208 (PORT SAINT JOHN PKWY) to MM 212 (SR 407)

Route 21 NB

Route 22 Timing Pattern

Route 22		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Flex Group**
147	SR 405 and SR 407	Brevard Co	22	HNTB_Route 22_Diversion
140	SR 405 and Grissom Pkwy	Brevard Co	22	
243	Grissom Pkwy and Kings Hwy	Brevard Co	22	
351	Grissom Pkwy and Falcon Blvd	Brevard Co	22	
352	Grissom Pkwy and Curtis Blvd	Brevard Co	22	
141	Grissom Pkwy and Fay Blvd	Brevard Co	22	
285	Port Saint John Pkwy and Grissom Pkwy	Brevard Co	22	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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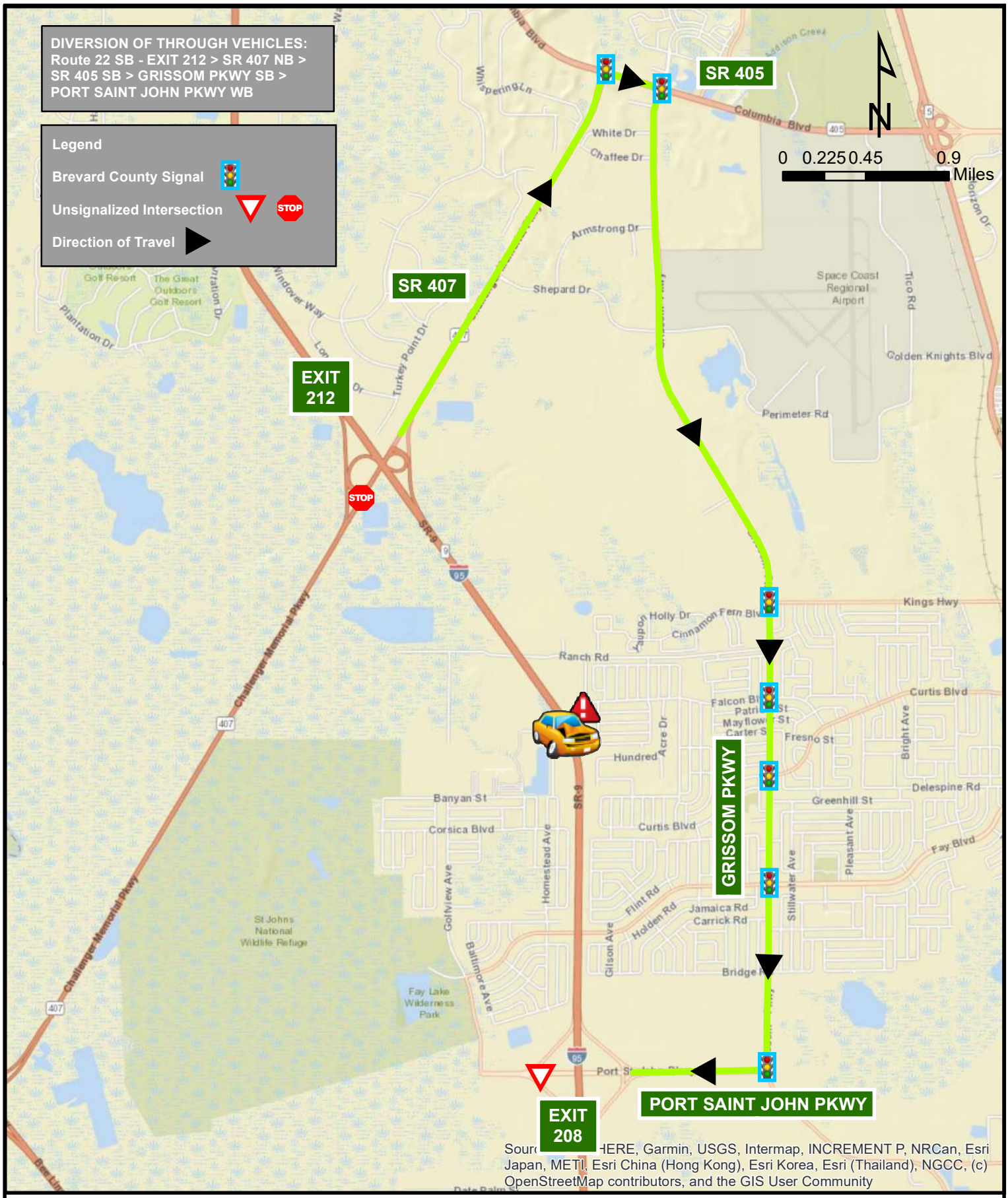


District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 212 (SR 407) to MM 208 (PORT SAINT JOHN PKWY)

Route 22 SB

Route 23 Timing Pattern

Route 23		Length Cycle = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Flex Group**
147	SR 405 and SR 407	Brevard Co	20	HNTB_Route 23_Diversion
2	SR 405 and Barna Ave	Brevard Co	20	
5545	SR 405 and Target Entrance	Brevard Co	20	
5543	SR 405 and Windover Trail	Brevard Co	20	
5528	SR 50 and SR 405	Brevard Co	20	
5540	SR 50 and I-95 NB Ramp	Brevard Co	20	
	SR 50 and I-95 SB Ramp	Brevard Co	20	

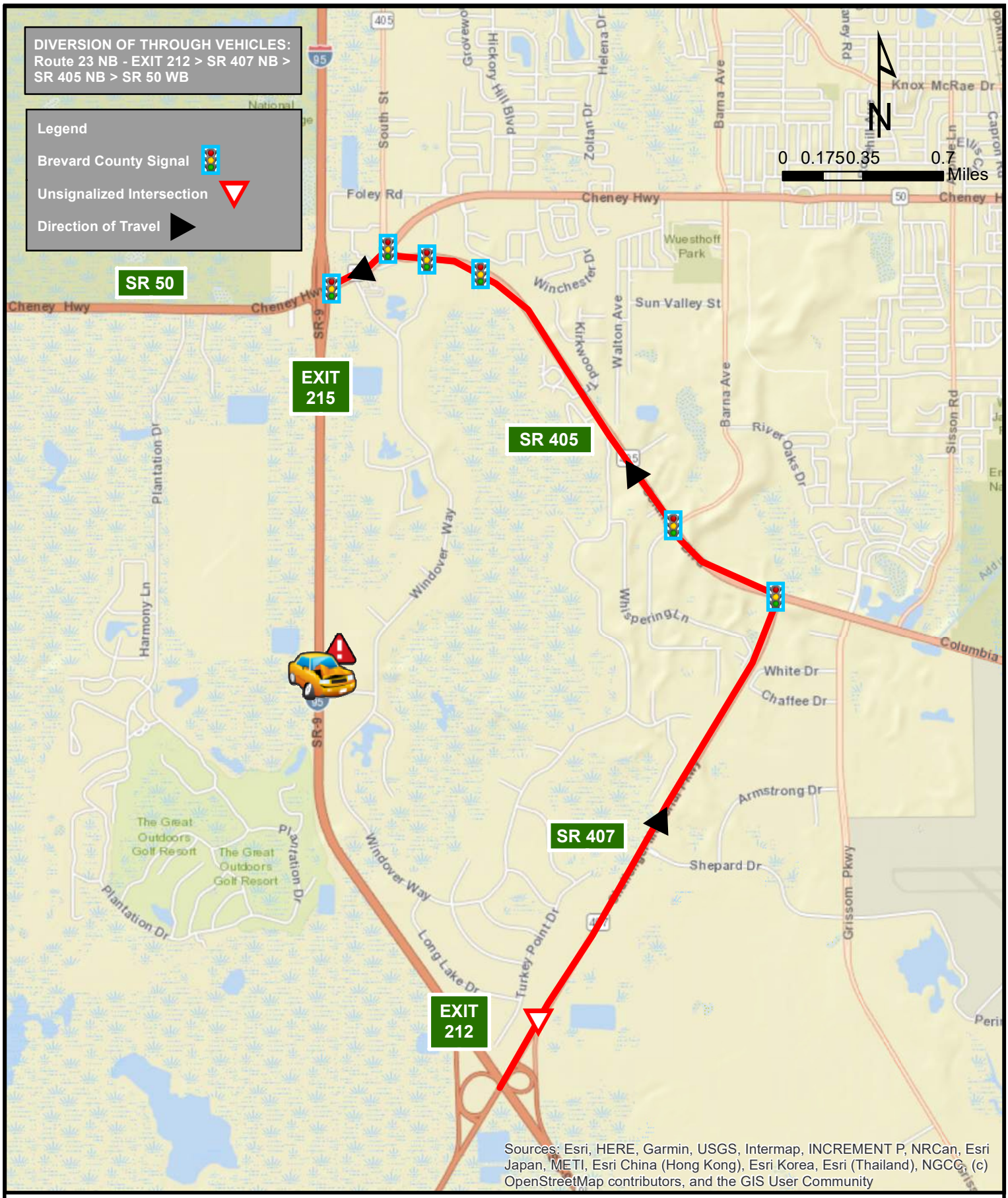
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 23> CTRL All signals> Right Click>Instant Pattern> 20> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 20> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 212 (SR 407) to MM 215 (SR 50)

Route 23 NB

Route 24 Timing Pattern

Route 24		Length Cycle = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Flex Group**
5540	SR 50 and I-95 SB Ramp	Brevard Co	24	HNTB_Route 24_Diversion
	SR 50 and I-95 NB Ramp	Brevard Co	24	
5528	SR 50 and SR 405	Brevard Co	24	
5543	SR 405 and Windover Trail	Brevard Co	24	
5545	SR 405 and Target Entrance	Brevard Co	24	
2	SR 405 and Barna Ave	Brevard Co	24	
147	SR 405 and SR 407	Brevard Co	24	

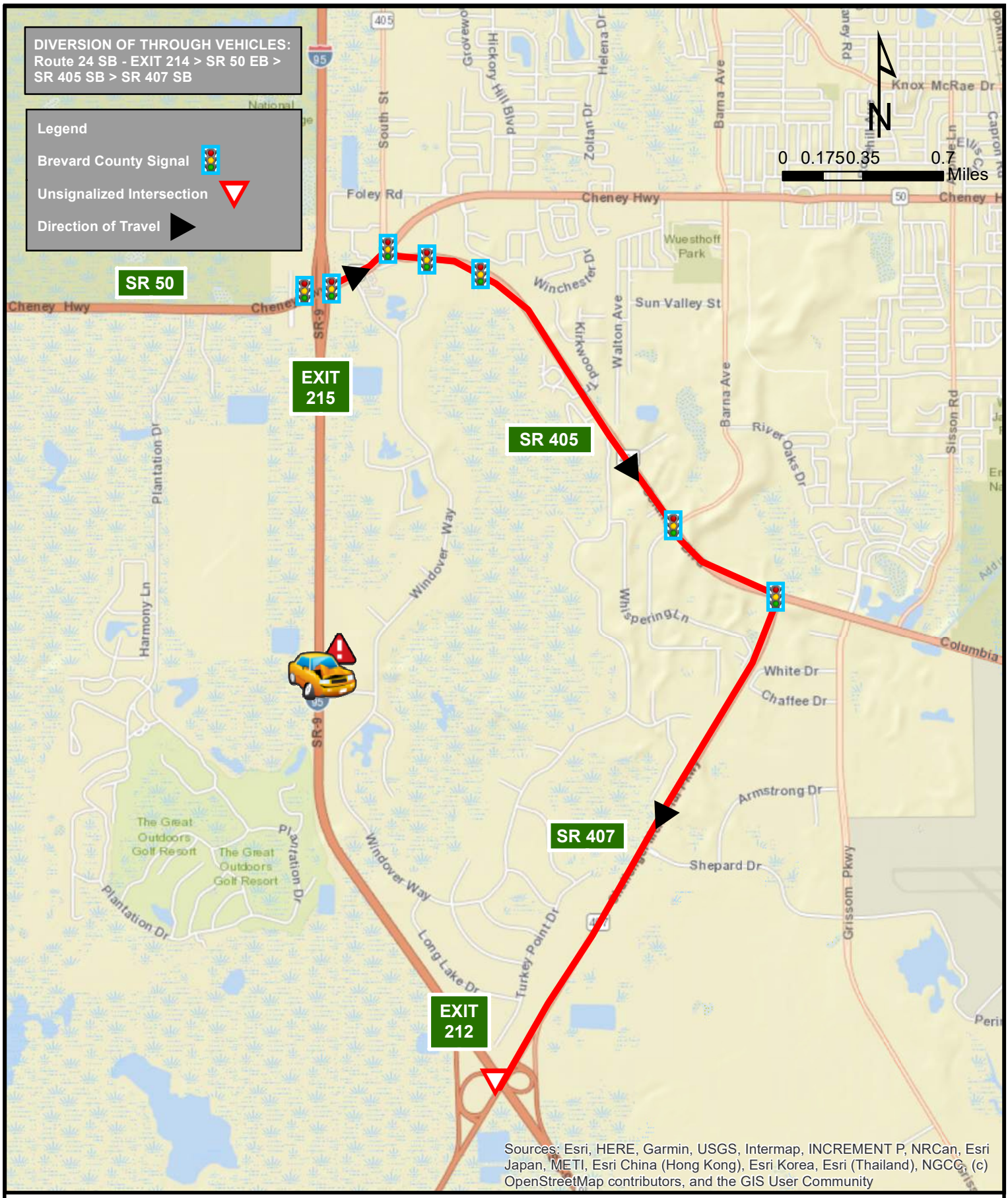
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 24> CTRL All signals> Right Click>Instant Pattern> 24> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 24> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 215 (SR 50) to MM 212 (SR 407)

Route 24 SB

Route 25 Timing Pattern

Route 25		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
5540	SR 50 and I-95 NB Ramp	Brevard Co	25	HNTB_Route 25_Diversion
	SR 50 and I-95 SB Ramp	Brevard Co	25	
5528	SR 50 and SR 405	Brevard Co	25	
	SR 405 and Park Ave	Brevard Co	25	
	SR 405 and Fox Lake Rd	Brevard Co	25	
	SR 406 and I-95 SB Ramp	Brevard Co	25	
	SR 406 and I-95 NB Ramp	Brevard Co	25	

Flex Group on ATMS. now

Activate Flex Group

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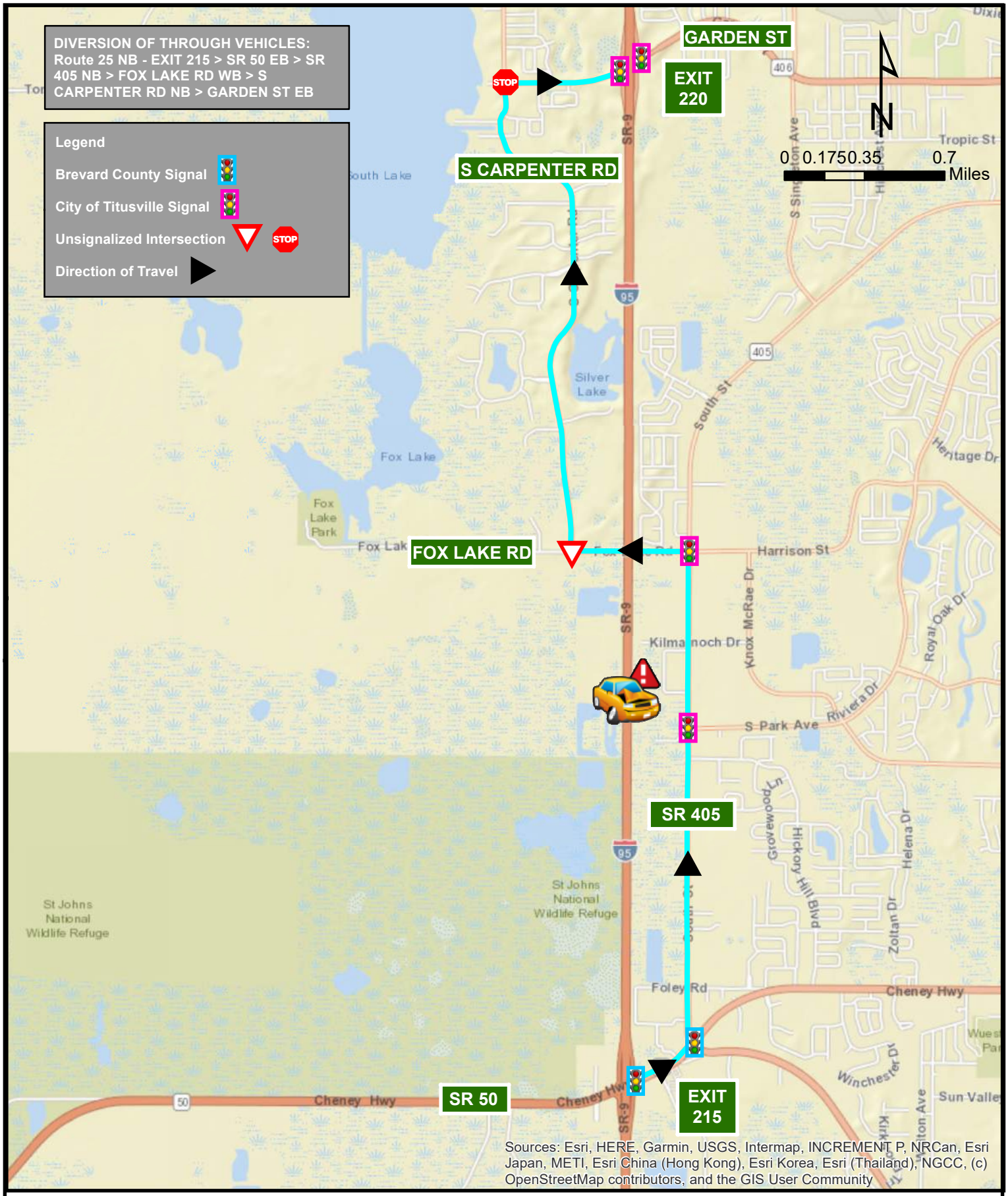
De-active Flex Group

Search> Flex Group HNTB_Route 25> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 215 (SR 50) to MM 220 (Garden St)

Route 25 NB

Route 26 Timing Pattern

Route 26		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 406 and I-95 SB Ramp	Brevard Co	26	HNTB_Route 26_Diversion
	SR 406 and I-95 NB Ramp	Brevard Co	26	
	SR 405 and Fox Lake Rd	Brevard Co	26	
	SR 405 and Park Ave	Brevard Co	26	
5528	SR 50 and SR 405	Brevard Co	26	
5540	SR 50 and I-95 NB Ramp	Brevard Co	26	
	SR 50 and I-95 SB Ramp	Brevard Co	26	

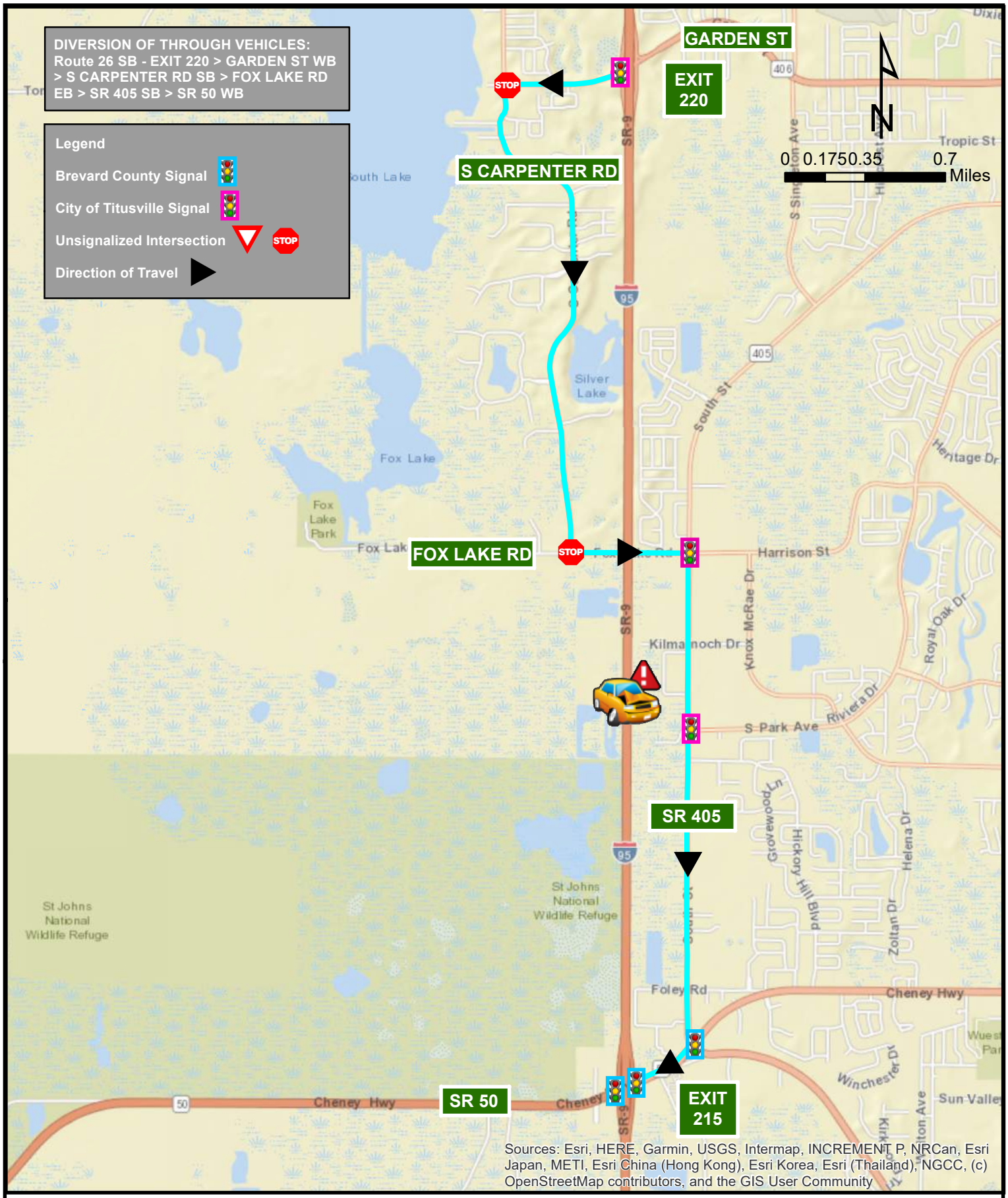
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 26> CTRL All signals> Right Click>Instant Pattern> 26> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 26> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 220 (Garden St) to MM 215 (SR 50)

Route 26 SB

Route 27 Timing Pattern

Route 27		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Flex Group**
5540	SR 50 and I-95 NB Ramp	Brevard Co	27	HNTB_Route 27_Diversion
	SR 50 and I-95 SB Ramp	Brevard Co	27	
5528	SR 50 and SR 405	Brevard Co	27	
	SR 405 and Park Ave	Brevard Co	27	
	SR 405 and Fox Lake Rd	Brevard Co	27	
	SR 406 and Singleton Ave	Brevard Co	27	
	SR 406 and I-95 SB Ramp	Brevard Co	27	
	SR 406 and I-95 NB Ramp	Brevard Co	27	

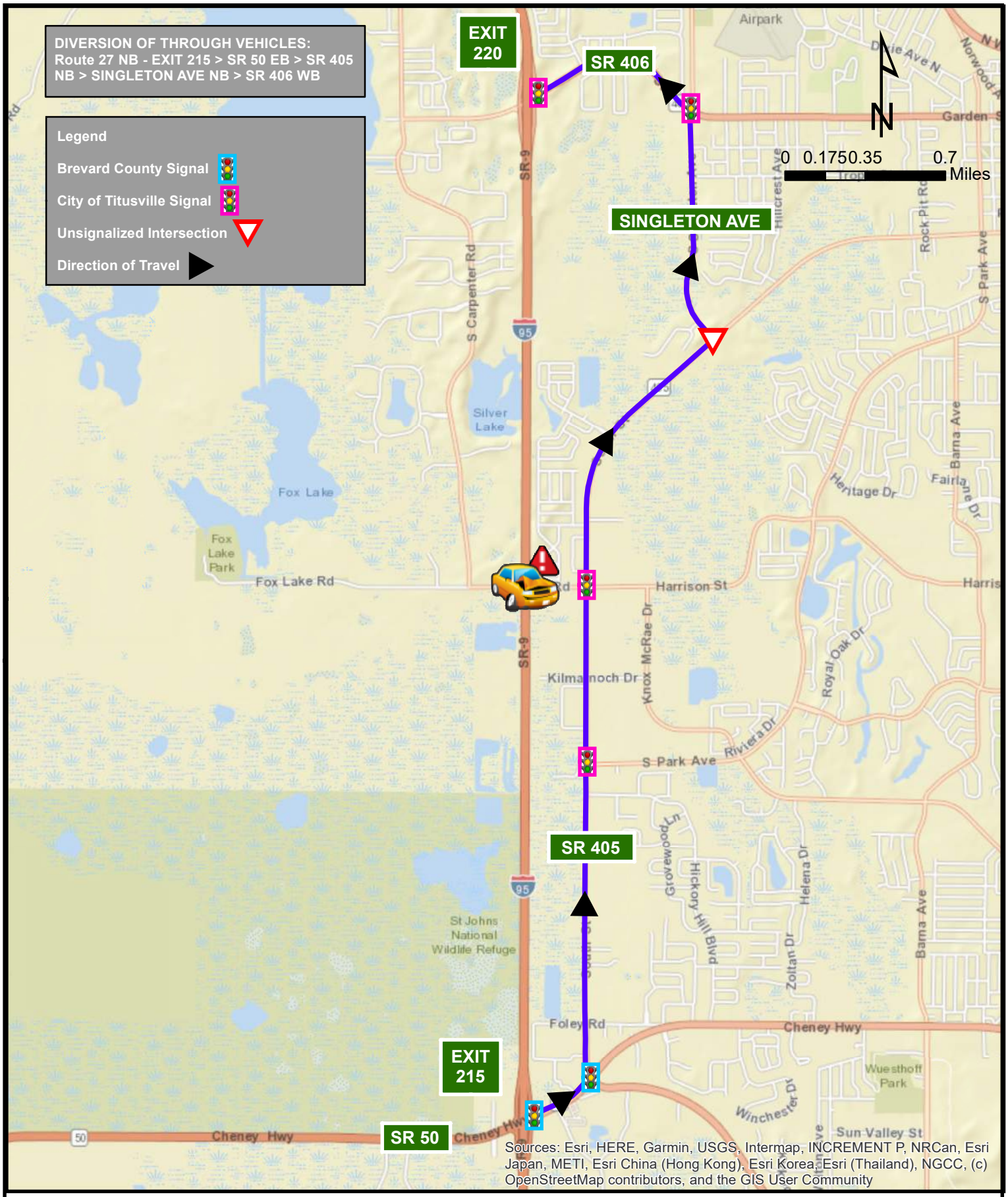
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 27> CTRL All signals> Right Click>Instant Pattern> 27> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 27> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 215 (SR 50) to MM 220 (SR 406)

Route 27 NB

Route 28 Timing Pattern

Route 28		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Flex Group**
	SR 406 and I-95 SB Ramp	Brevard Co	28	HNTB_Route 28_Diversion
	SR 406 and I-95 NB Ramp	Brevard Co	28	
	SR 406 and Singleton Ave	Brevard Co	28	
	SR 405 and Fox Lake Rd	Brevard Co	28	
	SR 405 and Park Ave	Brevard Co	28	
5528	SR 50 and SR 405	Brevard Co	28	
5540	SR 50 and I-95 NB Ramp	Brevard Co	28	
	SR 50 and I-95 SB Ramp	Brevard Co	28	

Flex Group on ATMS. now

Activate Flex Group

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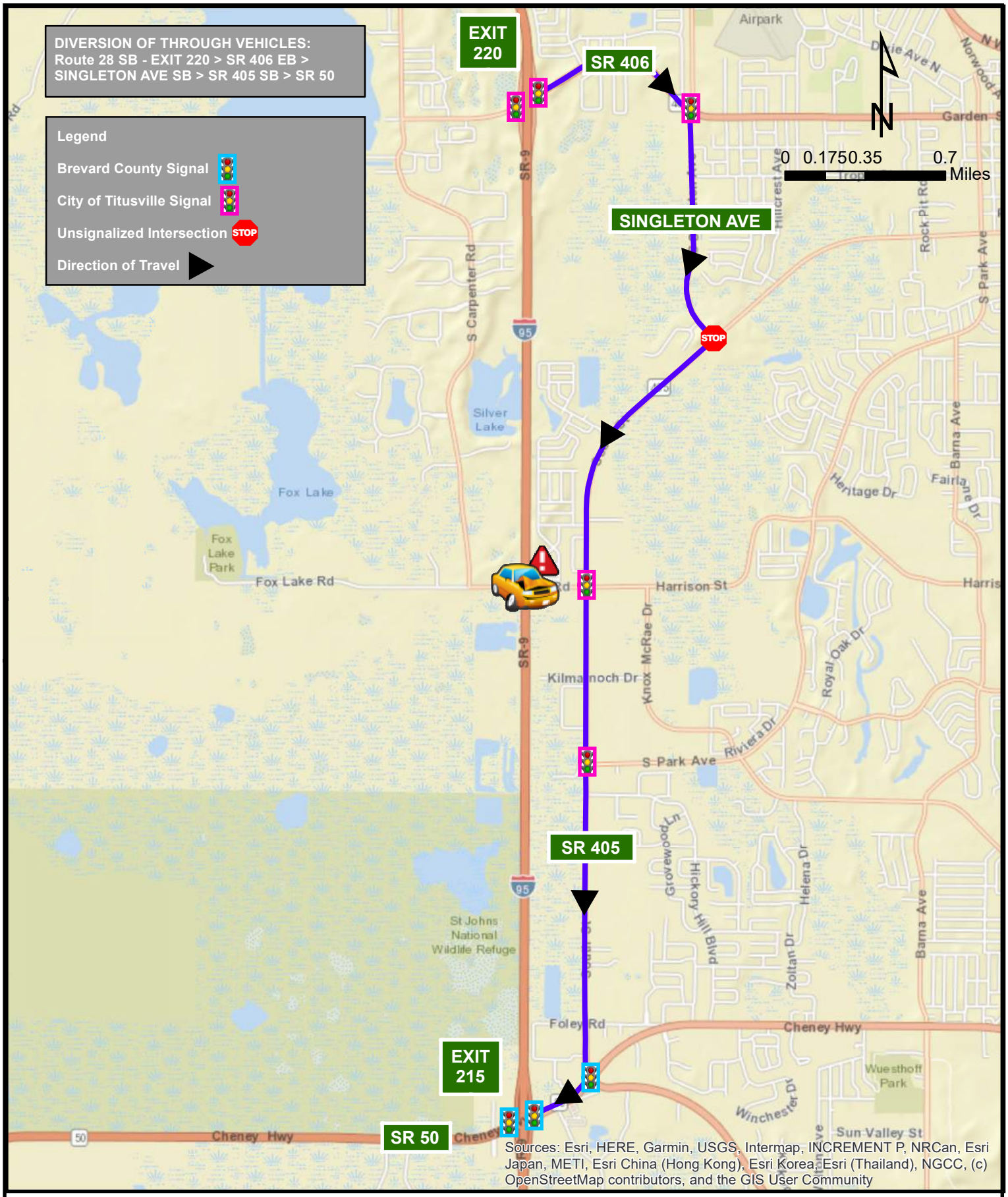
De-active Flex Group

Search> Flex Group HNTB_Route 28> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 220 (SR 406) to MM 215 (SR 50)

Route 28 SB

Route 29 Timing Pattern

Route 29		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 406 and I-95 NB Ramp	Brevard Co	29	HNTB_Route 29_Diversion
	SR 406 and I-95 SB Ramp	Brevard Co	29	
334	SR 46 and I -95 NB Ramp	Brevard Co	29	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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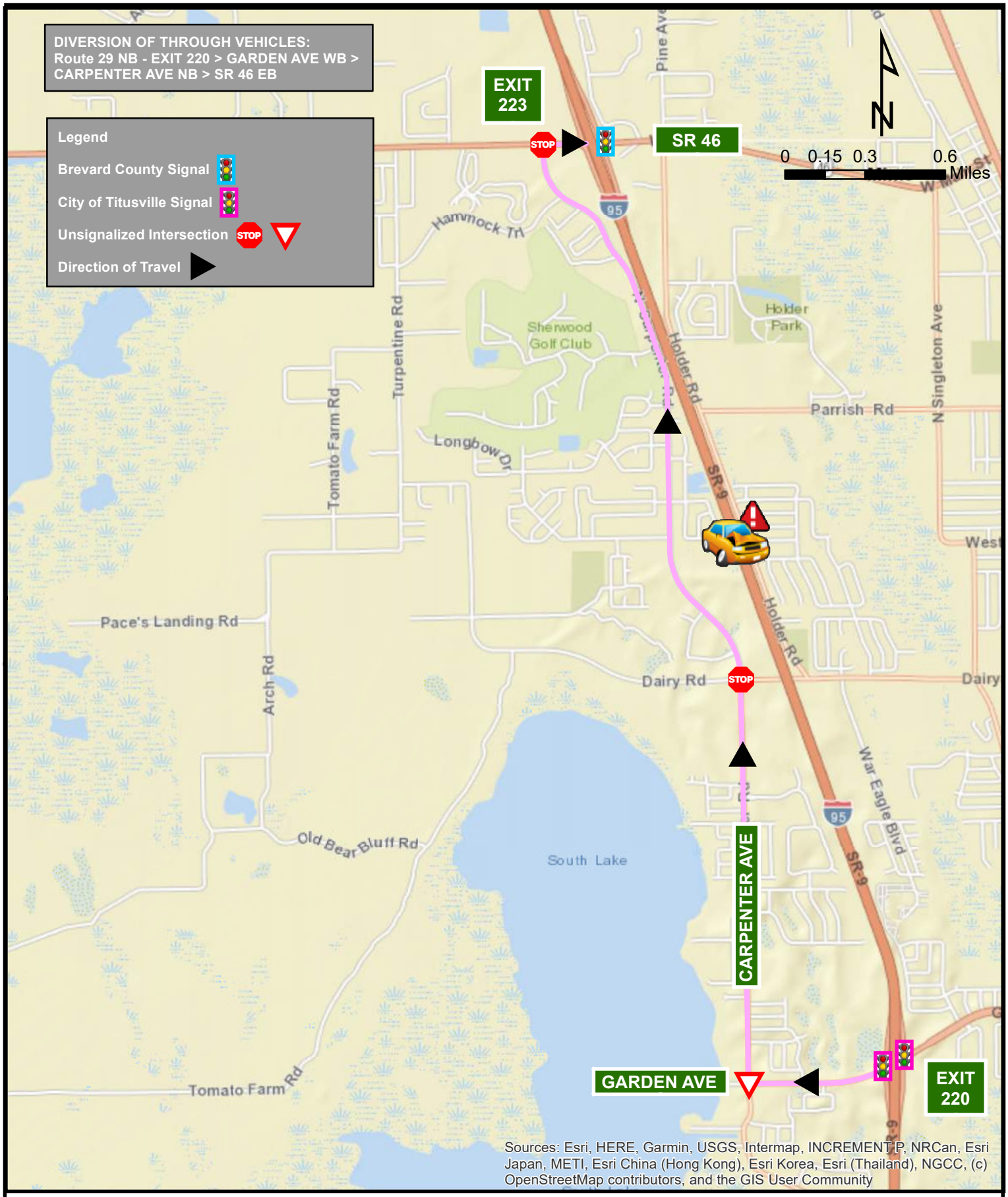

District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 220 (SR 406) to MM 223 (SR 46)

Route 29 NB

Route 30 Timing Pattern

Route 30		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 406 and I-95 SB Ramp	Brevard Co	30	HNTB_Route 30_Diversion
	SR 406 and I-95 NB Ramp	Brevard Co	30	

Flex Group on ATMS. now

Activate Flex Group

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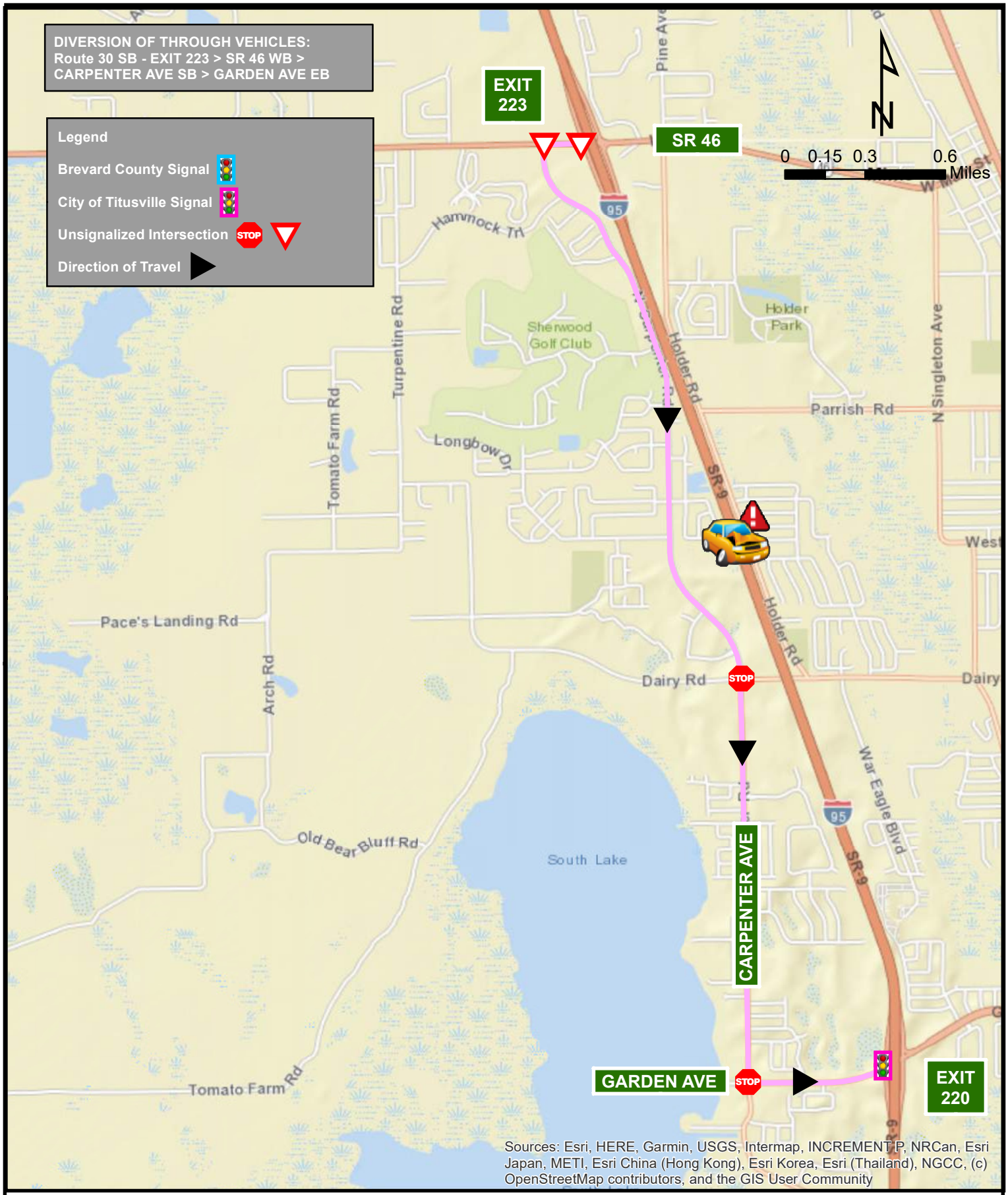
De-active Flex Group

Search> Flex Group HNTB_Route 30> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 223 (SR 46) to MM 220 (SR 406)

Route 30 SB

Route 31 Timing Pattern

Route 31		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 406 and I-95 NB Ramp	Brevard Co	31	HNTB_Route 31_Diversion
	SR 406 and I-95 SB Ramp	Brevard Co	31	
	SR 406 and Singleton Ave	Brevard Co	31	
	Dairy Rd and Singleton Ave	Brevard Co	31	
155	SR 46 and Pine Ave/Holder Rd	Brevard Co	31	
334	SR 46 and I-95 NB Ramp	Brevard Co	31	

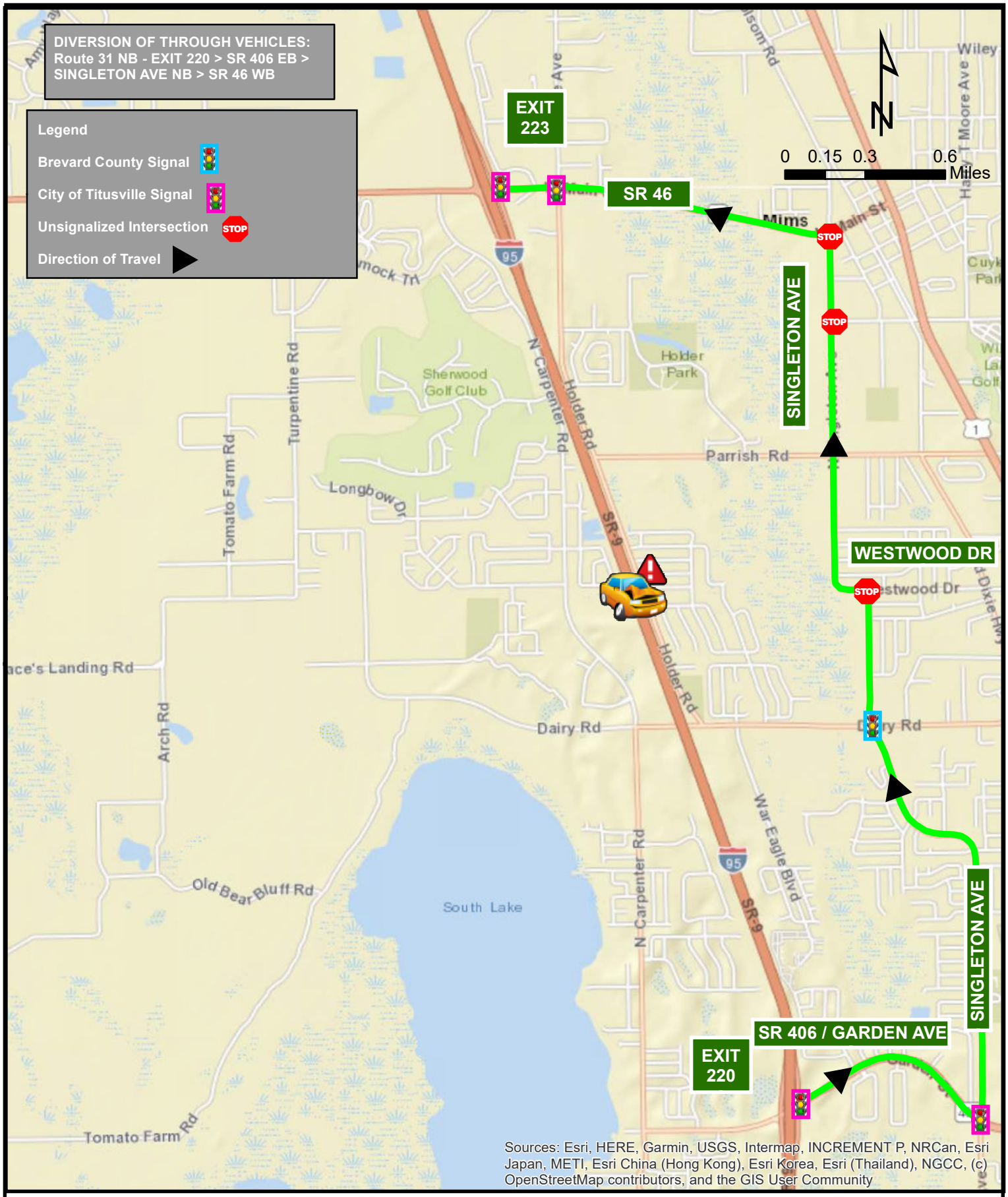
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 31> CTRL All signals> Right Click>Instant Pattern> 31> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 31> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 220 (SR 406) to MM 223 (SR 46)

Route 31 NB

Route 32 Timing Pattern

Route 32		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
334	SR 46 and I-95 NB Ramp	Brevard Co	32	HNTB_Route 32_Diversion
155	SR 46 and Pine Ave/Holder Rd	Brevard Co	32	
	Dairy Rd and Singleton Ave	Brevard Co	32	
	SR 406 and Singleton Ave	Brevard Co	32	
	SR 406 and I-95 NB Ramp	Brevard Co	32	
	SR 406 and I-95 SB Ramp	Brevard Co	32	

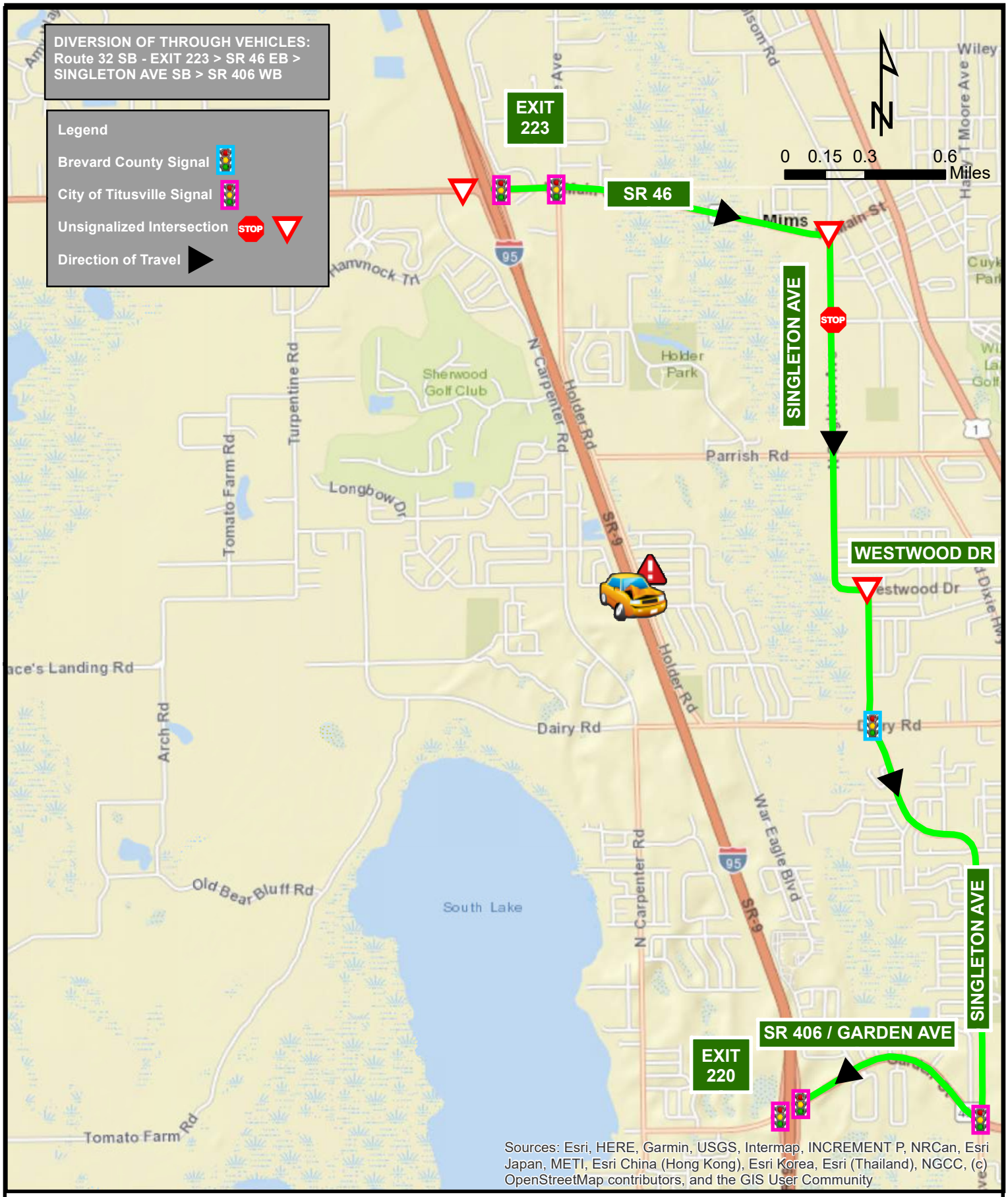
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 32> CTRL All signals> Right Click>Instant Pattern> 32> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 32> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 223 (SR 46) to MM 220 (SR 406)

Route 32 SB

Route 33 Timing Pattern

Route 33		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
334	SR 46 and I-95 NB Ramp	Brevard Co	23	HNTB_Route 33_Diversion
155	SR 46 and Pine Ave/Holder Rd	Brevard Co	23	
1	US 1 and SR 46	Brevard Co	23	
252	US 1 and Brockett Rd/Anglers Ln	Brevard Co	23	

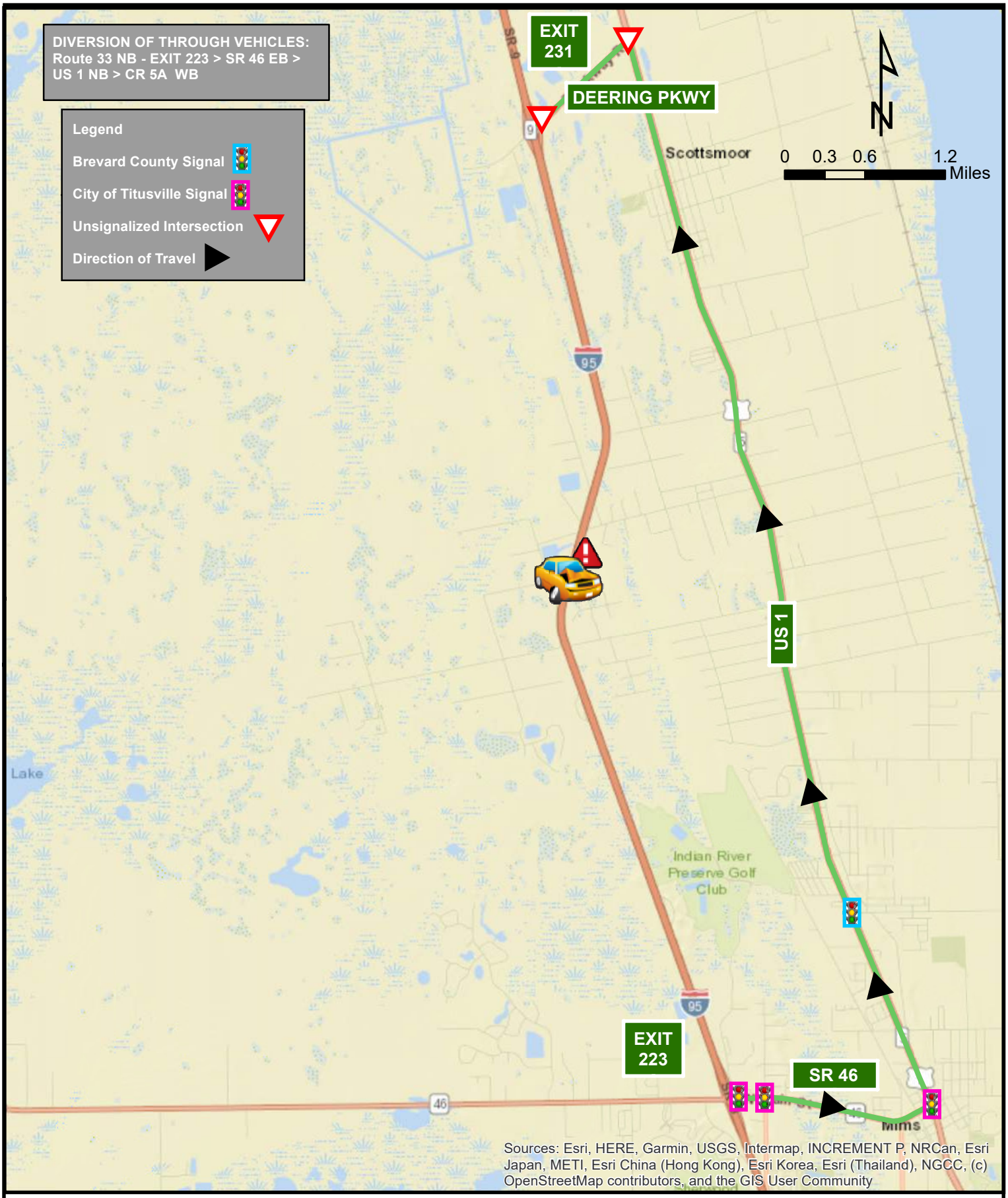
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 33> CTRL All signals> Right Click>Instant Pattern> 23> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 33> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 223 (SR 46) to MM 231 (CR 5A)

Route 33 NB

Route 34 Timing Pattern

Route 34		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
252	US 1 and Brockett Rd/Anglers Ln	Brevard Co	24	HNTB_Route 34_Diversion
1	US 1 and SR 46	Brevard Co	24	
155	SR 46 and Pine Ave/Holder Rd	Brevard Co	24	
334	SR 46 and I-95 NB Ramp	Brevard Co	24	

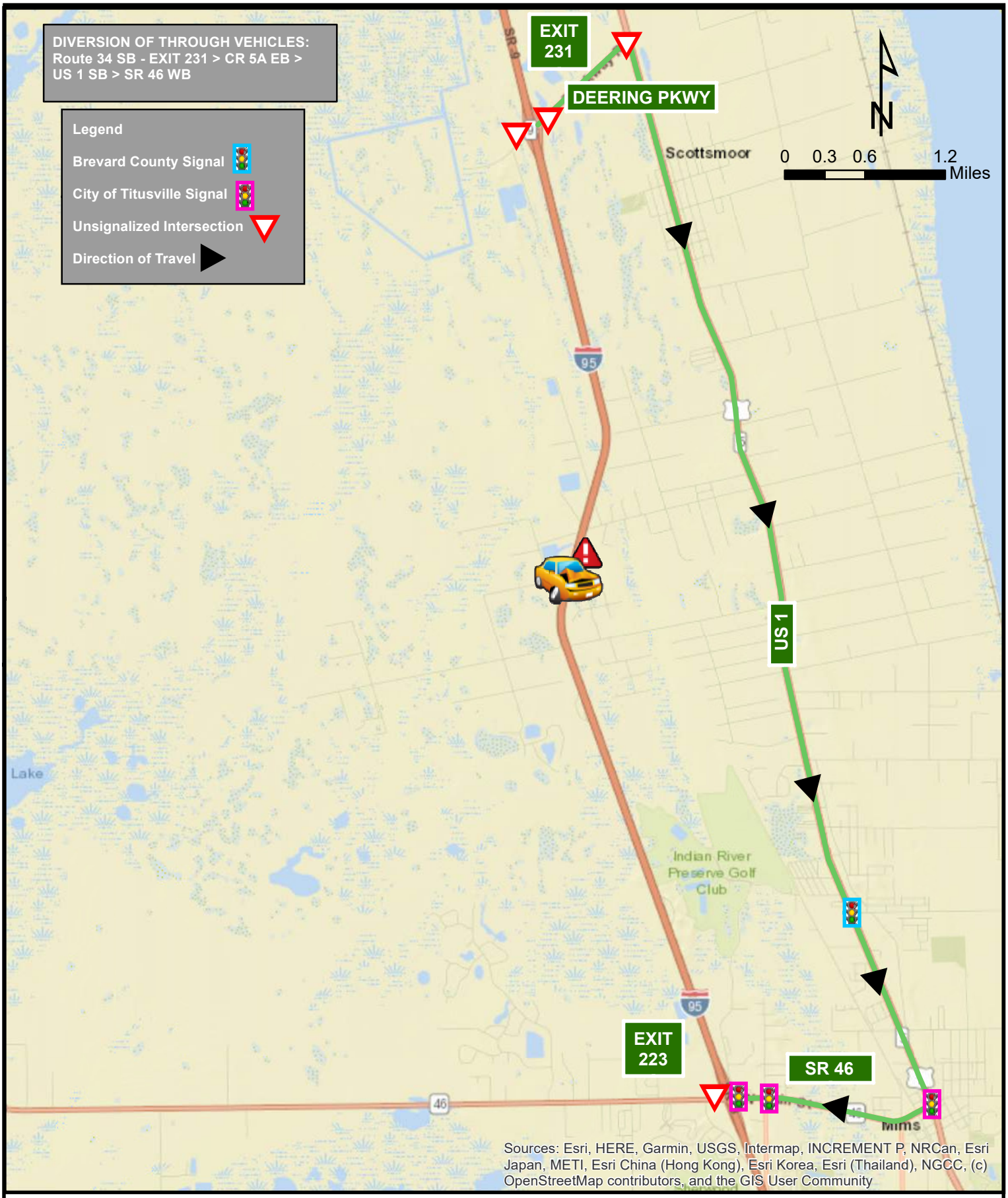
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 34> CTRL All signals> Right Click>Instant Pattern> 24> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 34> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 223 (SR 46) to MM 231 (CR 5A)

Route 34 SB

Route 35 Timing Pattern

Route 35		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
406	SR 520 and Friday Rd/Lk Poinsett Rd	Brevard Co	26	HNTB_Route 35_Diversion
102	SR 520 and I-95 SB Ramp	Brevard Co	26	
103	SR 520 and I-95 NB Ramp	Brevard Co	26	

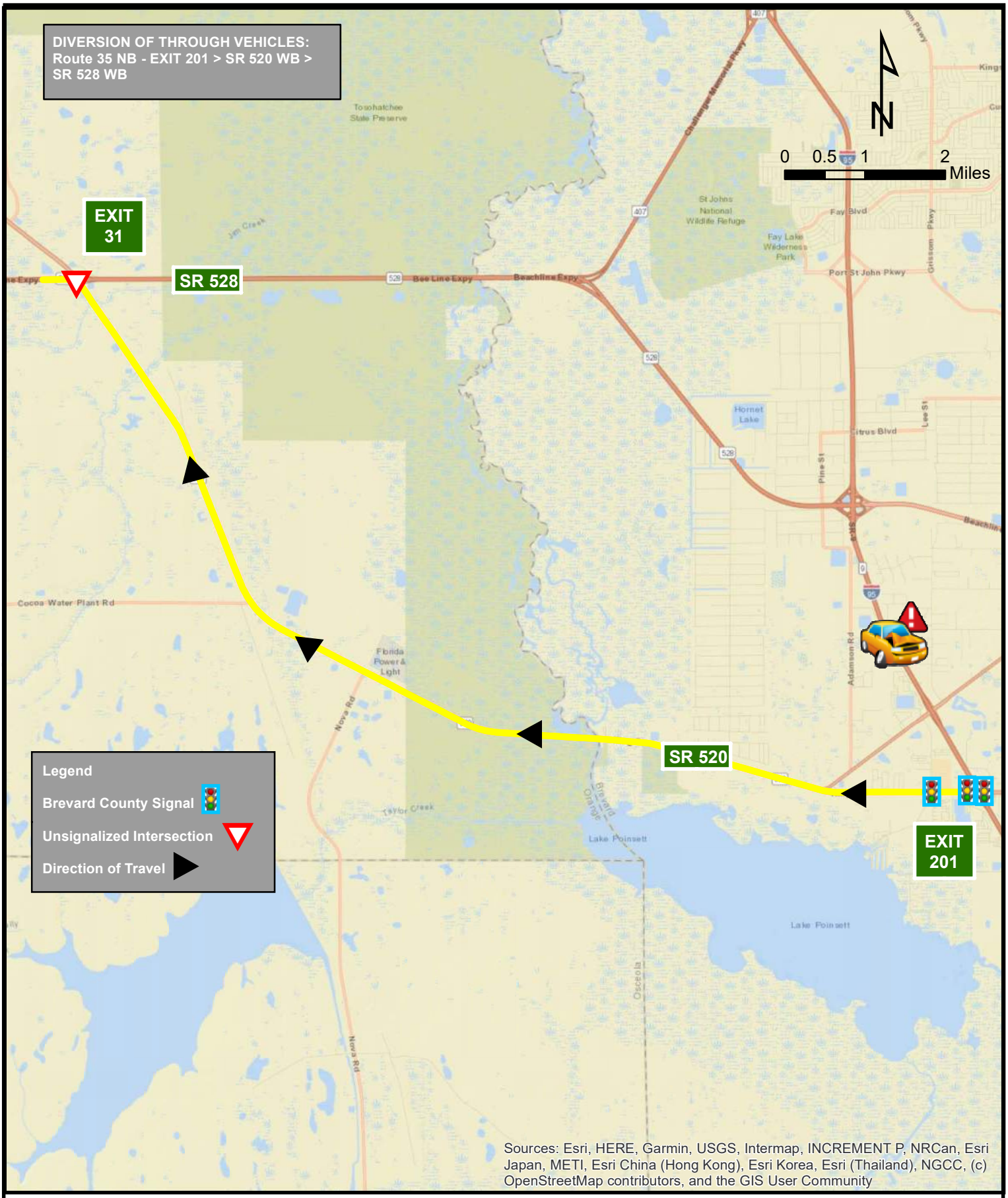
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 35> CTRL All signals> Right Click>Instant Pattern> 26> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 35> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

SR 528 Westbound Closure Between
MM 42 (I-95) to MM 31 (SR 520)

Route 35 WB

Route 36 Timing Pattern

Route 36		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
103	SR 520 and I-95 NB Ramp	Brevard Co	26	HNTB_Route 36_Diversion
102	SR 520 and I-95 SB Ramp	Brevard Co	26	
406	SR 520 and Friday Rd/Lk Poinsett Rd	Brevard Co	26	

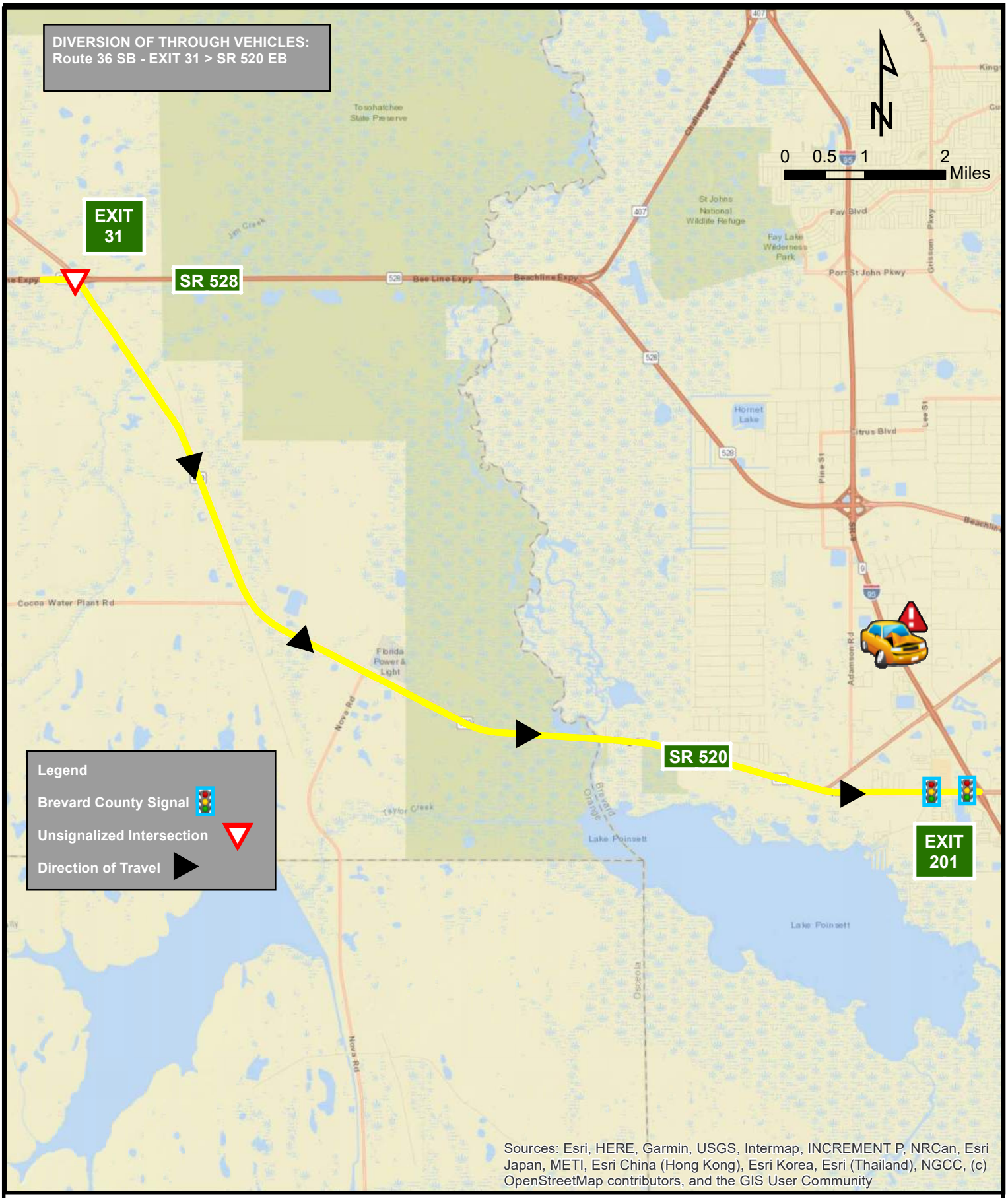
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route 36> CTRL All signals> Right Click>Instant Pattern> 26> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route 36> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

SR 528 Eastbound Closure Between
MM 31 (SR 520) to MM 42 (I-95)

Route 36 EB

Route A Timing Pattern

Route A		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
364	SR 404 and I-95 SB Ramp	Brevard Co	20	HNTB_Route A_Diversion
365	SR 404 and I-95 NB Ramp	Brevard Co	20	
363	SR 404 and St Andrews Blvd	Brevard Co	20	
353	Wickham Dr and Pineda Causeway	Brevard Co	20	
49	Wickham Dr and Windsor Estate Dr	Brevard Co	20	
244	Wickham Dr and Jordan Blass Dr	Brevard Co	20	
207	Wickham Dr and St Andrews Boulevard	Brevard Co	20	
75	Wickham Dr and Suntree Blvd	Brevard Co	20	
245	Wickham Dr and Waelti Dr	Brevard Co	20	
130	Wickham Dr and Pinehurst Ave	Brevard Co	20	
403	Wickham Dr and Golden Eagle Ct/ Forest Lake Ave	Brevard Co	20	
246	Wickham Rd and Interlachen Rd	Brevard Co	20	
277	Wickham Rd and Baytree Dr	Brevard Co	20	
233	Wickham Dr and Murrell Rd	Brevard Co	20	
262	Wickham Rd and Sherriff Dr	Brevard Co	20	
304	Wickham Rd and I-95 NB Ramp	Brevard Co	20	
230	Wickham Rd and I-95 SB Ramp	Brevard Co	20	

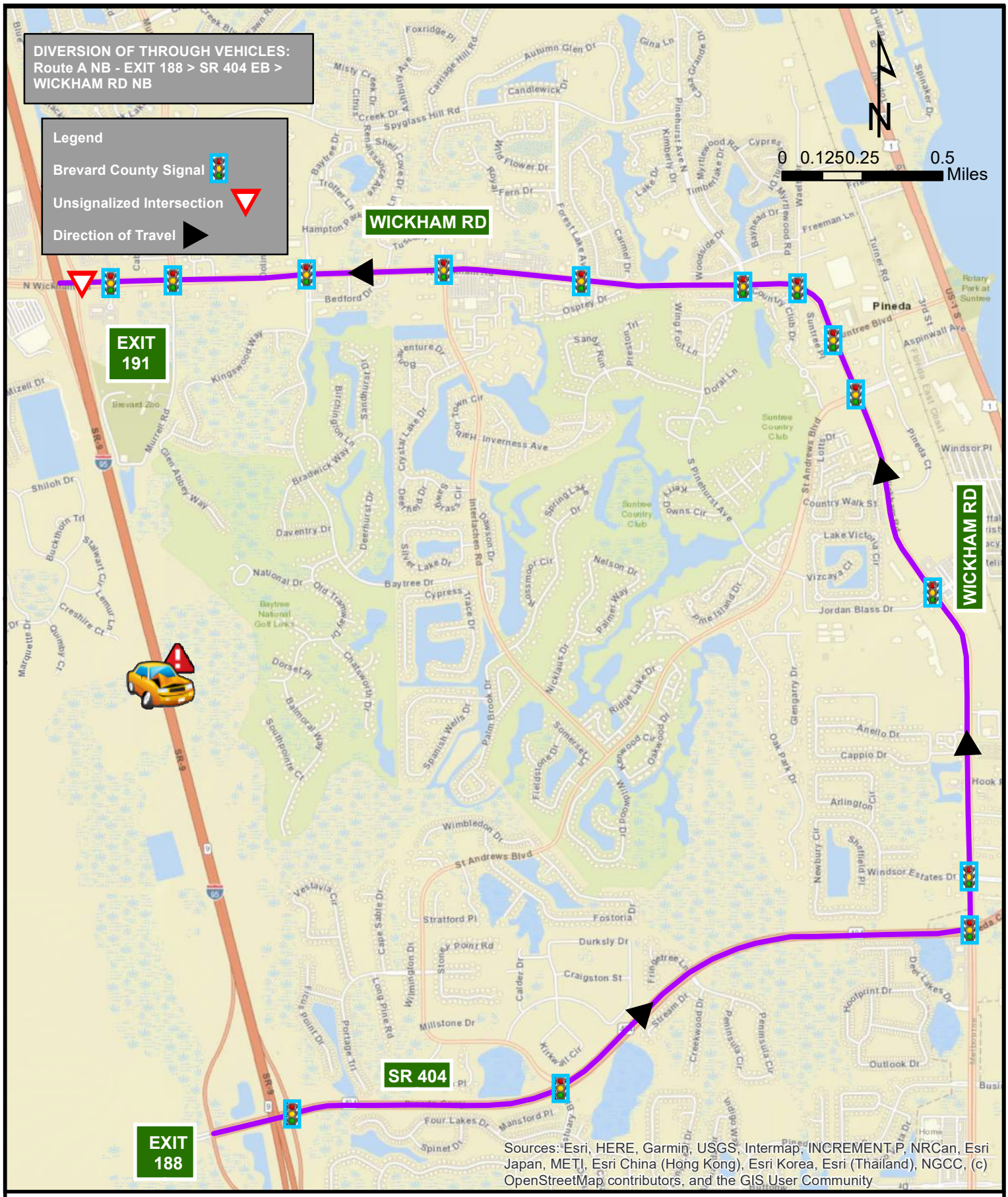
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route A> CTRL All signals> Right Click>Instant Pattern> 20> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route A> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 188 (SR 404) to MM 191 (Wickham Rd)

Route A NB

Route B Timing Pattern

Route B		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
230	Wickham Rd and I-95 SB Ramp	Brevard Co	21	HNTB_Route B_Diversion
304	Wickham Rd and I-95 NB Ramp	Brevard Co	21	
262	Wickham Rd and Sherriff Dr	Brevard Co	21	
233	Wickham Dr and Murrell Rd	Brevard Co	21	
277	Wickham Rd and Baytree Dr	Brevard Co	21	
246	Wickham Rd and Interlachen Rd	Brevard Co	21	
403	Wickham Dr and Golden Eagle Ct/ Forest Lake Ave	Brevard Co	21	
130	Wickham Dr and Pinehurst Ave	Brevard Co	21	
245	Wickham Dr and Waelti Dr	Brevard Co	21	
75	Wickham Dr and Suntree Blvd	Brevard Co	21	
207	Wickham Dr and St Andrews Boulevard	Brevard Co	21	
244	Wickham Dr and Jordan Blass Dr	Brevard Co	21	
49	Wickham Dr and Windsor Estate Dr	Brevard Co	21	
353	Wickham Dr and Pineda Causeway	Brevard Co	21	
363	SR 404 and St Andrews Blvd	Brevard Co	21	
365	SR 404 and I-95 NB Ramp	Brevard Co	21	
364	SR 404 and I-95 SB Ramp	Brevard Co	21	

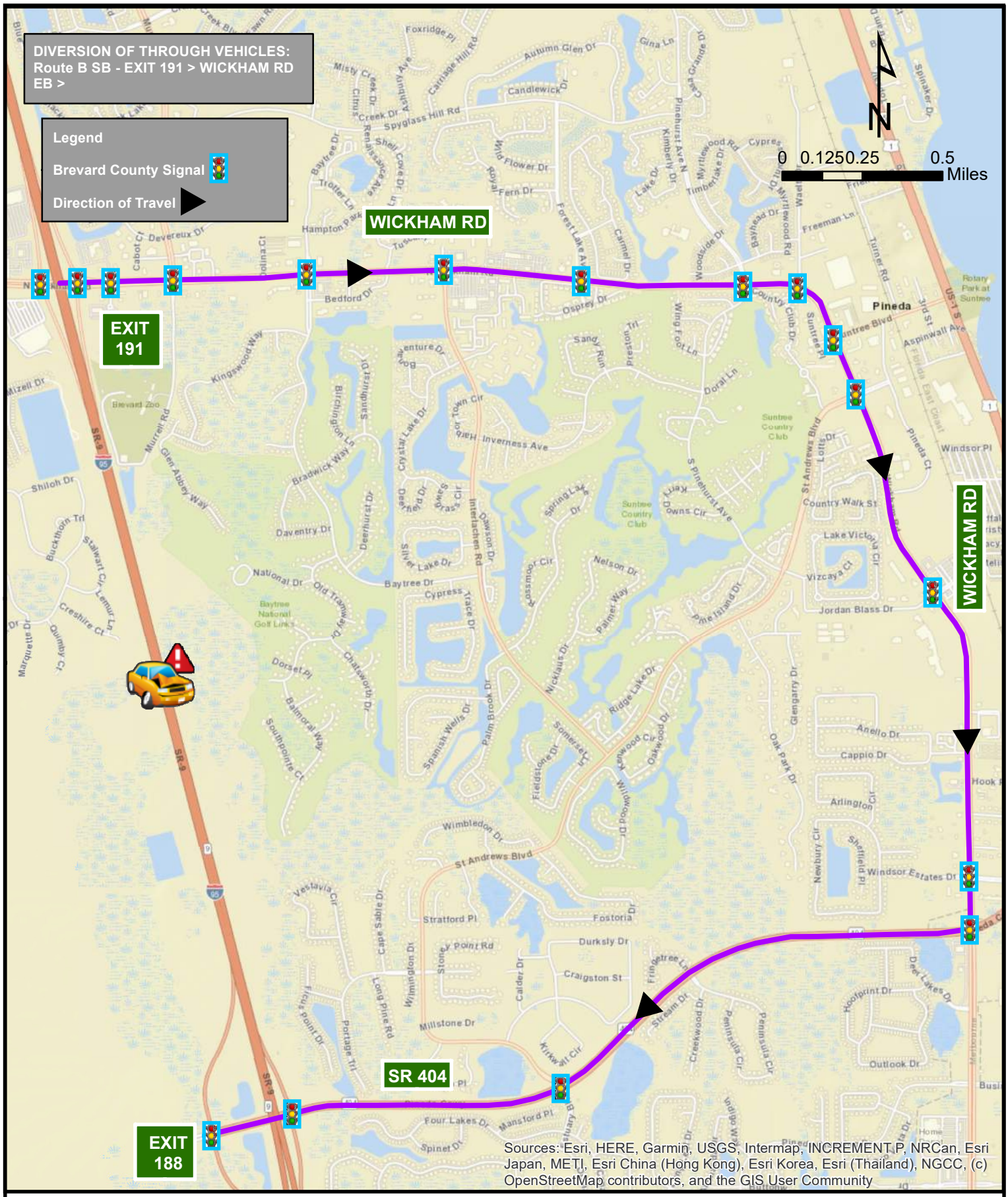
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route B> CTRL All signals> Right Click>Instant Pattern> 21> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route B> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Southbound Closure Between
MM 191 (Wickham Rd) to MM 188 (SR 404)

Route B SB

Route C Timing Pattern

Route C		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
248	SR 518 and I-95 SB Ramp	Brevard Co	22	HNTB_Route C_Diversion
249	SR 518 and I-95 NB Ramp	Brevard Co	22	
115	SR 518 and John Rodes Blvd	Brevard Co	22	
124	SR 518 and Sarno Rd	Brevard Co	22	
123	SR 518 and Wickham Rd	Brevard Co	22	
90	Wickham Rd and Aurora Rd	Brevard Co	22	
95	Wickham Rd and Northgate Plaza	Brevard Co	22	
96	Wickham Rd and Lake Washington Rd	Brevard Co	22	
97	Wickham Rd and Parkway Dr	Brevard Co	22	
99	Wickham Rd and College Wood Dr	Brevard Co	22	
98	Wickham Rd and Post Rd	Brevard Co	22	
286	Wickham Rd and Kensington Rd	Brevard Co	22	
392	Wickham Rd and Pebble Creek St	Brevard Co	22	
401	Wickham Rd and Benchmark Dr	Brevard Co	22	
333	Wickham Rd and Mariah Dr	Brevard Co	22	
306	Wickham Rd and Pineda Crossing Dr/Business Center Blvd	Brevard Co	22	
353	Wickham Dr and Pineda Causeway	Brevard Co	22	
363	SR 404 and St Andrews Blvd	Brevard Co	22	
365	SR 404 and I-95 NB Ramp	Brevard Co	22	
364	SR 404 and I-95 SB Ramp	Brevard Co	22	

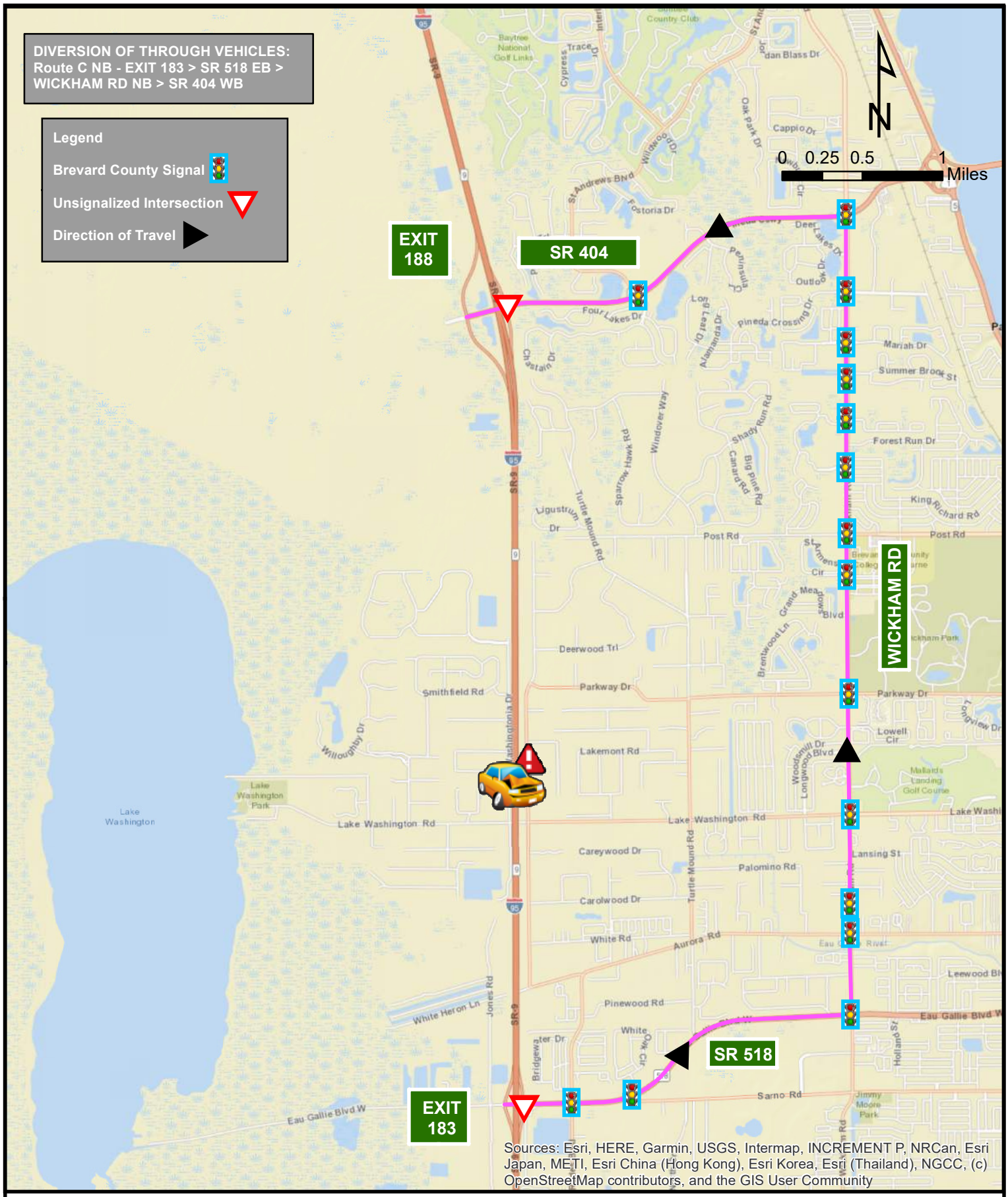
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route C> CTRL All signals> Right Click>Instant Pattern> 22> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route C> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

I-95 Northbound Closure Between
MM 183 (SR 518) to MM 188 (SR 404)

Route C NB

Route D Timing Pattern

Route D		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
364	SR 404 and I-95 SB Ramp	Brevard Co	23	HNTB_Route D_Diversion
365	SR 404 and I-95 NB Ramp	Brevard Co	23	
363	SR 404 and St Andrews Blvd	Brevard Co	23	
353	Wickham Dr and Pineda Causeway	Brevard Co	23	
306	Wickham Rd and Pineda Crossing Dr/Business Center Blvd	Brevard Co	23	
333	Wickham Rd and Mariah Dr	Brevard Co	23	
401	Wickham Rd and Benchmark Dr	Brevard Co	23	
392	Wickham Rd and Pebble Creek St	Brevard Co	23	
286	Wickham Rd and Kensington Rd	Brevard Co	23	
98	Wickham Rd and Post Rd	Brevard Co	23	
99	Wickham Rd and College Wood Dr	Brevard Co	23	
97	Wickham Rd and Parkway Dr	Brevard Co	23	
96	Wickham Rd and Lake Washington Rd	Brevard Co	23	
95	Wickham Rd and Northgate Plaza	Brevard Co	23	
90	Wickham Rd and Aurora Rd	Brevard Co	23	
123	SR 518 and Wickham Rd	Brevard Co	23	
124	SR 518 and Sarno Rd	Brevard Co	23	
115	SR 518 and John Rodes Blvd	Brevard Co	23	
249	SR 518 and I-95 NB Ramp	Brevard Co	23	
248	SR 518 and I-95 SB Ramp	Brevard Co	23	

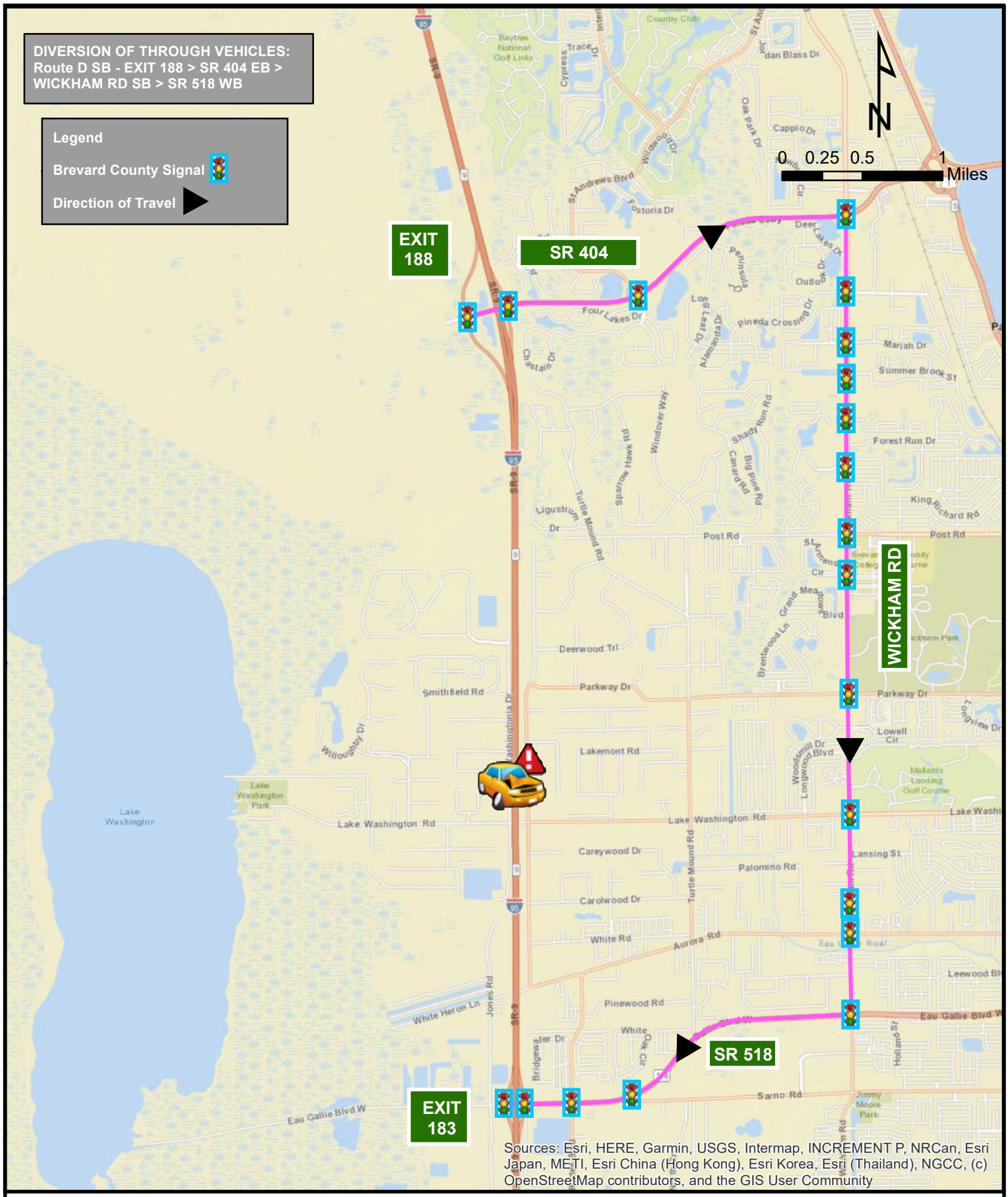
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Route D> CTRL All signals> Right Click>Instant Pattern> 23> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Route C> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management

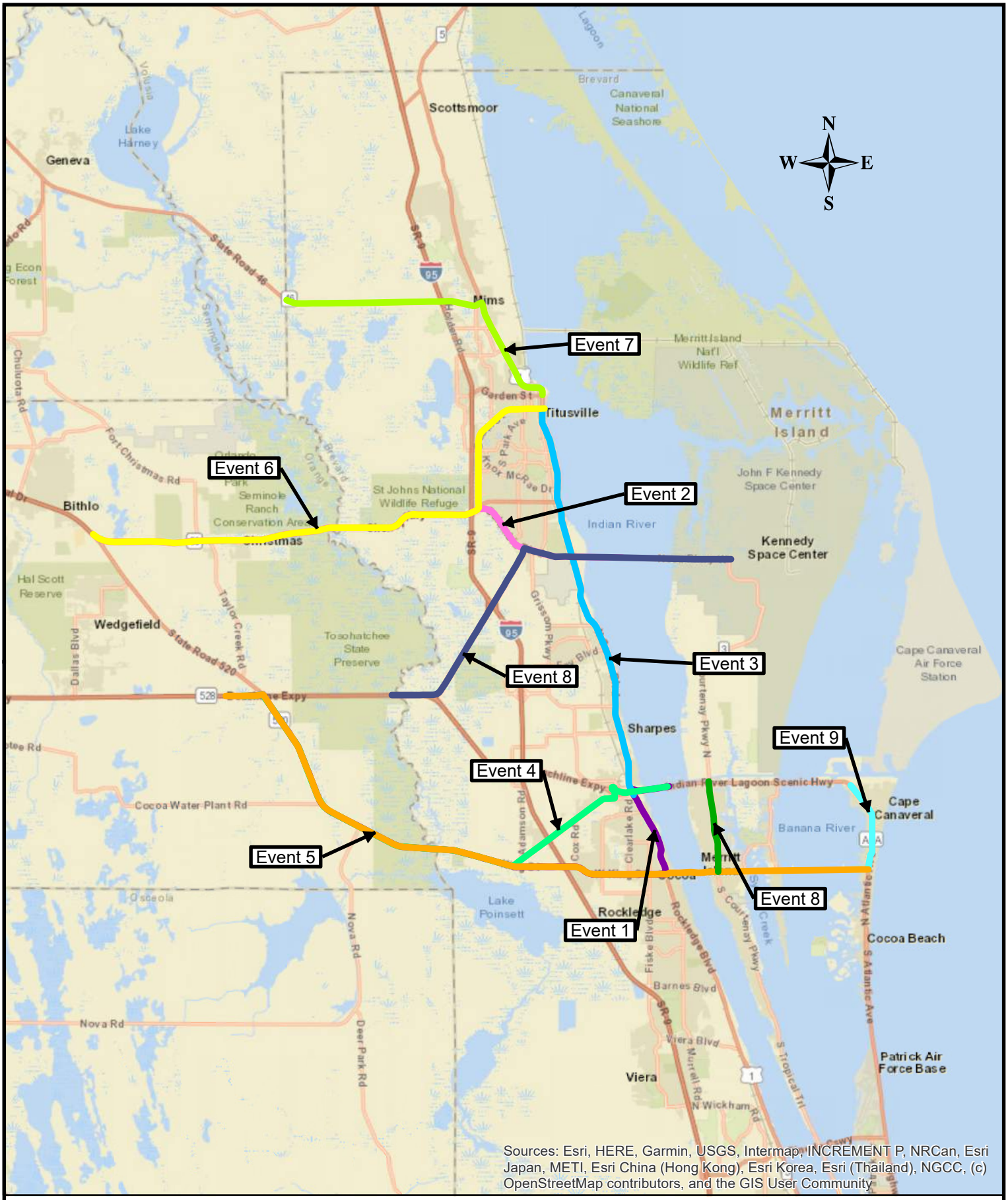
I-95 Southbound Closure Between
MM 188 (SR 404) to MM 183 (SR 518)

Route D SB

Appendix B – Launch Events Quick Guide

Events Routes

Route	Flex Group	Detail Page
1	HNTB_Event 1_ Diversion	85-86
2	HNTB_ Event 2_Diversion	87-88
3	HNTB_Event 3_Diversion	89-90
4	HNTB_ Event 4_Diversion	91-92
5	HNTB_Event 5_Diversion	93-94
6	HNTB_Event 6_Diversion	95-96
7	HNTB_Event7_Diversion	97-98
8	HNTB_Event 8_Diversion	99-100
9	HNTB_ Event 9_Diversion	101-102



District 5 Integrated Corridor Management
Space Coast Events

Event 1 Timing Pattern

Event 1		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
77	US 1 and SR 528 WB	Brevard Co	19	HNTB_Event 1_Diversion
78	US 1 and SR 528 EB	Brevard Co	19	
80	US 1 and Michigan Ave	Brevard Co	19	
1013	US 1 and Dixon Blvd	Brevard Co	19	
1012	US 1 and Forrest Ave	Brevard Co	19	
1009	US 1 and Peachtree St	Brevard Co	19	
1008	US 1 and SR 520	Brevard Co	26	HNTB_Event 5 West_Diversion
1015	SR 520 and Blake Ave	Brevard Co	26	
1014	SR 520 and SR 519	Brevard Co	26	
1016	SR 520 and Varr Ave	Brevard Co	26	
79	SR 520 and SR 501/Clearlake Rd	Brevard Co	26	
88	SR 520 and Ranger Rd	Brevard Co	26	
93	SR 520 and Burnett Rd	Brevard Co	26	
374	SR 520 and Cox Rd/ A Ln	Brevard Co	26	
355	SR 520 and Townsend Rd	Brevard Co	26	
103	SR 520 and I-95 NB Ramp	Brevard Co	26	
102	SR 520 and I-95 SB Ramp	Brevard Co	26	
406	SR 520 and Friday Rd/ Lk Poinsett Rd	Brevard Co	26	

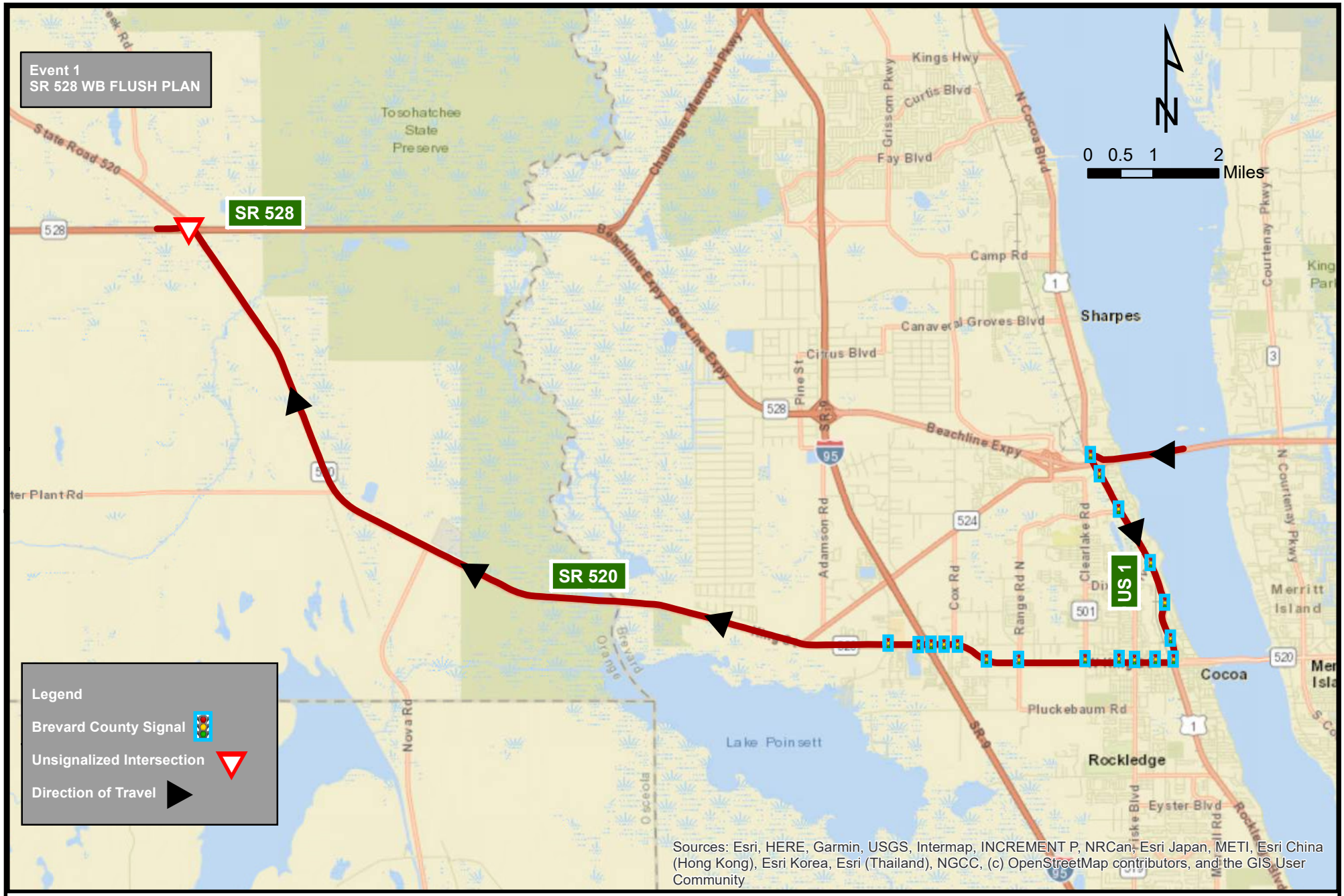
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Event 1> CTRL All signals> Right Click>Instant Pattern> 19,26> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Event 1> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management
Space Coast Event Routes

Event 1

Event 2 Timing Pattern

Event 2		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
4	SR 405 and Sisson Rd	Brevard Co	18	HNTB_Event 2_Diversion
140	SR 405 and Grissom Pkwy	Brevard Co	18	
147	SR 405 and SR 407	Brevard Co	18	
2	SR 405 and Barna Ave	Brevard Co	18	
5545	SR 405 and Target Entrance	Brevard Co	18	
5543	SR 405 and Windover Trail	Brevard Co	18	
5546	US 1 and SR 50	Brevard Co	18	
	SR 50 and Hopkins Ave	Brevard Co	18	
	SR 50 and Sisson Rd	Brevard Co	18	
	SR 50 and Key Largo Dr	Brevard Co	18	
	SR 50 and Barna Ave	Brevard Co	18	
	SR 50 and Hickory Hill Blvd	Brevard Co	18	
5528	SR 50 and SR 405	Brevard Co	18	
5540	SR 50 and I-95 SB Ramp	Brevard Co	18	
	SR 50 and I-95 NB Ramp	Brevard Co	18	

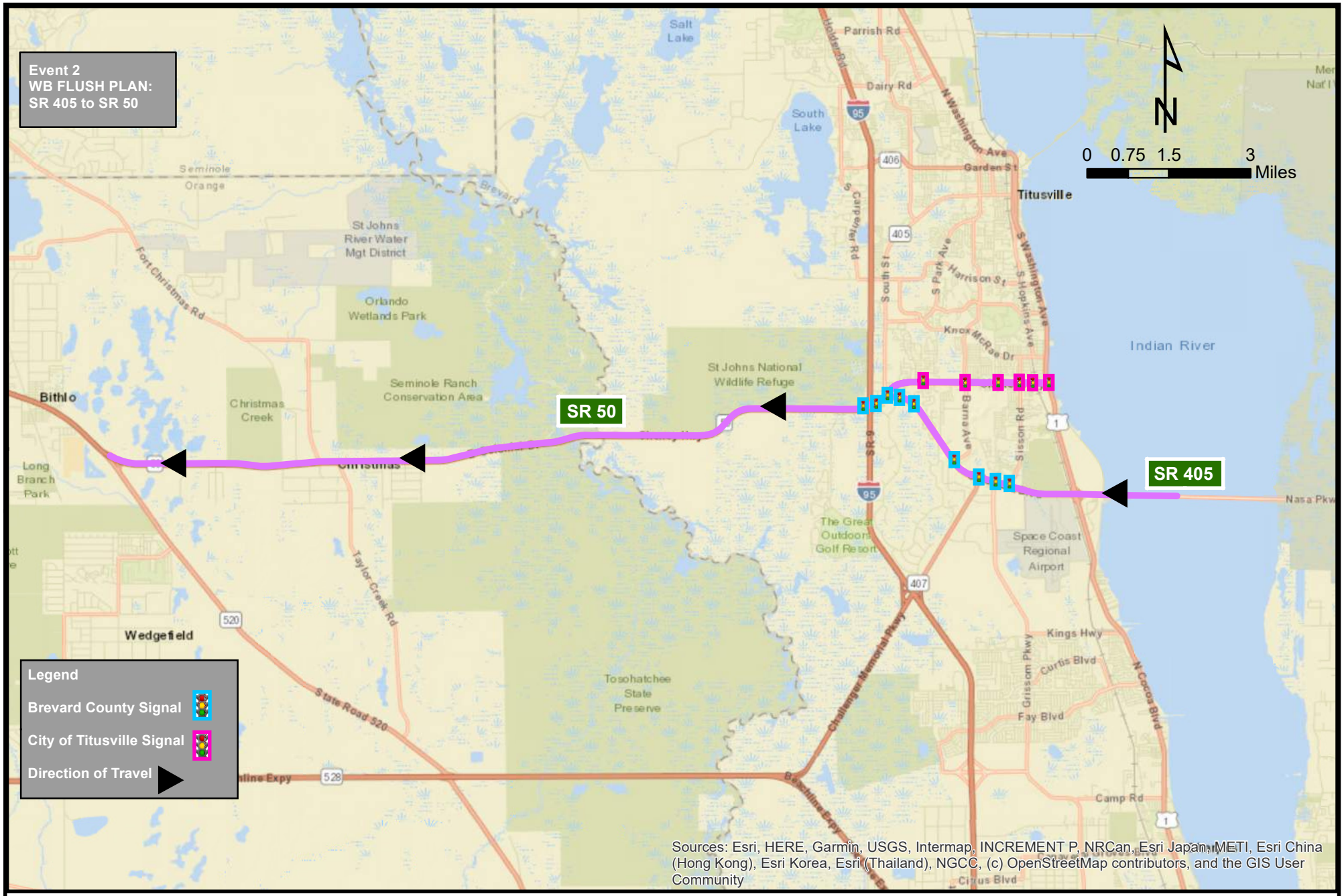
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Event 2> CTRL All signals> Right Click>Instant Pattern> 18> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Event 2> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management
Space Coast Event Routes

Event 2

Event 3 Timing Pattern

Event 3		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
78	US 1 and SR 528 EB	Brevard Co	17	HNTB_Event 3_Diversion
77	US 1 and SR 528 WB	Brevard Co	17	
5	US 1 and Canaveral Groves Blvd	Brevard Co	17	
142	US 1 and Camp Rd	Brevard Co	17	
7	US 1 and Port St John Plaza	Brevard Co	17	
3	US 1 and Fay Blvd	Brevard Co	17	
208	US 1 and Kings Hwy	Brevard Co	17	
5546	US 1 and SR 50	Brevard Co	17	
	US 1 and Knox McRae Dr	Brevard Co	17	
	US 1 and Olmstead Dr	Brevard Co	17	
	US 1 and Country Club Dr	Brevard Co	17	
	US 1 and Harrison St	Brevard Co	17	
	US 1 and Pelican Point Condominium	Brevard Co	17	
	US 1 and Terrier Trail	Brevard Co	17	
	US 1 and Grace St/Washington Ave	Brevard Co	17	
	SR 405 and Washington Ave	Brevard Co	17	

Flex Group on ATMS. now

Activate Flex Group

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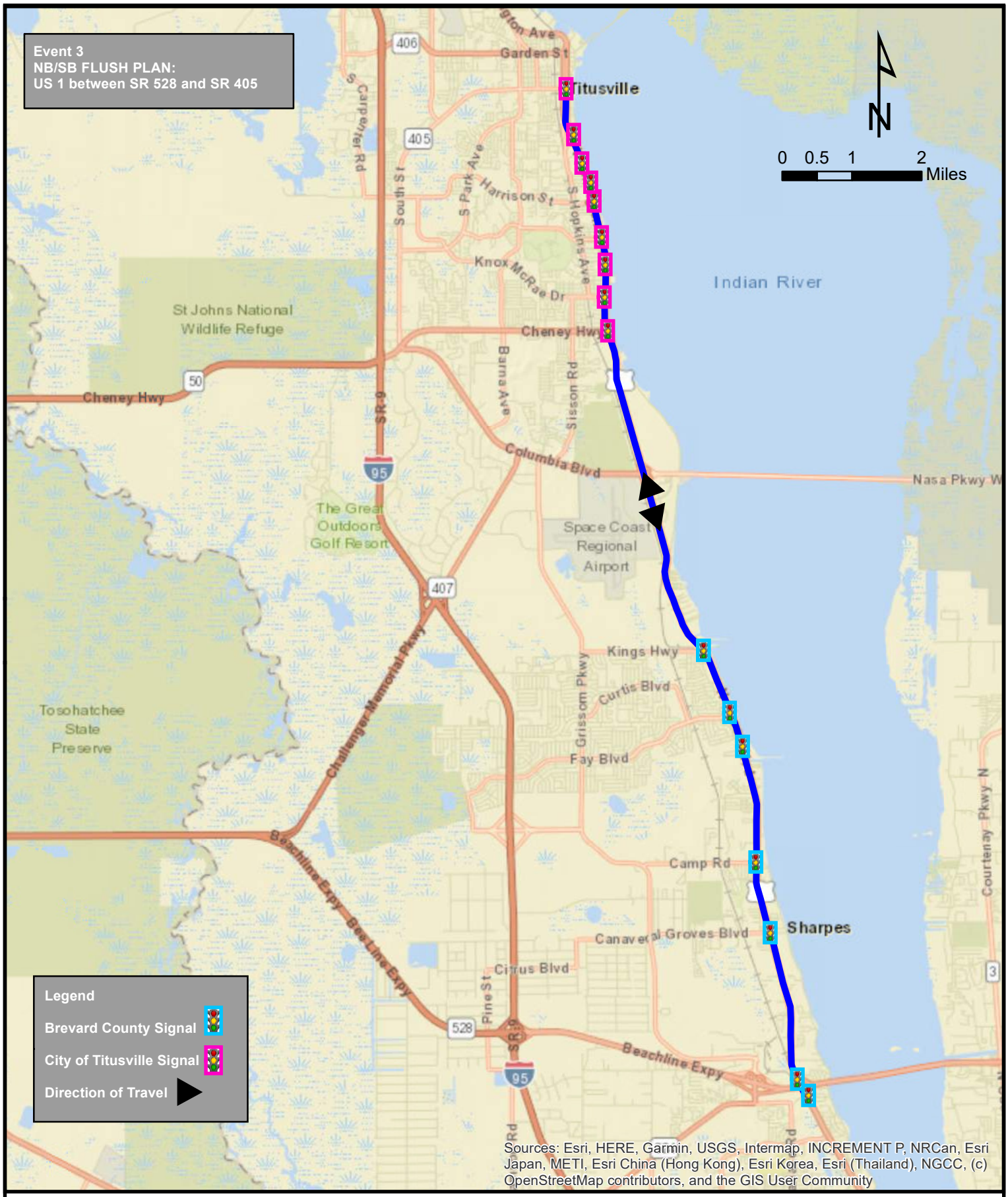
De-active Flex Group

Search> Flex Group HNTB_Event 3> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management
Space Coast Event Routes

Event 3

Event 4 Timing Pattern

Event 4		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
1018	SR 524 and E Industry Rd	Brevard Co	20	HNTB_Event 4_Diversion
	SR 524 and Cocoa Commons	Brevard Co	20	
1019	SR 524 and London Blvd	Brevard Co	20	
185	SR 524 and Cox Rd	Brevard Co	20	
1038	SR 524 and Walmart Distribution Center	Brevard Co	20	
1035	SR 524 and Friday Rd	Brevard Co	20	
1037	SR 524 and I-95 NB Ramp	Brevard Co	20	
1036	SR 524 and I-95 SB Ramp	Brevard Co	20	

Flex Group on ATMS. now

Activate Flex Group

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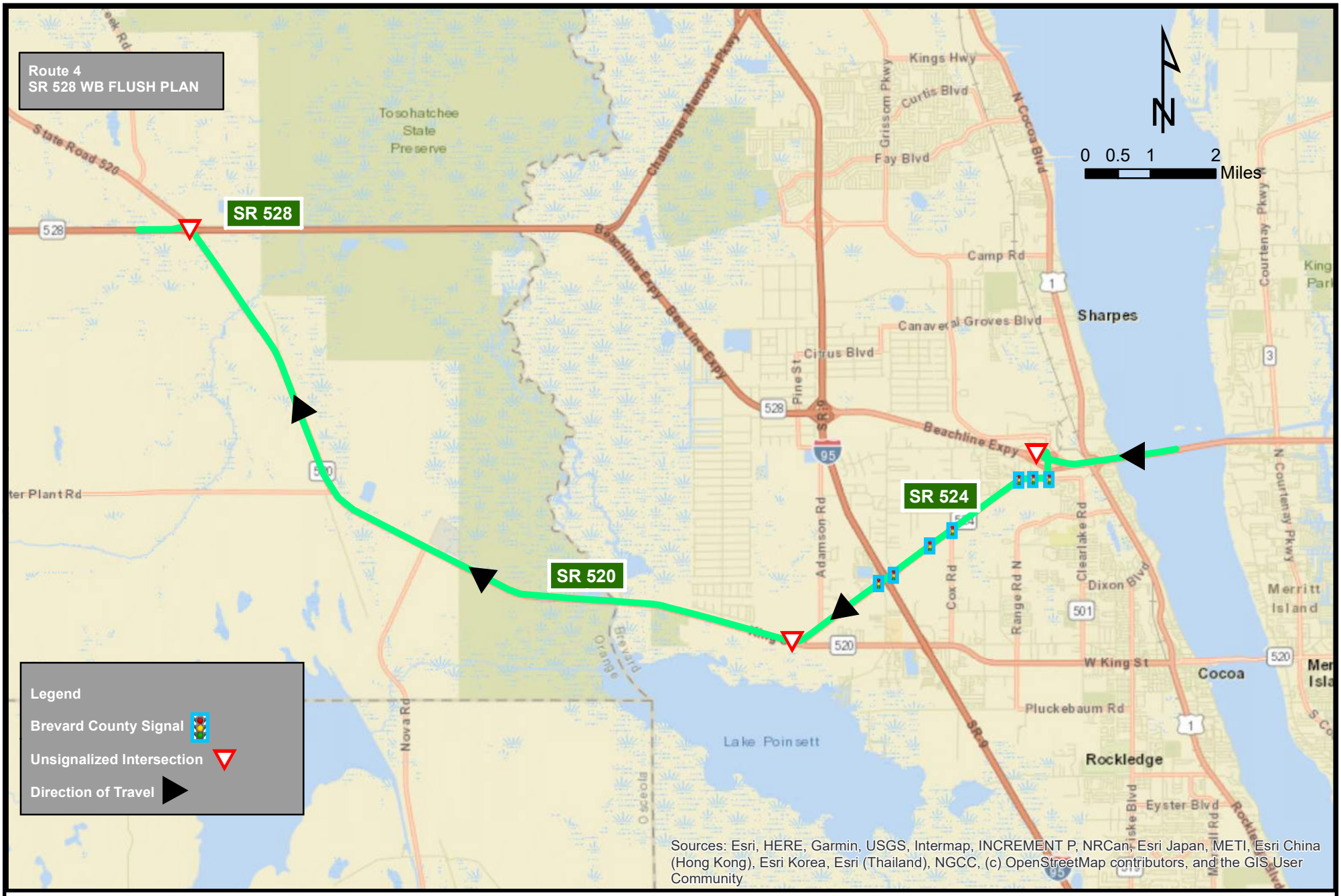
De-active Flex Group

Search> Flex Group HNTB_Event 4> CTRL All signals> Right Click> Instant Pattern> Revert>Download



FDOT

District 5 Integrated Corridor Management
Space Coast Events Routes

Route 4

Event 5 Timing Pattern

Event 5		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
2003	SR 520 and SR A1A	Brevard Co	26	HNTB_Event 5 East_Diversion
2015	SR 520 and Banana River Blvd/Belt Rd	Brevard Co	26	
2016	SR 520 and John Horne Blvd	Brevard Co	26	
23	SR 520 and Milford Point Dr/ S Banana River Dr	Brevard Co	26	
22	SR 520 and N Banana River Dr	Brevard Co	26	
20	SR 520 and Newfound Harbor Dr	Brevard Co	26	
21	SR 520 and Kiwanis Island Park Rd	Brevard Co	26	
19	SR 520 and Sykes Creek Pkwy	Brevard Co	26	
18	SR 520 and Meritt Square Mall	Brevard Co	26	
17	SR 520 and Plumosa St	Brevard Co	26	
43	SR 520 and Holiday Plaza	Brevard Co	26	
16	SR 520 and Courtenay Pkwy	Brevard Co	26	
15	SR 520 and Tropical Trail	Brevard Co	26	
1005	SR 520/Willard St and SR 515/Delannoy Ave	Brevard Co	26	
1003	SR 520/Willard St and Brevard Ave	Brevard Co	26	
1001	SR 520/Willard St and Forrest Ave	Brevard Co	26	
1008	US 1 and SR 520	Brevard Co	26	HNTB_Event 5 West_Diversion
1015	SR 520 and Blake Ave	Brevard Co	26	
1014	SR 520 and SR 519	Brevard Co	26	
1016	SR 520 and Varr Ave	Brevard Co	26	
79	SR 520 and SR 501/Clearlake Rd	Brevard Co	26	
88	SR 520 and Ranger Rd	Brevard Co	26	
93	SR 520 and Burnett Rd	Brevard Co	26	
374	SR 520 and Cox Rd/ A Ln	Brevard Co	26	
355	SR 520 and Townsend Rd	Brevard Co	26	
103	SR 520 and I-95 NB Ramp	Brevard Co	26	
102	SR 520 and I-95 SB Ramp	Brevard Co	26	
406	SR 520 and Friday Rd/ Lk Poinsett Rd	Brevard Co	26	

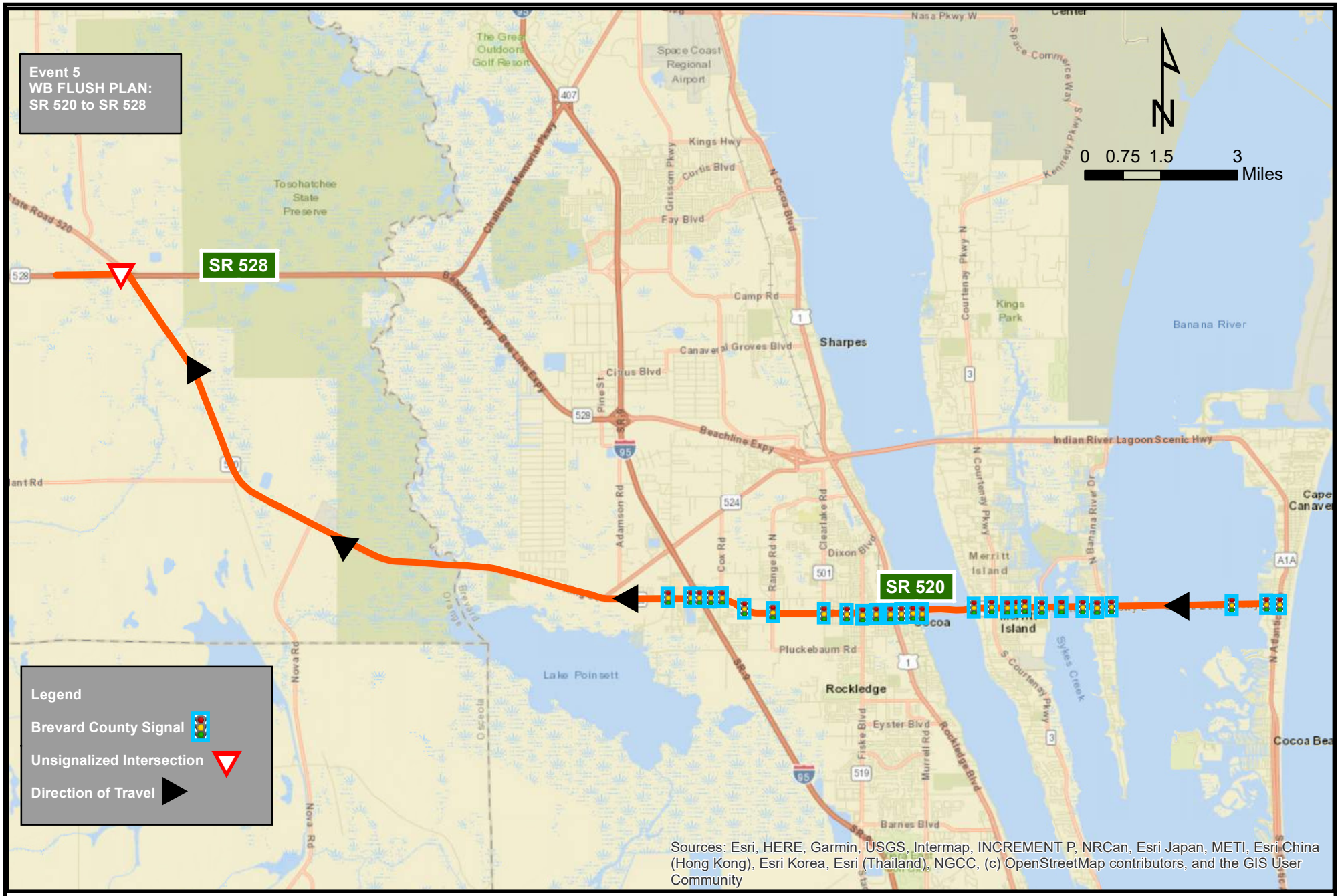
Flex Group on ATMS. now

Activate Flex Group

Search> Flex Group HNTB_Event 5> CTRL All signals> Right Click>Instant Pattern> 26> Duration 254>Download

De-active Flex Group

Search> Flex Group HNTB_Event 5> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management
Space Coast Event Routes

Event 5

Event 6 Timing Pattern

Event 6		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	SR 405 and Washington Ave	Brevard Co	21	HNTB_Event 6_Diversion
	SR 405 and Hopkins Ave	Brevard Co	21	
	SR 405 and S Deleon Ave	Brevard Co		
	SR 405 and Park Ave (NB- SB)	Brevard Co		
	SR 405 and Fox Lake Rd	Brevard Co		
	SR 405 and Park Ave (EB- WB)	Brevard Co		
5528	SR 50 and SR 405	Brevard Co	21	
5540	SR 50 and I-95 NB Ramp	Brevard Co	21	
	SR 50 and I-95 SB Ramp	Brevard Co	21	

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

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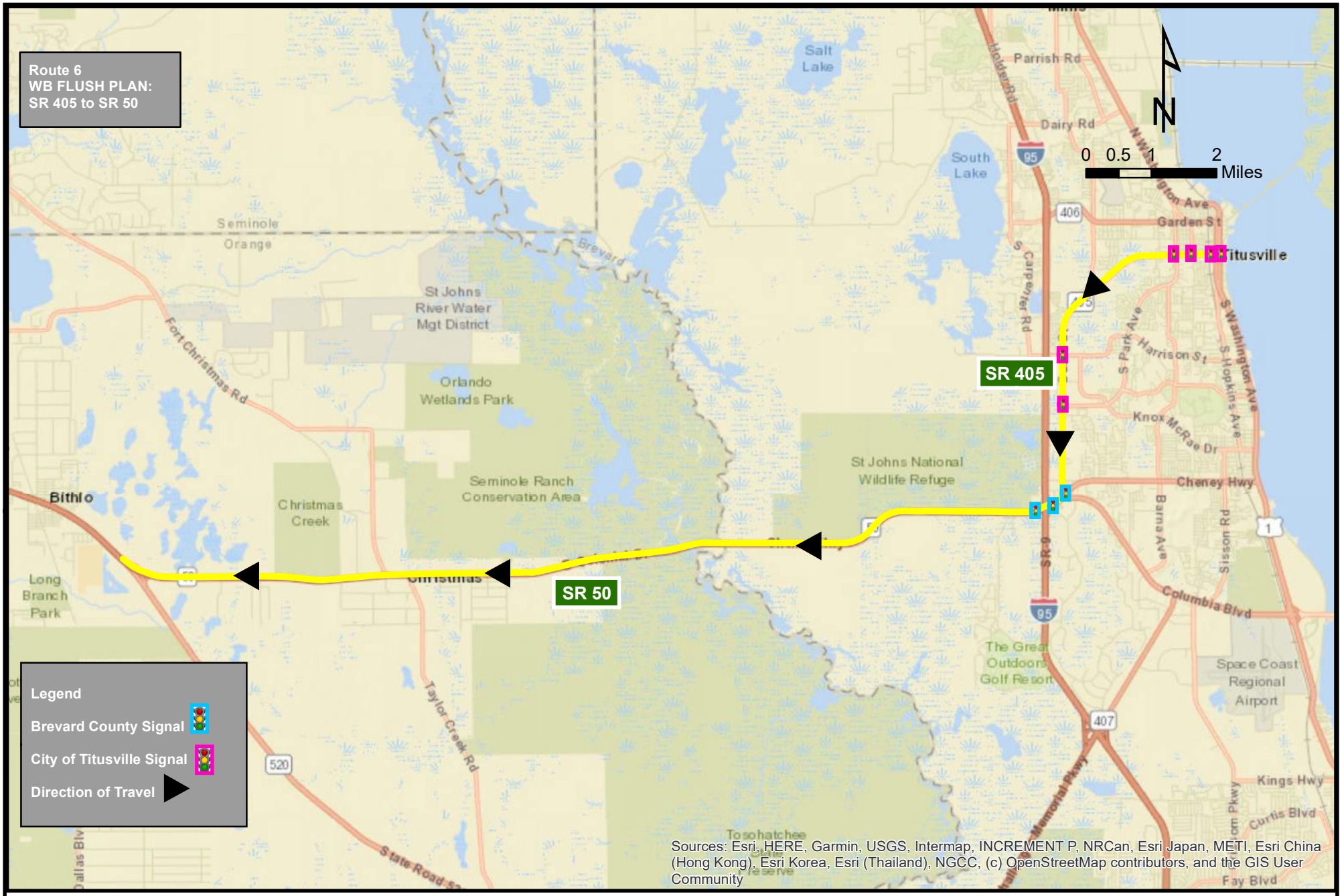

District 5 Integrated Corridor Management
Space Coast Events Routes

Route 6

Event 7 Timing Pattern

Event 7		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
	US 1 and SR 406 NB Ramp	Brevard Co		HNTB_Event 7_Diversion
	US 1 and Norwood Ave	Brevard Co		
	US 1 and Jess Parrish Ct	Brevard Co		
143	US 1 and Dairy Rd	Brevard Co		
1	US 1 and SR 46	Brevard Co	22	
155	SR 46 and Pine Ave/Holder Rd	Brevard Co	22	
334	SR 46 and I-95 NB Ramp	Brevard Co	22	

Flex Group on ATMS. now

Activate Flex Group

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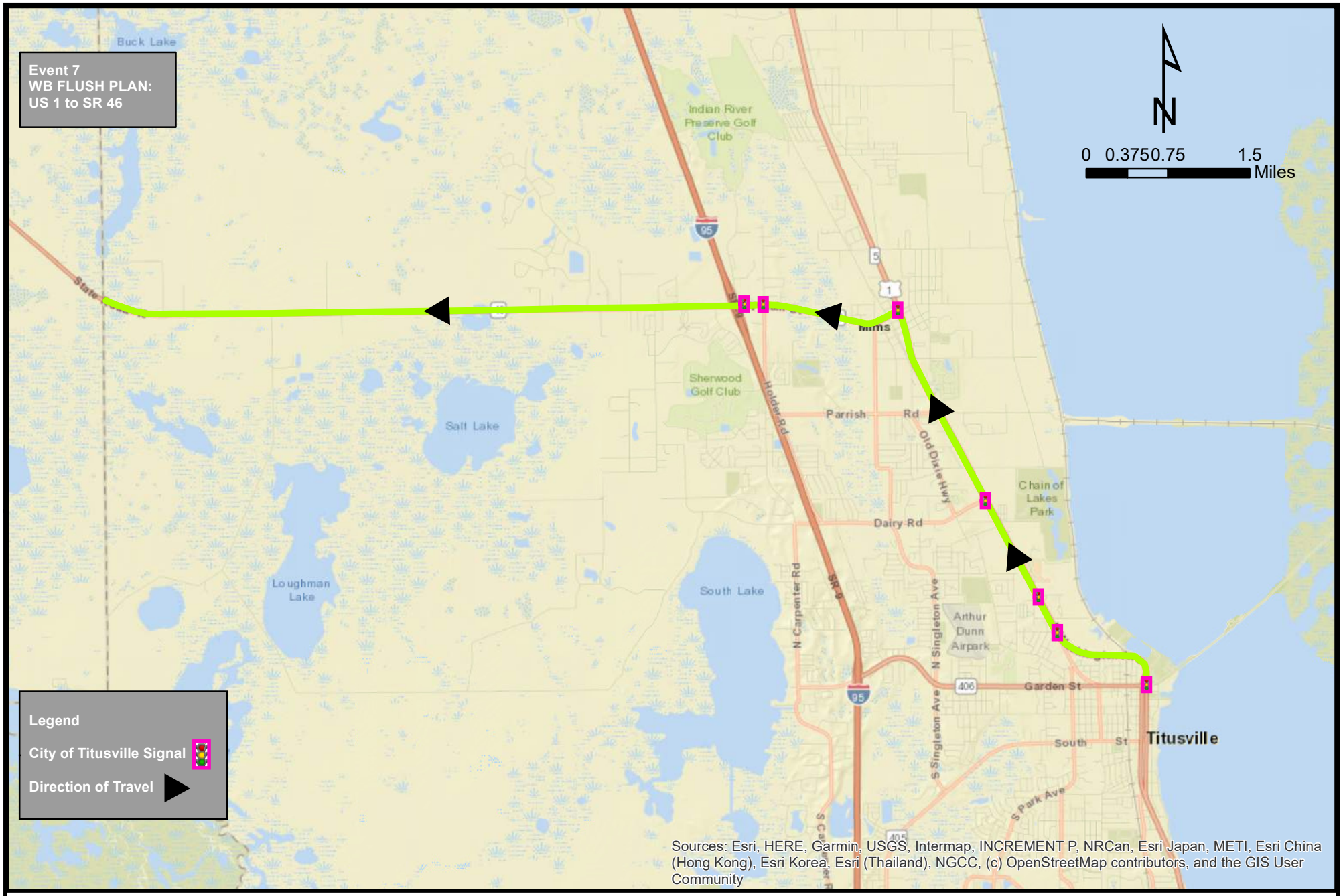
De-active Flex Group

Search> Flex Group HNTB_Event 7> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management
Space Coast Events Routes

Event 7

Event 8 Timing Pattern

Event 8		Cycle Length = 200 sec		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
30	SR 528 WB and Courtenay Pkwy	Brevard Co	16	HNTB_Event 8_Diversion
31	SR 528 EB and Courtenay Pkwy	Brevard Co	16	
14	Courtenay Pkwy and Pioneer Rd	Brevard Co	16	
320	Courtenay Pkwy and Florida Blvd/ Meadows Blvd	Brevard Co	16	
32	Courtenay Pkwy and Crockett Blvd/ Diana Blvd	Brevard Co	16	
29	Courtenay Pkwy and Grove Blvd	Brevard Co	16	
28	Courtenay Pkwy and Mustang Way/Lucas Rd	Brevard Co	16	
27	Courtenay Pkwy and Catalina Isle Dr	Brevard Co	16	
26	Courtenay Pkwy and Richland Ave	Brevard Co	16	
25	Courtenay Pkwy and Needle Blvd/Harwood Ave	Brevard Co	16	
24	Courtenay Pkwy and Merritt Ave	Brevard Co	16	
16	SR 520 and Courtenay Pkwy	Brevard Co	26	HNTB_Event 5 East_Diversion**
15	SR 50 and Tropical Trail	Brevard Co	26	
1005	SR 520/Willard St and Delannoy Ave	Brevard Co	26	
1003	SR 520/Willard St and Brevard Ave	Brevard Co	26	
1001	SR 520/Willard St and Forrest Ave	Brevard Co	26	
1008	US 1 and SR 520/ King St	Brevard Co	26	HNTB_Event 5 West_Diversion
1015	SR 520 and Blake Ave	Brevard Co	26	
1014	SR 520 and SR 519	Brevard Co	26	
1016	SR 520 and Varr Ave	Brevard Co	26	
79	SR 520 and SR 501/Clearlake Rd	Brevard Co	26	
88	SR 520 and Ranger Rd	Brevard Co	26	
93	SR 520 and Burnett Rd	Brevard Co	26	
374	SR 520 and Cox Rd/ A Ln	Brevard Co	26	
355	SR 520 and Townsend Rd	Brevard Co	26	
103	SR 520 and I-95 NB Ramp	Brevard Co	26	
102	SR 520 and I-95 SB Ramp	Brevard Co	26	
406	SR 520 and Friday Rd/ Lk Poinsett Rd	Brevard Co	26	

Flex Group on ATMS. now

Activate Flex Group

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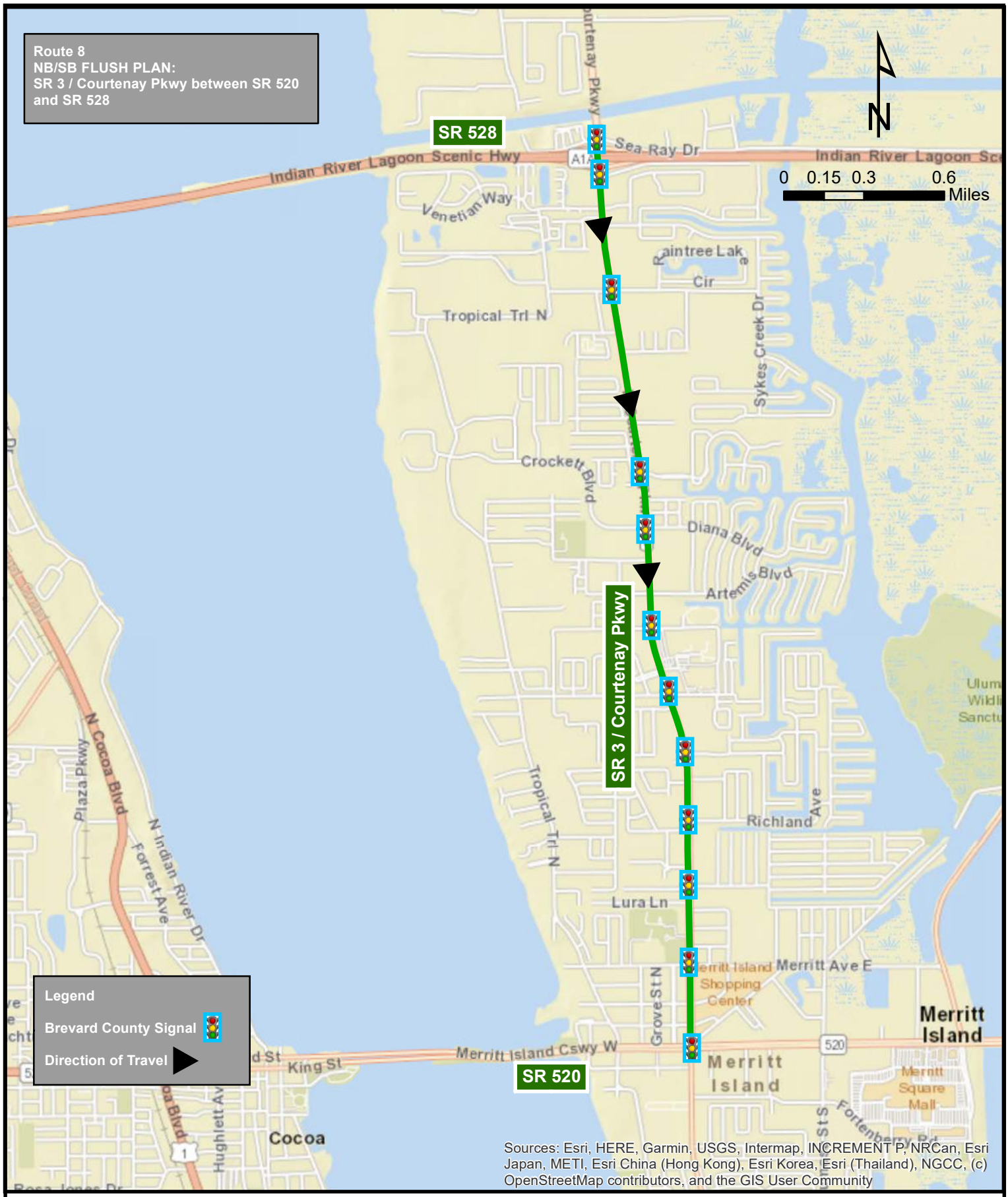
De-active Flex Group

Search> Flex Group HNTB_Event 8> CTRL All signals> Right Click> Instant Pattern> Revert>Download



District 5 Integrated Corridor Management
Space Coast Events Routes

Route 8

Event 9 Timing Pattern

Event 9		Cycle Length = 200 seconds		
ID No.	**Intersection**	**Maintaining Agency**	**Pattern**	**Group**
161	SR A1A and W Central Blvd	Brevard Co	7	HNTB_Event 9_Diversion
425	SR A1A and Atlantic Ave	Brevard Co	7	
424	SR A1A and Center St/Buchanan Ave	Brevard Co	7	
40	SR A1A and Holman Rd/McKinley Ave	Brevard Co	7	
2001	SR A1A and Shepard Dr	Brevard Co	7	
2004	SR A1A and Marion Ln	Brevard Co	7	
2005	SR A1A and St Lucie	Brevard Co	7	
2006	SR A1A and Fisher Park	Brevard Co	7	
2007	SR A1A and Banana River Blvd	Brevard Co	7	
2008	SR A1A and Royale Way	Brevard Co	7	
	All Signals on SR 520	Brevard Co	26	HNTB_Event 5 East_Diversion
				HNTB_Event 5 West_Diversion

Flex Group on ATMS. now

Activate Flex Group

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De-active Flex Group

Search> Flex Group HNTB_Event 9> CTRL All signals> Right Click> Instant Pattern> Revert>Download

District 5 Integrated Corridor Management
Space Coast Event Routes

Event 9

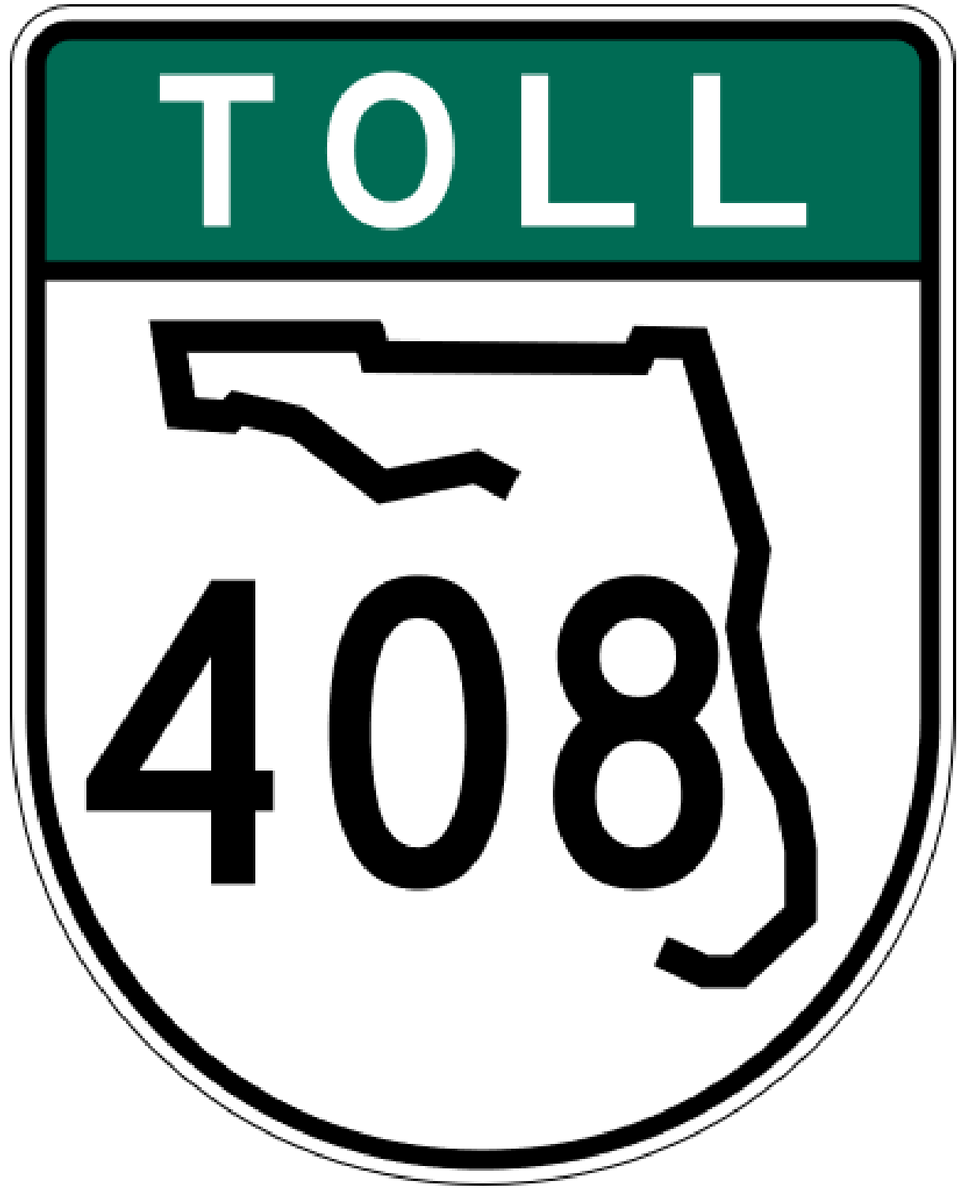
Appendix Q

SR 408 Diversion Routes

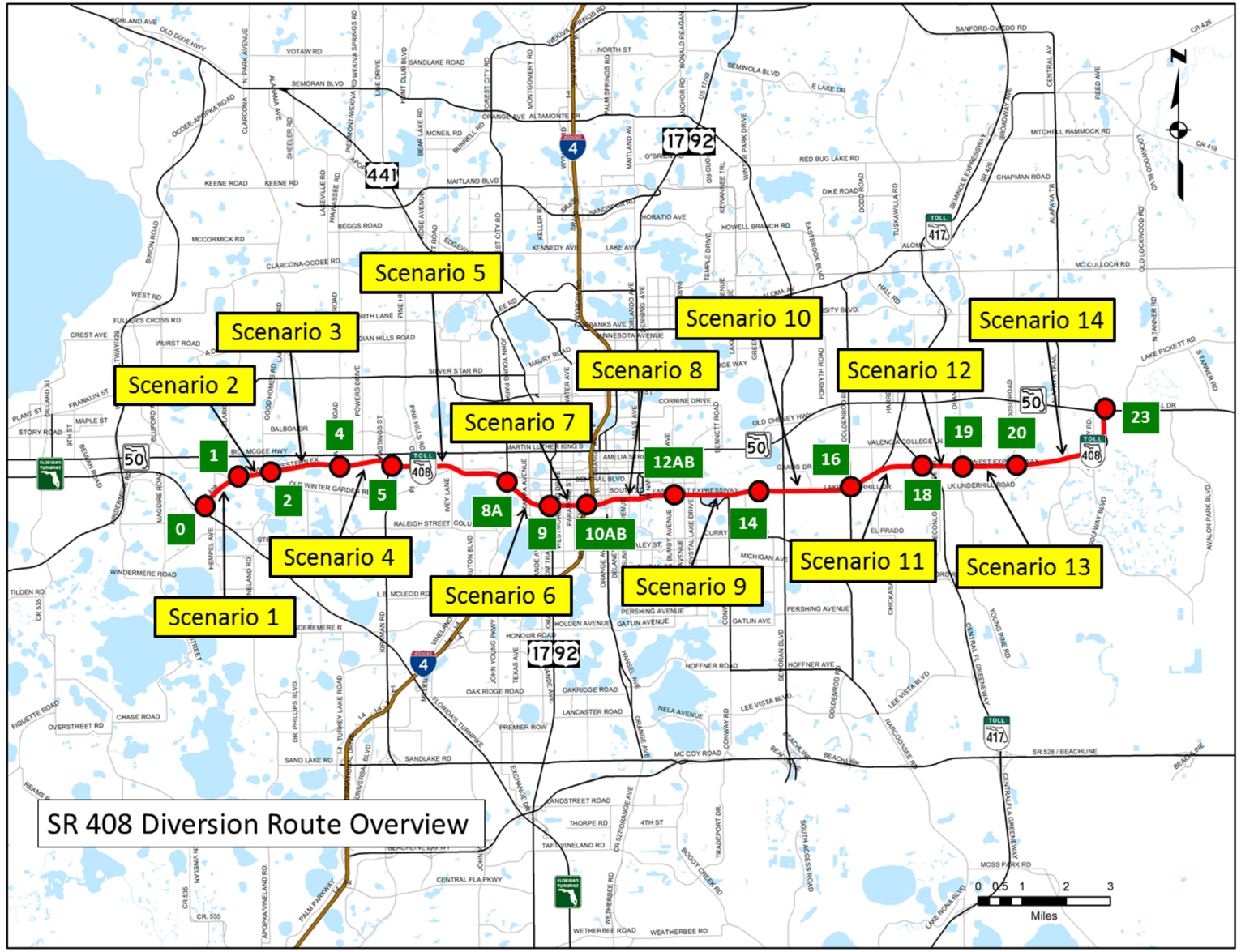
07/25/2020 : Updated with Intelight new timing tables

10/13/2020: Updated with I-4 & Colonial Dr interchange

Version 1.2



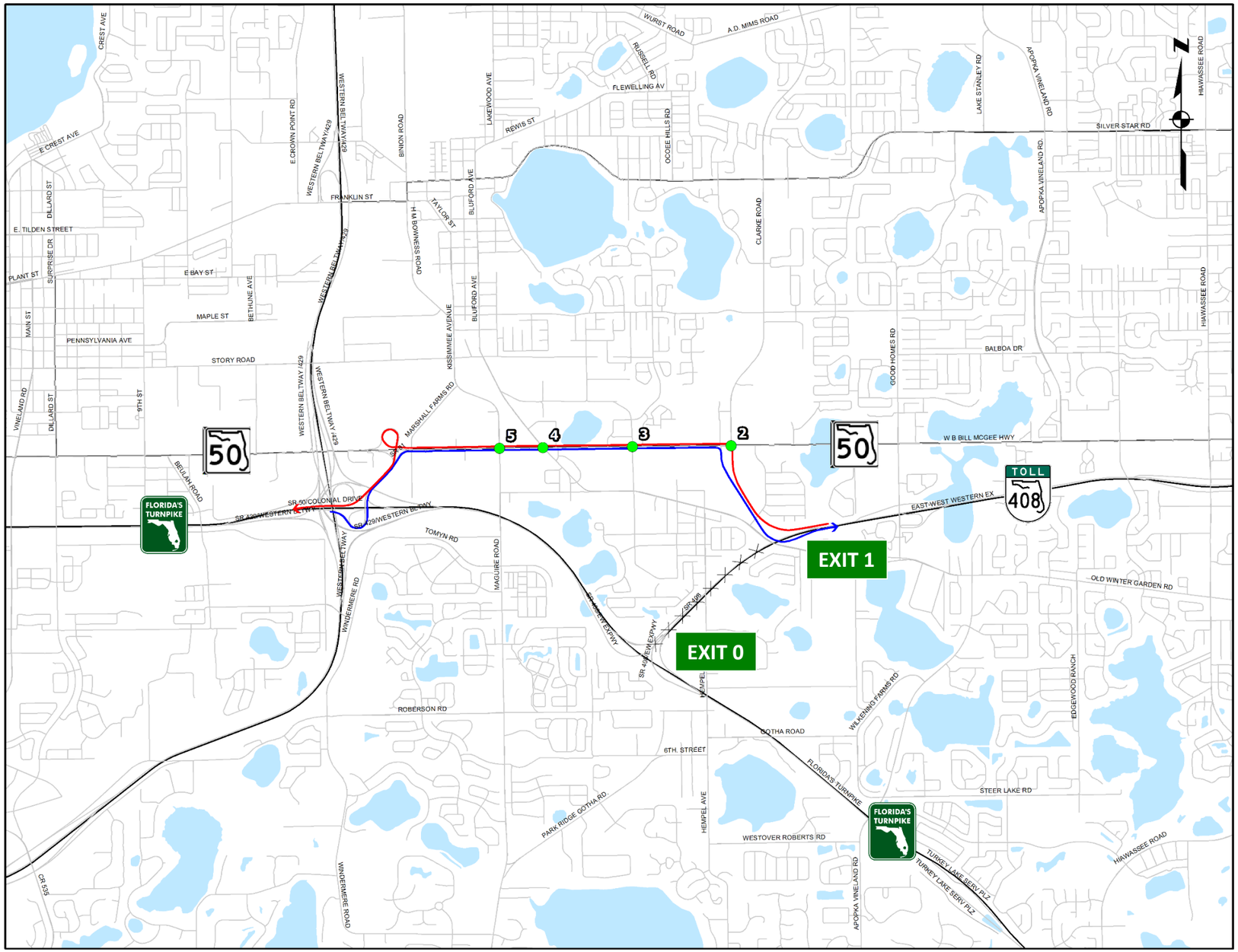
STATE ROAD 408 DIVERSION ROUTES



Legend:

- Interchange
- 182 Interchange Number

Scenarios 1 through 14 reflect incidents along sections of State Road 408.



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

0 0.2 0.4 0.8 1.2
Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
Florida's Turnpike to
West Colonial Drive

SEGMENT 1 EB

State Road 408 / East-West Expressway Diversion Route

Florida Turnpike to Exit 1 - West Colonial Drive

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Turnpike Exit 267B - SR 50	NA	NA	NA	NA	Exit from Turnpike.
West Colonial Drive at Turnpike	NA	NA	NA	NA	Turn onto West Colonial Drive eastbound.
West Colonial Drive at Maguire Road	4020	Ocoee/FDOT	100	210	Favor eastbound traffic.
West Colonial Drive at Bluford Avenue	4015	Ocoee/FDOT	100	210	Favor eastbound traffic.
West Colonial Drive at Blackwood Avenue	4010	Ocoee/FDOT	100	210	Favor eastbound traffic.
West Colonial Drive at Clarke Road	4005	Ocoee/FDOT	100	210	Favor eastbound traffic for the freeflow eastbound right turn onto SR 408 Eastbound.

SEGMENT 1 WB

State Road 408 / East-West Expressway Diversion Route

Exit 1 - West Colonial Drive to Exit 0 - Florida Turnpike

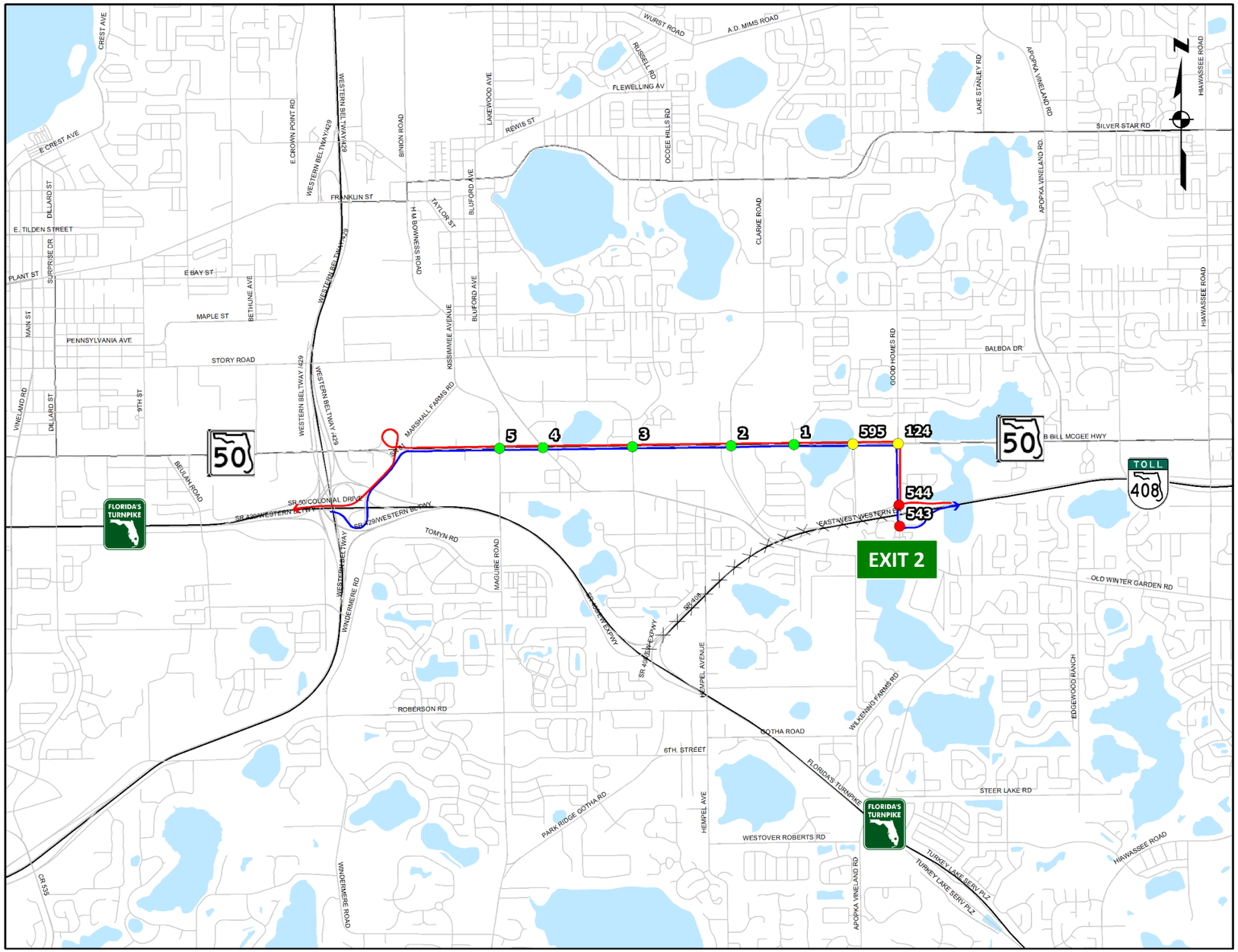
Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 1 - West Colonial Drive	NA	NA	NA	NA	Exit westbound SR 408.
West Colonial Drive at Clarke Road	4005	Ocoee/FDOT	101	210	Favor northbound left turn onto West Colonial Drive.
West Colonial Drive at Blackwood Avenue	4010	Ocoee/FDOT	101	210	Favor westbound traffic.
West Colonial Drive at Bluford Avenue	4015	Ocoee/FDOT	101	210	Favor westbound traffic.
West Colonial Drive at Maguire Road	4020	Ocoee/FDOT	101	210	Favor westbound traffic.
West Colonial Drive at Turnpike	NA	NA	NA	NA	Westbound right turn onto ramp to return to Turnpike.

SEGMENT 1 BiD

State Road 408 / East-West Expressway Diversion Route

Exit 0 - Florida Turnpike to Exit 1 - West Colonial Drive

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Turnpike Exit 267B - SR 50	NA	NA	NA	NA	Eastbound: Exit from Turnpike. Westbound: Return to Turnpike.
West Colonial Drive at Turnpike	NA	NA	NA	NA	Eastbound: turn onto West Colonial Drive eastbound. Westbound: right turn to return to Turnpike.
West Colonial Drive at Maguire Road	4020	Ocoee/FDOT	103	210	Favor eastbound and westbound traffic.
West Colonial Drive at Bluford Avenue	4015	Ocoee/FDOT	103	210	Favor eastbound and westbound traffic.
West Colonial Drive at Blackwood Avenue	4010	Ocoee/FDOT	103	210	Favor eastbound and westbound traffic.
West Colonial Drive at Clarke Road	4005	Ocoee/FDOT	103	210	Favor eastbound (for eastbound right turn to return to SR 408) and northbound left turn traffic.
Exit 1 - West Colonial Drive	NA	NA	NA	NA	Westbound: Exit from SR 408. Eastbound: Return to SR 408.



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

0 0.2 0.4 0.8 1.2
Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
Florida's Turnpike to
Good Homes Road

SEGMENT 2 EB

State Road 408 / East-West Expressway Diversion Route

Exit 1 - West Colonial Drive to Exit 2 - Good Homes Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Turnpike Exit 267B - SR 50	NA	NA	NA	NA	Exit from Turnpike.
West Colonial Drive at Turnpike	NA	NA	NA	NA	Turn onto West Colonial Drive eastbound.
West Colonial Drive at Maguire Road	4020	Ocoee/FDOT	103	210	Favor eastbound traffic.
West Colonial Drive at Bluford Avenue	4015	Ocoee/FDOT	103	210	Favor eastbound traffic.
West Colonial Drive at Blackwood Avenue	4010	Ocoee/FDOT	103	210	Favor eastbound traffic.
West Colonial Drive at Clarke Road	4005	Ocoee/FDOT	103	210	Favor eastbound and northbound right turning traffic.
W Colonial Dr at Vintage Vil Ln / West Oak Mall	4000	Ocoee/FDOT	103	210	Favor eastbound traffic.
West Colonial Drive at Vizcaya Lakes Road	595	Orange County	103	210	Favor eastbound traffic.
West Colonial Drive at Good Homes Road	124	Orange County	103	FREE	Favor eastbound right turning traffic.
Good Homes Road at SR 408 WB Off Ramp	544	CFX	2/3/3	210	Favor southbound traffic.
Good Homes Road at SR 408 EB Off Ramp	543	CFX	2/3/3	210	Favor southbound left turning traffic to return to SR 408 eastbound.

SEGMENT 2 WB

State Road 408 / East-West Expressway Diversion Route

Exit 2 - Good Homes Road to Exit 1 - West Colonial Drive

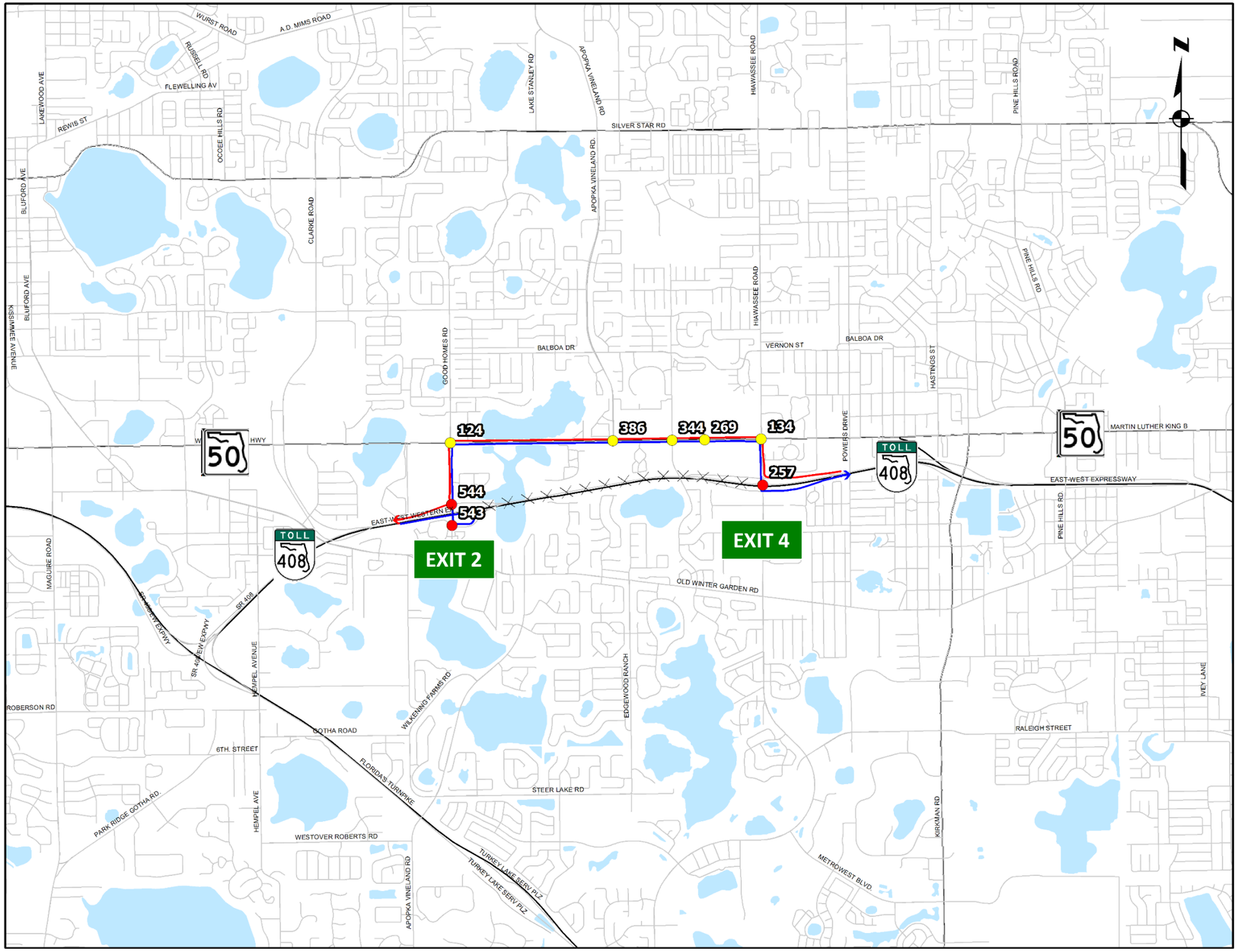
Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 2 - Good Homes Road	NA	NA	NA	NA	Exit from Westbound SR 408.
Good Homes Road at SR 408 EB Off Ramp	543	CFX	3/3/3	210	Favor southbound traffic.
Good Homes Road at SR 408 WB Off Ramp	544	CFX	3/3/3	210	Favor westbound traffic to turn right onto northbound Good Homes Road.
West Colonial Drive at Good Homes Road	124	Orange County	104	FREE	Favor northbound left turning traffic.
West Colonial Drive at Vizcaya Lakes Road	595	Orange County	104	210	Favor westbound traffic.
W Colonial Dr at Vintage Vil Ln / West Oak Mall	4000	Ocoee/FDOT	104	210	Favor westbound traffic.
West Colonial Drive at Clarke Road	4005	Ocoee/FDOT	104	210	Favor westbound traffic.
West Colonial Drive at Blackwood Avenue	4010	Ocoee/FDOT	104	210	Favor westbound traffic.
West Colonial Drive at Bluford Avenue	4015	Ocoee/FDOT	104	210	Favor westbound traffic.
West Colonial Drive at Maguire Road	4020	Ocoee/FDOT	104	210	Favor westbound traffic.
West Colonial Drive at Turnpike	NA	NA	NA	NA	Right turn on ramp to return to Turnpike.

SEGMENT 2 BiD

State Road 408 / East-West Expressway Diversion Route

Exit 1 - West Colonial Drive to Exit 2 - Good Homes Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Turnpike Exit 267B - SR 50	NA	NA	NA	NA	Exit from Turnpike.
West Colonial Drive at Turnpike	NA	NA	NA	NA	Eastbound: Turn onto West Colonial Drive eastbound. Westbound: Right turn onto ramp to return to Turnpike.
West Colonial Drive at Maguire Road	4020	Ocoee/FDOT	105	210	Favor eastbound and westbound traffic.
West Colonial Drive at Bluford Avenue	4015	Ocoee/FDOT	105	210	Favor eastbound and westbound traffic.
West Colonial Drive at Blackwood Avenue	4010	Ocoee/FDOT	105	210	Favor eastbound and westbound traffic.
West Colonial Drive at Clarke Road	4005	Ocoee/FDOT	105	210	Favor eastbound and westbound traffic.
W Colonial Dr at Vintage Vil Ln / West Oak Mall	4000	Ocoee/FDOT	105	210	Favor eastbound and westbound traffic.
West Colonial Drive at Vizcaya Lakes Road	595	Orange County	105	210	Favor eastbound and westbound traffic.
West Colonial Drive at Good Homes Road	124	Orange County	105	FREE	Favor eastbound right turning traffic and northbound left turning traffic.
Good Homes Road at SR 408 WB Off Ramp	544	CFX	3/3/3	210	Favor southbound traffic and westbound right turning traffic.
Good Homes Road at SR 408 EB Off Ramp	543	CFX	3/3/3	210	Favor southbound left turning traffic to return to SR 408 eastbound.



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

0 0.2 0.4 0.8 1.2
Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
Good Homes Road to
Hiawassee Road

SEGMENT 3 EB

State Road 408 / East-West Expressway Diversion Route

Exit 2 - Good Homes Road to Exit 4 - Hiawassee Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 2 - Good Homes Road	NA	NA	NA	NA	Exit from Eastbound SR 408.
Good Homes Road at SR 408 EB Off Ramp	543	CFX	1/3/3	210	Favor westbound right turn onto northbound Good Homes Road.
Good Homes Road at SR 408 WB Off Ramp	544	CFX	1/3/3	210	Favor northbound traffic.
West Colonial Drive at Good Homes Road	124	Orange County	100	FREE	Favor northbound right turning traffic onto eastbound West Colonial Drive.
West Colonial Drive at Apopka Vineland Road	386	Orange County	100	210	Favor eastbound traffic.
West Colonial Drive at Dorscher Road	344	Orange County	100	210	Favor eastbound traffic.
West Colonial Drive at Highland Lakes Center	269	Orange County	100	210	Favor eastbound traffic.
West Colonial Drive at Hiawassee Road	134	Orange County	100	FREE	Favor eastbound right turning traffic onto southbound Hiawassee Road
Hiawassee Road at SR 408 WB Off Ramp	257	CFX	2/3/3	FREE	Favor southbound traffic.
Hiawassee Road at SR 408 EB Off Ramp					Favor southbound left turning traffic onto SR 408 Eastbound.

SEGMENT 3 WB

State Road 408 / East-West Expressway Diversion Route

Exit 4 - Hiawassee Road to Exit 2 - Good Homes Road

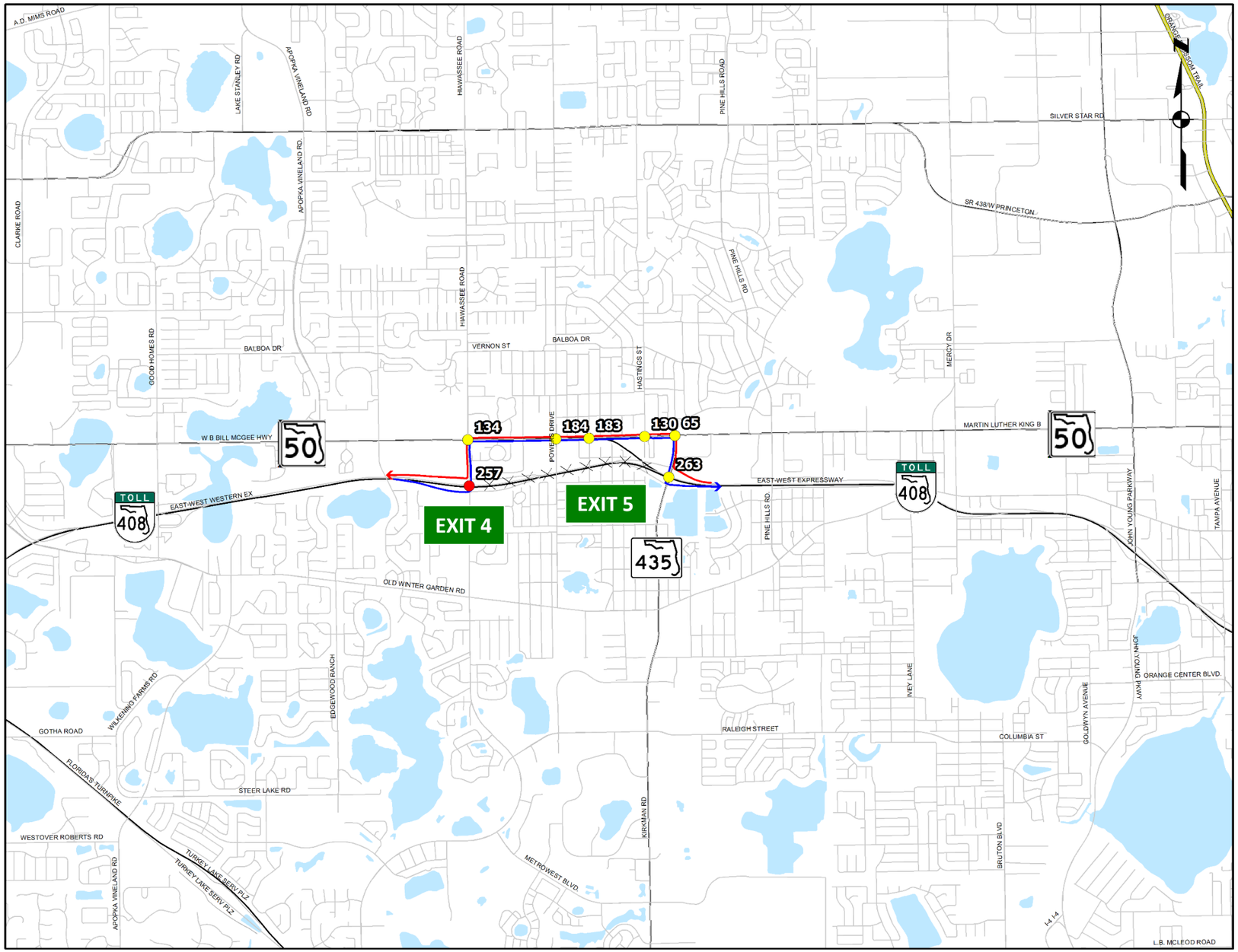
Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 4 - Hiawassee Road	NA	NA	NA	NA	Exit from Westbound SR 408
Hiawassee Road at SR 408 WB Off Ramp	257	CFX	1/3/3	FREE	Favor westbound right turn onto northbound Hiawassee Road.
West Colonial Drive at Hiawassee Road	134	Orange County	101	FREE	Favor northbound left turn onto westbound West Colonial Drive.
West Colonial Drive at Highland Lakes Center	269	Orange County	101	210	Favor westbound traffic.
West Colonial Drive at Dorscher Road	344	Orange County	101	210	Favor westbound traffic.
West Colonial Drive at Apopka Vineland Road	386	Orange County	101	210	Favor westbound traffic.
West Colonial Drive at Good Homes Road	124	Orange County	101	FREE	Favor westbound left turn onto southbound Good Homes Road.
Good Homes Road at SR 408 WB Off Ramp	544	CFX	2/3/3	210	Favor southbound right turn onto westbound SR 408.
Good Homes Road at SR 408 EB Off Ramp	543	CFX	2/3/3	210	Favor southbound traffic.

SEGMENT 3 BiD

State Road 408 / East-West Expressway Diversion Route

Exit 2 - Good Homes Road to Exit 4 - Hiawassee Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 2 - Good Homes Road	NA	NA	NA	NA	Exit from Eastbound SR 408
Good Homes Road at SR 408 EB Off Ramp	543	CFX	3/3/3	210	Favor southbound traffic.
Good Homes Road at SR 408 WB Off Ramp	544	CFX	3/3/3	210	Favor southbound right turn traffic onto SR 408 Westbound and northbound traffic.
West Colonial Drive at Good Homes Road	124	Orange County	102	FREE	Favor westbound left turn and northbound right turn.
West Colonial Drive at Apopka Vineland Road	386	Orange County	102	210	Favor eastbound and westbound traffic.
West Colonial Drive at Dorscher Road	344	Orange County	102	210	Favor eastbound and westbound traffic.
West Colonial Drive at Highland Lakes Center	269	Orange County	102	210	Favor eastbound and westbound traffic.
West Colonial Drive at Hiwassee Road	134	Orange County	102	FREE	Favor eastbound right turn and northbound left turn.
Hiawassee Road at SR 408 WB Off Ramp	257	CFX	3/3/3	FREE	Favor westbound right turn onto northbound Hiawassee Road and southbound through.
Hiawassee Road at SR 408 EB Off Ramp					Favor southbound left turn to return to eastbound SR 408.
Exit 4 - Hiawassee Road	NA	NA	NA	NA	Exit from Westbound SR 408



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
Hiawassee Road to
State Road 435 (Kirkman Road)

SEGMENT 4 EB

State Road 408 / East-West Expressway Diversion Route

Exit 4 - Hiawassee Road to Exit 5 - Kirkman Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 4 - Hiawassee Road	NA	NA	NA	NA	Exit from eastbound SR 408.
Hiawassee Road at SR 408 EB Off Ramp	257	CFX	1/3/3	FREE	Favor eastbound left turn onto northbound Hiawassee Road.
Hiawassee Road at SR 408 WB Off Ramp					Favor northbound traffic.
West Colonial Drive at Hiawassee Road	134	Orange County	103	FREE	Favor northbound right turn onto eastbound West Colonial Drive.
West Colonial Drive at Powers Drive	184	Orange County	103	210	Favor eastbound traffic.
West Colonial Drive at Paul Street	183	Orange County	103	210	Favor eastbound traffic.
West Colonial Drive at Hastings Street	130	Orange County	103	210	Favor eastbound traffic.
West Colonial Drive at Kirkman Road	65	Orange County	103	FREE	Favor eastbound right turn onto southbound Kirkman Road.
Kirkman Road at SR 408 Westbound Off Ramp	263	Orange County	103	FREE	Favor southbound traffic.
Kirkman Road at SR 408 Eastbound Off Ramp					Favor southbound left turn onto ramp to eastbound SR 408.

SEGMENT 4 WB

State Road 408 / East-West Expressway Diversion Route

Exit 5 - Kirkman Road to Exit 4 - Hiawassee Road

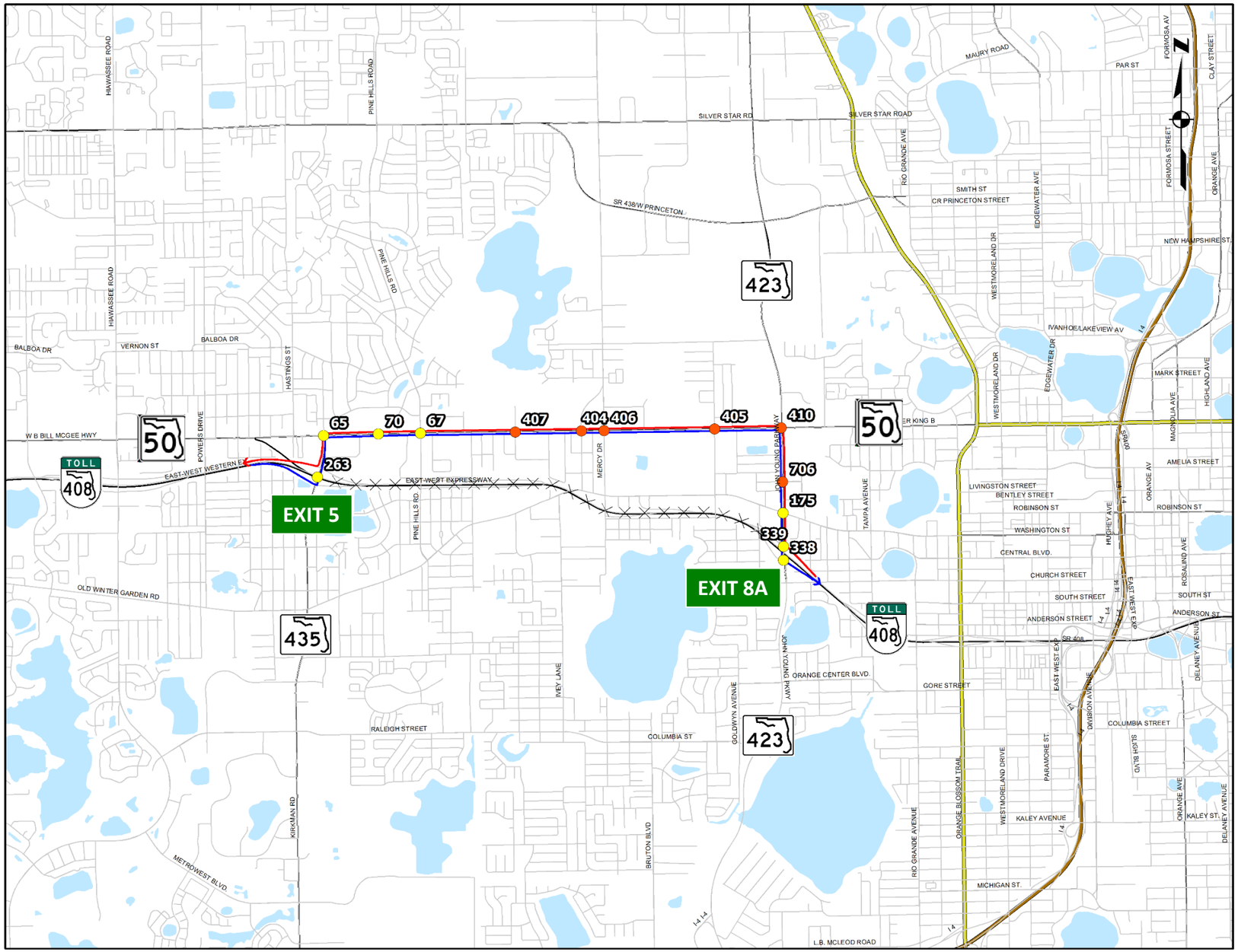
Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 5 - Kirkman Road	NA	NA	NA	NA	Exit from westbound SR 408.
Kirkman Road at SR 408 Westbound Off Ramp	263	Orange County	104	FREE	Favor westbound right turn onto northbound Kirkman Road.
West Colonial Drive at Kirkman Road	65	Orange County	104	FREE	Favor northbound left turn onto westbound West Colonial Drive.
West Colonial Drive at Hastings Street	130	Orange County	104	210	Favor westbound traffic.
West Colonial Drive at Paul Street	183	Orange County	104	210	Favor westbound traffic.
West Colonial Drive at Powers Drive	184	Orange County	104	210	Favor westbound traffic.
West Colonial Drive at Hiawassee Road	134	Orange County	104	FREE	Favor westbound left turn onto southbound Hiawassee Road.
Hiawassee Road at SR 408 WB Off Ramp	257	CFX	2/3/3	FREE	Favor southbound right turn onto westbound SR 408 on-ramp.

SEGMENT 4 BiD

State Road 408 / East-West Expressway Diversion Route

Exit 4 - Hiawassee Road to Exit 5 - Kirkman Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 4 - Hiawassee Road	NA	NA	NA	NA	Exit from eastbound SR 408.
Hiawassee Road at SR 408 EB Off Ramp	257	CFX	3/3/3	FREE	Favor eastbound left turn onto northbound Hiawassee Road.
Hiawassee Road at SR 408 WB Off Ramp					Favor southbound right turn and northbound traffic.
West Colonial Drive at Hiawassee Road	134	Orange County	105	FREE	Favor NB right turn onto eastbound West Colonial Drive and westbound left turn onto southbound Hiawassee Road.
West Colonial Drive at Powers Drive	184	Orange County	105	210	Favor eastbound and westbound traffic.
West Colonial Drive at Paul Street	183	Orange County	105	210	Favor eastbound and westbound traffic.
West Colonial Drive at Hastings Street	130	Orange County	105	210	Favor eastbound and westbound traffic.
West Colonial Drive at Kirkman Road	65	Orange County	105	FREE	Favor eastbound right turn onto southbound Kirkman Road and northbound left turn onto West Colonial Drive.
Kirkman Road at SR 408 Westbound Off Ramp	263	Orange County	105	FREE	Favor southbound traffic and westbound right turning traffic.
Kirkman Road at SR 408 Eastbound Off Ramp					Favor southbound left turn onto ramp to eastbound SR 408.
Exit 5 - Kirkman Road	NA	NA	NA	NA	Exit from westbound SR 408.



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
State Road 435 (Kirkman Road)
to
State Road 423
(John Young Parkway)

SEGMENT 5 EB

State Road 408 / East-West Expressway Diversion Route

Exit 5 - Kirkman Road to Exit 8A - John Young Parkway

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 5 - Kirkman Road	NA	NA	NA	NA	Exit from eastbound SR 408.
Kirkman Road at SR 408 Eastbound Off Ramp	263	Orange County	100	FREE	Favor eastbound left turn onto northbound Kirkman Road.
Kirkman Road at SR 408 Westbound Off Ramp					Favor northbound traffic.
West Colonial Drive at Kirkman Road	65	Orange County	100	FREE	Favor northbound right turn onto eastbound West Colonial Drive.
West Colonial Drive at Westside Crossings	70	Orange County	100	210	Favor eastbound traffic.
West Colonial Drive at Pine Hills Road	67	Orange County	100	210	Favor eastbound traffic.
West Colonial Drive at Pete Parrish Blvd	* 407	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Fairvilla Road	* 404	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Mercy Drive	* 406	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Ferguson Drive	* 405	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at John Young Parkway	* 410	Orlando	11	FREE	Favor eastbound right turn onto southbound John Young Parkway.
John Young Parkway at Harwood Street	* 706	Orlando	12	210	Favor southbound traffic.
John Young Parkway at Old Winter Garden Road	175	Orange County	100	210	Favor southbound traffic.
John Young Parkway at SR 408 WB Off Ramp	339	Orange County	100	210	Favor southbound traffic.
John Young Parkway at SR 408 EB Off Ramp	338	Orange County	100	210	Favor southbound left turn onto SR 408 eastbound on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 5*

SEGMENT 5 WB

State Road 408 / East-West Expressway Diversion Route

Exit 8A - John Young Parkway to Exit 5 - Kirkman Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 8A - John Young Parkway	NA	NA	NA	NA	Exit from Westbound SR 408.
John Young Parkway at SR 408 EB Off Ramp	338	Orange County	101	210	Favor northbound and southbound traffic.
John Young Parkway at SR 408 WB Off Ramp	339	Orange County	101	210	Favor westbound right turn onto northbound John Young Parkway.
John Young Parkway at Old Winter Garden Road	175	Orange County	101	210	Favor northbound traffic.
John Young Parkway at Harwood Street	* 706	Orlando	13	210	Favor northbound traffic.
West Colonial Drive at John Young Parkway	* 410	Orlando	13	FREE	Favor northbound left turn onto westbound West Colonial Drive.
West Colonial Drive at Ferguson Drive	* 405	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at Mercy Drive	* 406	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at Fairvilla Road	* 404	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at Pete Parrish Blvd	* 407	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at Pine Hills Road	67	Orange County	101	210	Favor westbound traffic.
West Colonial Drive at Westside Crossings	70	Orange County	101	210	Favor westbound traffic.
West Colonial Drive at Kirkman Road	65	Orange County	101	FREE	Favor westbound left turn onto southbound Kirkman Road.
Kirkman Road at SR 408 Westbound Off Ramp	263	Orange County	101	FREE	Favor southbound right turn onto westbound SR 408 on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 5*

SEGMENT 5 BiD

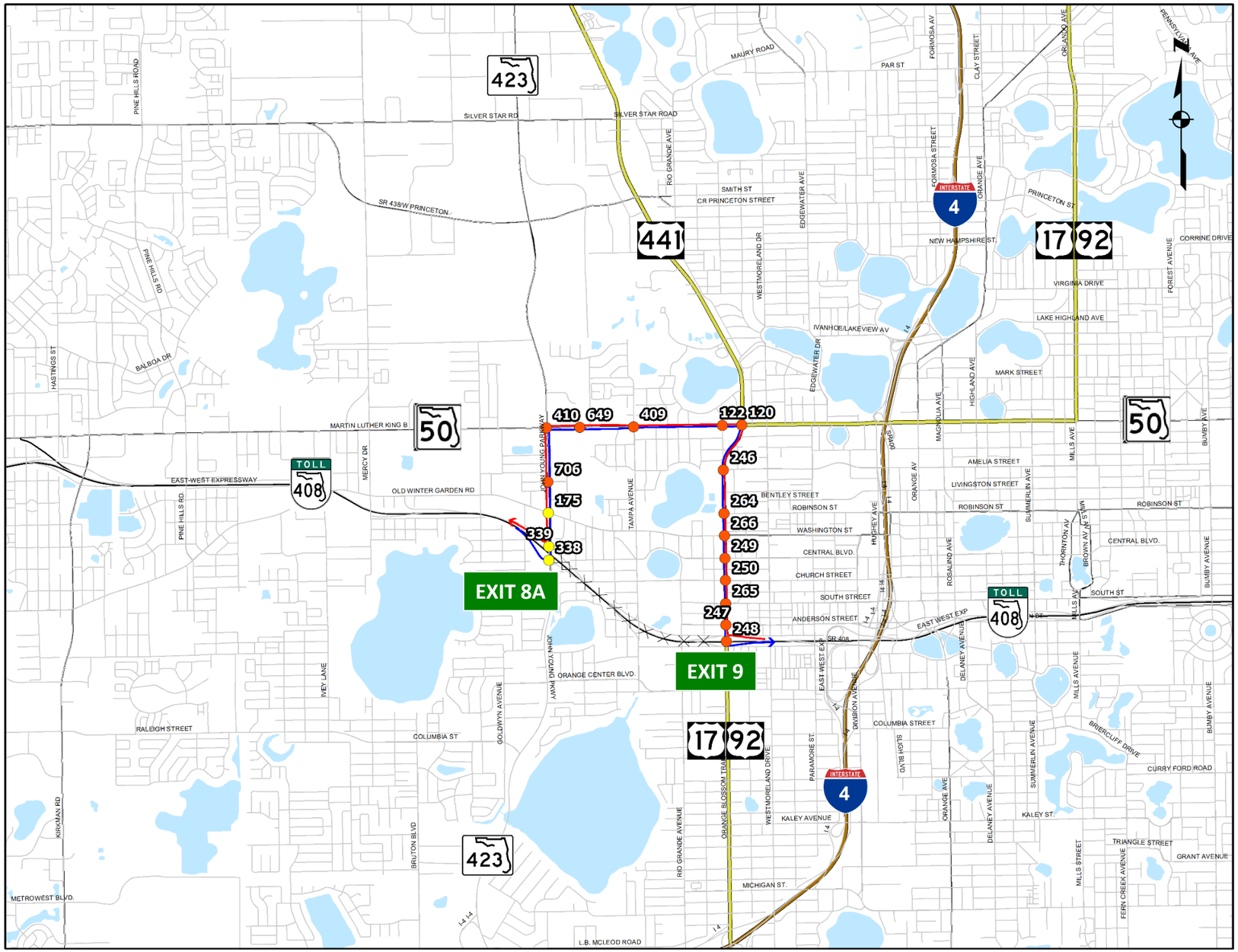
State Road 408 / East-West Expressway Diversion Route

Exit 5 - Kirkman Road to Exit 8A - John Young Parkway

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 5 - Kirkman Road	NA	NA	NA	NA	Exit from eastbound SR 408.
Kirkman Road at SR 408 Eastbound Off Ramp	263	Orange County	102	FREE	Favor eastbound left turn onto northbound Kirkman Road.
Kirkman Road at SR 408 Westbound Off Ramp					Favor southbound right turn onto SR 408 WB on-ramp and northbound traffic.
West Colonial Drive at Kirkman Road	65	Orange County	102	FREE	Favor northbound right turn and westbound left turn traffic.
West Colonial Drive at Westside Crossings	70	Orange County	102	210	Favor eastbound and westbound traffic.
West Colonial Drive at Pine Hills Road	67	Orange County	102	210	Favor eastbound and westbound traffic.
West Colonial Drive at Pete Parrish Blvd	* 407	Orlando	13	210	Favor eastbound and westbound traffic.
West Colonial Drive at Fairvilla Road	* 404	Orlando	13	210	Favor eastbound and westbound traffic.
West Colonial Drive at Mercy Drive	* 406	Orlando	13	210	Favor eastbound and westbound traffic.
West Colonial Drive at Ferguson Drive	* 405	Orlando	13	210	Favor eastbound and westbound traffic.
West Colonial Drive at John Young Parkway	* 410	Orlando	11	FREE	Favor eastbound right turn and northbound left turn traffic.
John Young Parkway at Harwood Street	* 706	Orlando	11	210	Favor northbound and southbound traffic.
John Young Parkway at Old Winter Garden Road	175	Orange County	102	210	Favor northbound and southbound traffic.
John Young Parkway at SR 408 WB Off Ramp	339	Orange County	102	210	Favor westbound right turn and southbound through traffic.
John Young Parkway at SR 408 EB Off Ramp	338	Orange County	102	210	Favor southbound left turn onto SR 408 eastbound on-ramp.
Exit 8A - John Young Parkway	NA	NA	NA	NA	Exit from westbound SR 408.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 5*

ATMS.now Flex Group: SR 408 Diversion Scenario 5



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
State Road 423
(John Young Parkway) to
US Highway 441
(Orange Blossom Trail)

SEGMENT 6 EB

State Road 408 / East-West Expressway Diversion Route

Exit 8A - John Young Parkway to Exit 9 - Orange Blossom Trail

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 8A - John Young Parkway	NA	NA	NA	NA	Exit from SR 408 Eastbound.
John Young Parkway at SR 408 EB Off Ramp	338	Orange County	103	210	Favor eastbound left turn onto northbound John Young Parkway.
John Young Parkway at SR 408 WB Off Ramp	339	Orange County	103	210	Favor northbound traffic.
John Young Parkway at Old Winter Garden Road	175	Orange County	103	210	Favor northbound traffic.
John Young Parkway at Harwood Street	* 706	Orlando	11	210	Favor northbound traffic.
West Colonial Drive at John Young Parkway	* 410	Orlando	13	FREE	Favor northbound right turn onto West Colonial Drive eastbound.
West Colonial Drive at Sheriff's Central Complex	* 649	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Tampa Ave / Country Lane	* 409	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Springdale Road	* 122	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Orange Blossom Trail	* 120	Orlando	11	FREE	Favor eastbound right turn onto southbound Orange Blossom Trail.
Orange Blossom Trail at Amelia Street	* 246	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Robinson Street	* 264	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Old Winter Garden Rd	* 266	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Central Blvd	* 249	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Church Street	* 250	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at South Street	* 265	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Anderson Street	* 247	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Long St / SR 408 WB	* 248	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Carter St / SR 408 EB					Favor southbound right turn onto eastbound SR 408 on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 6*

SEGMENT 6 WB

State Road 408 / East-West Expressway Diversion Route

Exit 9 - Orange Blossom Trail to Exit 8A - John Young Parkway

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 9 - Orange Blossom Trail	NA	NA	NA	NA	Exit from westbound SR 408.
Orange Blossom Trail at Long St / SR 408 WB	* 248	Orlando	13	210	Favor westbound right turn onto Orange Blossom Trail northbound.
Orange Blossom Trail at Anderson Street	* 247	Orlando	13	210	Favor northbound traffic.
Orange Blossom Trail at South Street	* 265	Orlando	13	210	Favor northbound traffic.
Orange Blossom Trail at Church Street	* 250	Orlando	13	210	Favor northbound traffic.
Orange Blossom Trail at Central Blvd	* 249	Orlando	13	210	Favor northbound traffic.
Orange Blossom Trail at Old Winter Garden Rd	* 266	Orlando	13	210	Favor northbound traffic.
Orange Blossom Trail at Robinson Street	* 264	Orlando	13	210	Favor northbound traffic.
Orange Blossom Trail at Amelia Street	* 246	Orlando	13	210	Favor northbound traffic.
West Colonial Drive at Orange Blossom Trail	* 120	Orlando	13	FREE	Favor northbound left turn onto westbound West Colonial Drive.
West Colonial Drive at Springdale Road	* 122	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at Tampa Ave / Country Lane	* 409	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at Sheriff's Central Complex	* 649	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at John Young Parkway	* 410	Orlando	12	FREE	Favor westbound left turn onto southbound John Young Parkway.
John Young Parkway at Harwood Street	* 706	Orlando	12	210	Favor southbound traffic.
John Young Parkway at Old Winter Garden Road	175	Orange County	104	210	Favor southbound traffic.
John Young Parkway at SR 408 WB Off Ramp	339	Orange County	104	210	Favor southbound right turn onto westbound SR 408 on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 6*

SEGMENT 6 BiD

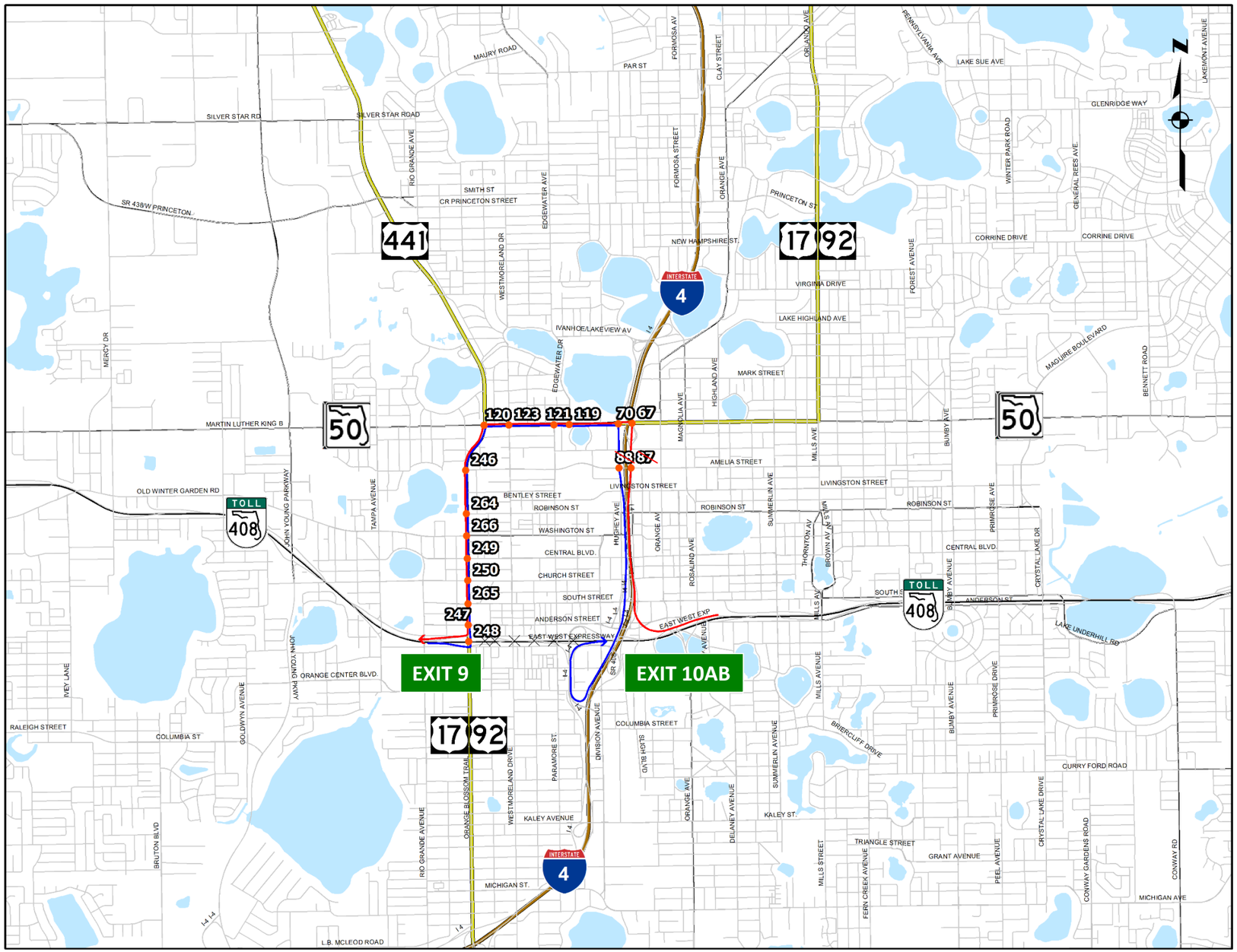
State Road 408 / East-West Expressway Diversion Route

Exit 8A - John Young Parkway to Exit 9 - Orange Blossom Trail

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 8A - John Young Parkway	NA	NA	NA	NA	Exit from eastbound SR 408.
John Young Parkway at SR 408 EB Off Ramp	338	Orange County	105	210	Favor eastbound left turn onto northbound John Young Parkway.
John Young Parkway at SR 408 WB Off Ramp	339	Orange County	105	210	Favor southbound right turn onto westbound SR 408 and northbound through traffic.
John Young Parkway at Old Winter Garden Road	175	Orange County	105	210	Favor northbound and southbound traffic.
John Young Parkway at Harwood Street	* 706	Orlando	11	210	Favor northbound and southbound traffic.
West Colonial Drive at John Young Parkway	* 410	Orlando	12	FREE	Favor northbound right turn and westbound left turn.
West Colonial Drive at Sheriff's Central Complex	* 649	Orlando	13	210	Favor eastbound and westbound traffic.
West Colonial Drive at Tampa Ave / Country Lane	* 409	Orlando	13	210	Favor eastbound and westbound traffic.
West Colonial Drive at Springdale Road	* 122	Orlando	13	210	Favor eastbound and westbound traffic.
West Colonial Drive at Orange Blossom Trail	* 120	Orlando	11	FREE	Favor eastbound right turn and northbound left turn.
Orange Blossom Trail at Amelia Street	* 246	Orlando	13	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Robinson Street	* 264	Orlando	13	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Old Winter Garden Rd	* 266	Orlando	13	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Central Blvd	* 249	Orlando	13	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Church Street	* 250	Orlando	13	210	Favor northbound and southbound traffic.
Orange Blossom Trail at South Street	* 265	Orlando	13	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Anderson Street	* 247	Orlando	13	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Long St / SR 408 WB	* 248	Orlando	13	210	Favor westbound right turn onto northbound Orange Blossom Trail and southbound traffic.
Orange Blossom Trail at Carter St / SR 408 EB					Favor southbound left turn onto eastbound SR 408 on ramp.
Exit 9 - Orange Blossom Trail	NA	NA	NA	NA	Exit from westbound SR 408.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 6*

ATMS.now Flex Group: SR 408 Diversion Scenario 6



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
US Highway 441
(Orange Blossom Trail) to
Interstate 4

SEGMENT 7 EB

State Road 408 / East-West Expressway Diversion Route

Exit 9 - Orange Blossom Trail to Exit 10AB - Interstate 4

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 9 - Orange Blossom Trail	NA	NA	NA	NA	Exit from Eastbound SR 408.
Orange Blossom Trail at Carter St / SR 408 EB	* 248	Orlando	11	210	Favor eastbound left turn onto Orange Blossom Trail northbound.
Orange Blossom Trail at Long St / SR 408 WB					Favor northbound traffic.
Orange Blossom Trail at Anderson Street	* 247	Orlando	11	210	Favor northbound traffic.
Orange Blossom Trail at South Street	* 265	Orlando	11	210	Favor northbound traffic.
Orange Blossom Trail at Church Street	* 250	Orlando	11	210	Favor northbound traffic.
Orange Blossom Trail at Central Blvd	* 249	Orlando	11	210	Favor northbound traffic.
Orange Blossom Trail at Old Winter Garden Rd	* 266	Orlando	11	210	Favor northbound traffic.
Orange Blossom Trail at Robinson Street	* 264	Orlando	11	210	Favor northbound traffic.
Orange Blossom Trail at Amelia Street	* 246	Orlando	11	210	Favor northbound traffic.
West Colonial Drive at Orange Blossom Trail	* 120	Orlando	13	FREE	Favor northbound right turn onto eastbound West Colonial Drive.
West Colonial Drive at Westmoreland Drive	* 123	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Parramore Avenue	* 121	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Edgewater Drive	* 119	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Hughey Ave / I-4 WB	* 70	Orlando	12	210	Favor eastbound traffic. Traffic can turn right to return to SR 408 via I-4 westbound.
West Colonial Drive at Garland Ave / I-4 EB	* 67	Orlando	11	210	Favor eastbound left turn onto Interstate 4 eastbound.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 7*

SEGMENT 7 WB

State Road 408 / East-West Expressway Diversion Route

Exit 10AB - Interstate 4 to Exit 9 - Orange Blossom Trail

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 10AB - Interstate 4	NA	NA	NA	NA	Exit SR 408 westbound.
Intertate 4 Exit 84B - Colonial Drive	NA	NA	NA	NA	Exit Interstate 4 eastbound.
Garland Avenue at West Colonial Drive	* 67	Orlando	13	210	Favor northbound left turn onto westbound Colonial Drive.
West Colonial Drive at Hughey Ave / I-4 WB	* 70	Orlando	11	210	Favor westbound traffic.
West Colonial Drive at Edgewater Drive	* 119	Orlando	13	210	Favor westbound traffic.
West Colonial Drive at Parramore Avenue	* 121	Orlando	13	210	Favor westbound traffic.
West Colonial Drive at Westmoreland Drive	* 123	Orlando	13	210	Favor westbound traffic.
West Colonial Drive at Orange Blossom Trail	* 120	Orlando	12	FREE	Favor westbound left turn onto Orange Blossom Trail southbound.
Orange Blossom Trail at Amelia Street	* 246	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Robinson Street	* 264	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Old Winter Garden Rd	* 266	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Central Blvd	* 249	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Church Street	* 250	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at South Street	* 265	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Anderson Street	* 247	Orlando	12	210	Favor southbound traffic.
Orange Blossom Trail at Long St / SR 408 WB	* 248	Orlando	12	210	Favor southbound right turn onto SR 408 westbound on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 7*

SEGMENT 7 BiD

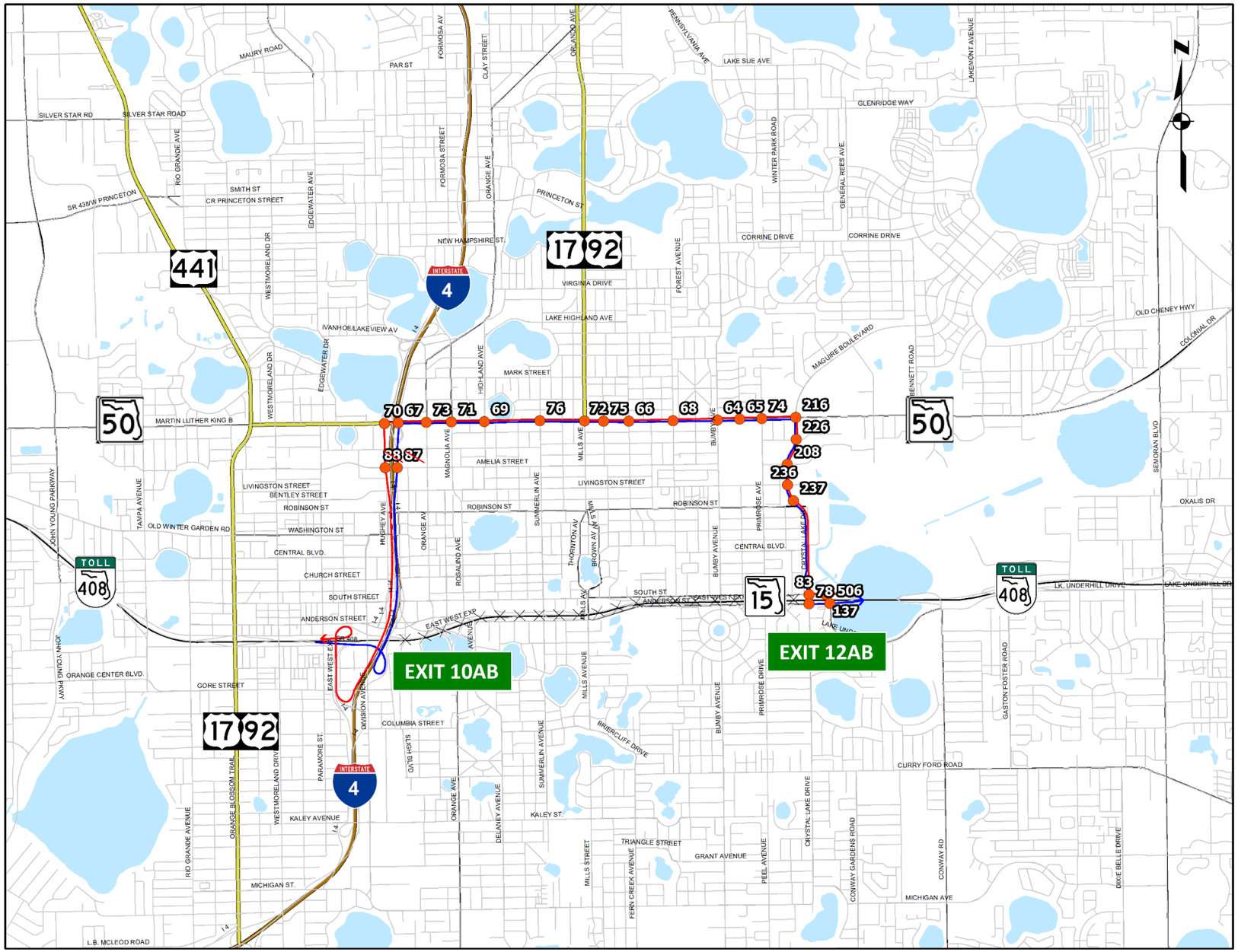
State Road 408 / East-West Expressway Diversion Route

Exit 9 - Orange Blossom Trail to Exit 10AB - Interstate 4

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 9 - Orange Blossom Trail	NA	NA	NA	NA	Exit from Eastbound SR 408.
Orange Blossom Trail at Carter St / SR 408 EB	248	Orlando	11	210	Favor eastbound left turn onto Orange Blossom Trail northbound.
Orange Blossom Trail at Long St / SR 408 WB					Favor southbound right turn and northbound through traffic.
Orange Blossom Trail at Anderson Street	247	Orlando	11	210	Favor northbound and southbound traffic.
Orange Blossom Trail at South Street	265	Orlando	12	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Church Street	250	Orlando	12	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Central Blvd	249	Orlando	11	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Old Winter Garden Rd	266	Orlando	11	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Robinson Street	264	Orlando	11	210	Favor northbound and southbound traffic.
Orange Blossom Trail at Amelia Street	246	Orlando	13	210	Favor northbound and southbound traffic.
West Colonial Drive at Orange Blossom Trail	120	Orlando	12	FREE	Favor northbound right turn and westbound left turn.
West Colonial Drive at Westmoreland Drive	123	Orlando	13	210	Favor eastbound and westbound traffic.
West Colonial Drive at Parramore Avenue	121	Orlando	13	210	Favor eastbound and westbound traffic.
West Colonial Drive at Edgewater Drive	119	Orlando	13	210	Favor eastbound and westbound traffic.
West Colonial Drive at Hughey Ave / I-4 WB	70	Orlando	13	210	Favor eastbound and westbound traffic. Eastbound traffic can return to SR 408 by turning right.
West Colonial Drive at Garland Ave / I-4 EB	67	Orlando	13	210	Favor northbound left and eastbound left traffic.
Exit 10AB - Interstate 4	NA	NA	NA	NA	Exit from eastbound Interstate 4.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 7*

ATMS.now Flex Group: SR 408 Diversion Scenario 7



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
Interstate 4 to
Bumby Avenue /
Crystal Lake Drive

SEGMENT 8 EB

State Road 408 / East-West Expressway Diversion Route

Exit 10AB - Interstate 4 to Exit 12AB - Bumby Avenue / Crystal Lake Drive

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
West Colonial Drive at Westmoreland Drive	* 123	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Parramore Avenue	* 121	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Edgewater Drive	* 119	Orlando	11	210	Favor eastbound traffic.
West Colonial Drive at Hughey Ave / I-4 WB	* 70	Orlando	12	210	Favor eastbound traffic. Traffic can turn right to return to SR 408 via Hughey Avenue and I-4 westbound.
Exit 10AB - Interstate 4	NA	NA	NA	NA	Exit from SR 408 Eastbound onto Interstate 4 Eastbound.
Intertate 4 Exit 84B - Garland Avenue at Colonial Dr	* 67	Orlando	13	210	Favor northbound right turn onto eastbound Colonial Drive.
East Colonial Drive at Orange Avenue	* 73	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Magnolia Avenue	* 71	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Highland Avenue	* 69	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Summerlin Avenue	* 76	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Mills Avenue	* 72	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Shine Avenue	* 75	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Fern Creek Avenue	* 66	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Hampton Avenue	* 68	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Bumby Avenue	* 64	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Coy Drive	* 65	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Primrose Drive	* 74	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Maguire Blvd	* 216	Orlando	11	FREE	Favor eastbound right turn onto Maguire Blvd southbound.
Maguire Blvd at Fairgreen Street	* 226	Orlando	12	170	Favor southbound traffic.
Maguire Blvd at Amelia Street	* 208	Orlando	12	170	Favor southbound traffic.
Maguire Blvd at Livingston Street	* 236	Orlando	12	170	Favor southbound traffic.
Crystal Lake Dr at Robinson Street	* 237	Orlando	12	170	Favor southbound traffic.
Crystal Lake Drive at South Street	* 83	Orlando	12	170	Favor southbound traffic.
Crystal Lake Drive at Anderson Street	* 78	Orlando	12	170	Favor southbound left turn onto Anderson Street eastbound.
Anderson Street at Lake Underhill Rd	* 506	Orlando	12	170	Favor eastbound traffic onto SR 408 eastbound on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 8*

SEGMENT 8 WB

State Road 408 / East-West Expressway Diversion Route

Exit 12AB - Bumby Avenue / Crystal Lake Drive to Exit 10AB - Interstate 4

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 12AB - Crystal Lake Drive	NA	NA	NA	NA	Exit from SR 408 westbound.
Lake Underhill Road at South Street	* 137	Orlando	11	170	Favor westbound traffic.
Crystal Lake Drive at South Street	* 83	Orlando	13	170	Favor westbound right turn onto northbound Crystal Lake Drive.
Crystal Lake Dr at Robinson Street	* 237	Orlando	11	170	Favor northbound traffic.
Maguire Blvd at Livingston Street	* 236	Orlando	11	170	Favor northbound traffic.
Maguire Blvd at Amelia Street	* 208	Orlando	11	170	Favor northbound traffic.
Maguire Blvd at Fairgreen Street	* 226	Orlando	11	170	Favor northbound traffic.
East Colonial Drive at Maguire Blvd	* 216	Orlando	13	FREE	Favor northbound left turn onto westbound Colonial Drive.
East Colonial Drive at Primrose Drive	* 74	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Coy Drive	* 65	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Bumby Avenue	* 64	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Hampton Avenue	* 68	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Fern Creek Avenue	* 66	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Shine Avenue	* 75	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Mills Avenue	* 72	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Summerlin Avenue	* 76	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Highland Avenue	* 69	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Magnolia Avenue	* 71	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Orange Avenue	* 73	Orlando	12	210	Favor westbound traffic.
Garland Avenue at West Colonial Drive	* 67	Orlando	12	210	Favor westbound traffic. Traffic can turn right onto eastbound Interstate 4.
West Colonial Drive at Hughey Ave / I-4 WB	* 70	Orlando	12	210	Favor westbound left turn onto Hughey Avenue south to Interstate 4 west to return to SR 408 westbound.
West Colonial Drive at Edgewater Drive	* 119	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at Parramore Avenue	* 121	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at Westmoreland Drive	* 123	Orlando	12	210	Favor westbound traffic.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 8*

SEGMENT 8 BiD

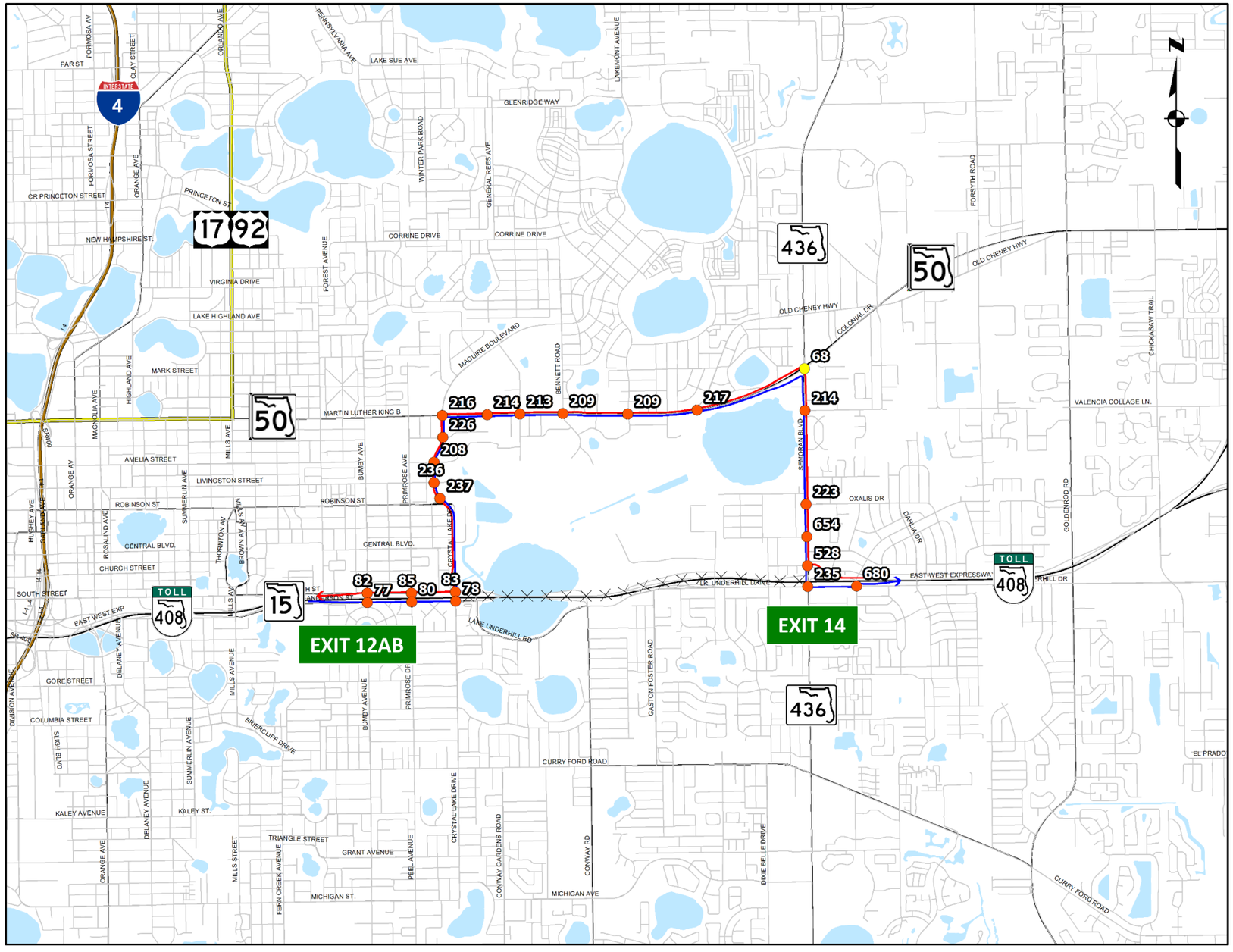
State Road 408 / East-West Expressway Diversion Route

Exit 10AB - Interstate 4 to Exit 12AB - Bumby Avenue / Crystal Lake Drive

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 10AB - Interstate 4	NA	NA	NA	NA	Exit from SR 408 Eastbound onto Interstate 4 Eastbound.
I-4 Exit 84B - Garland Avenue at West Colonial Drive	* 67	Orlando	13	210	Favor northbound right turn and westbound through traffic.
East Colonial Drive at Orange Avenue	* 73	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Magnolia Avenue	* 71	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Highland Avenue	* 69	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Summerlin Avenue	* 76	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Mills Avenue	* 72	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Shine Avenue	* 75	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Fern Creek Avenue	* 66	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Hampton Avenue	* 68	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Bumby Avenue	* 64	Orlando	12	210	Favor eastbound and westbound traffic.
East Colonial Drive at Coy Drive	* 65	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Primrose Drive	* 74	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Maguire Blvd	* 216	Orlando	11	FREE	Favor eastbound right turn and northbound left turn.
Maguire Blvd at Fairgreen Street	* 226	Orlando	11	170	Favor northbound and southbound traffic.
Maguire Blvd at Amelia Street	* 208	Orlando	11	170	Favor northbound and southbound traffic.
Maguire Blvd at Livingston Street	* 236	Orlando	11	170	Favor northbound and southbound traffic.
Crystal Lake Dr at Robinson Street	* 237	Orlando	11	170	Favor northbound and southbound traffic.
Lake Underhill Road at South Street	* 137	Orlando	13	170	Favor westbound traffic.
Crystal Lake Drive at South Street	* 83	Orlando	13	170	Favor westbound right turn and southbound through traffic.
Crystal Lake Drive at Anderson Street	* 78	Orlando	13	170	Favor southbound left turn traffic onto Anderson Street eastbound.
Anderson Street at Lake Underhill Rd	* 506	Orlando	11	170	Favor eastbound traffic onto SR 408 eastbound ramp.
West Colonial Drive at Hughey Ave / I-4 WB	* 70	Orlando	12	210	Favor westbound left turn onto Hughey Avenue south to Interstate 4 west to return to SR 408 westbound.
West Colonial Drive at Edgewater Drive	* 119	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at Parramore Avenue	* 121	Orlando	12	210	Favor westbound traffic.
West Colonial Drive at Westmoreland Drive	* 123	Orlando	12	210	Favor westbound traffic.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 8*

ATMS.now Flex Group: SR 408 Diversion Scenario 8



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
Bumby Avenue / Crystal Lake Drive to State Road 436 (Semoran Boulevard)

SEGMENT 9 EB

State Road 408 / East-West Expressway Diversion Route

Exit 12AB - Bumby Avenue / Crystal Lake Drive to Exit 14 - Semoran Blvd

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 12AB - Bumby Avenue	NA	NA	NA	NA	Exit from SR 408 Eastbound.
Anderson Street at Bumby Avenue	* 77	Orlando	11	170	Favor eastbound through traffic.
Anderson Street at Primrose Drive	* 88	Orlando	11	170	Favor eastbound through traffic.
Anderson Street at Crystal Lake Drive	* 78	Orlando	11	170	Favor eastbound left turn onto northbound Crystal Lake Drive.
Crystal Lake Drive at South Street	* 83	Orlando	11	170	Favor northbound traffic.
Crystal Lake Dr at Robinson Street	* 237	Orlando	11	170	Favor northbound traffic.
Maguire Blvd at Livingston Street	* 236	Orlando	11	170	Favor northbound traffic.
Maguire Blvd at Amelia Street	* 208	Orlando	11	170	Favor northbound traffic.
Maguire Blvd at Fairgreen Street	* 226	Orlando	11	170	Favor northbound traffic.
East Colonial Drive at Maguire Blvd	* 216	Orlando	13	FREE	Favor northbound right turn onto Colonial Drive eastbound.
E Colonial Dr at Fashion Square / Herndon Plaza	* 214	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Herndon Avenue	* 213	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Rickenbacker Dr	* 209	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Humphries Avenue	* 215	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Old Cheney Highway	* 217	Orlando	11	210	Favor eastbound traffic.
East Colonial Drive at Semoran Blvd	68	Orange County	100	210	Favor eastbound right turn onto Semoran Blvd southbound.
Semoran Blvd at Oleander Drive	214	Orange County	100	210	Favor southbound traffic.
Semoran Blvd at Dahlia Drive	* 223	Orlando	12	210	Favor southbound traffic.
Semoran Blvd at Kalmia Street	* 654	Orlando	12	210	Favor southbound traffic.
Semoran Blvd at Yew Drive / SR 408 WB	* 528	Orlando	12	210	Favor southbound traffic.
Semoran Blvd at Lake Underhill Drive	*235	Orlando	12	210	Favor southbound left turn onto eastbound Lake Underhill Drive.
Lake Underhill Drive at Yucatan Drive	* 680	Orlando	12	210	Favor eastbound left turn onto northbound Yucatan Drive. Immediate right onto eastbound SR 408 on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 9*

SEGMENT 9 WB

State Road 408 / East-West Expressway Diversion Route

Exit 14 - Semoran Blvd to Exit 12AB - Bumby Avenue / Crystal Lake Drive

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 14 - Semoran Blvd	NA	NA	NA	NA	Exit from westbound SR 408.
Semoran Blvd at Yew Drive / SR 408 WB	* 528	Orlando	13	210	Favor westbound right turn onto northbound Semoran Blvd.
Semoran Blvd at Kalmia Street	* 654	Orlando	13	210	Favor northbound traffic.
Semoran Blvd at Dahlia Drive	* 223	Orlando	13	210	Favor northbound traffic.
Semoran Blvd at Oleander Drive	214	Orange County	101	210	Favor northbound traffic.
East Colonial Drive at Semoran Blvd	68	Orange County	101	210	Favor northbound left turn onto East Colonial Drive westbound.
East Colonial Drive at Old Cheney Highway	* 217	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Humphries Avenue	* 215	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Rickenbacker Dr	* 209	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Herndon Avenue	* 213	Orlando	12	210	Favor westbound traffic.
E Colonial Dr at Fashion Square / Herndon Plaza	* 214	Orlando	12	210	Favor westbound traffic.
East Colonial Drive at Maguire Blvd	* 216	Orlando	12	FREE	Favor westbound left turn onto Maguire Blvd southbound.
Maguire Blvd at Fairgreen Street	* 226	Orlando	12	170	Favor southbound traffic.
Maguire Blvd at Amelia Street	* 208	Orlando	12	170	Favor southbound traffic.
Maguire Blvd at Livingston Street	* 236	Orlando	12	170	Favor southbound traffic.
Crystal Lake Dr at Robinson Street	* 237	Orlando	12	170	Favor southbound traffic.
Crystal Lake Drive at South Street	* 83	Orlando	12	170	Favor southbound right turn traffic onto westbound South Street.
South Street at Primrose Drive	* 85	Orlando	12	170	Favor westbound traffic.
South Street at Bumby Avenue	* 82	Orlando	12	170	Favor westbound traffic then bear left onto westbound SR 408 on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 9*

SEGMENT 9 BiD

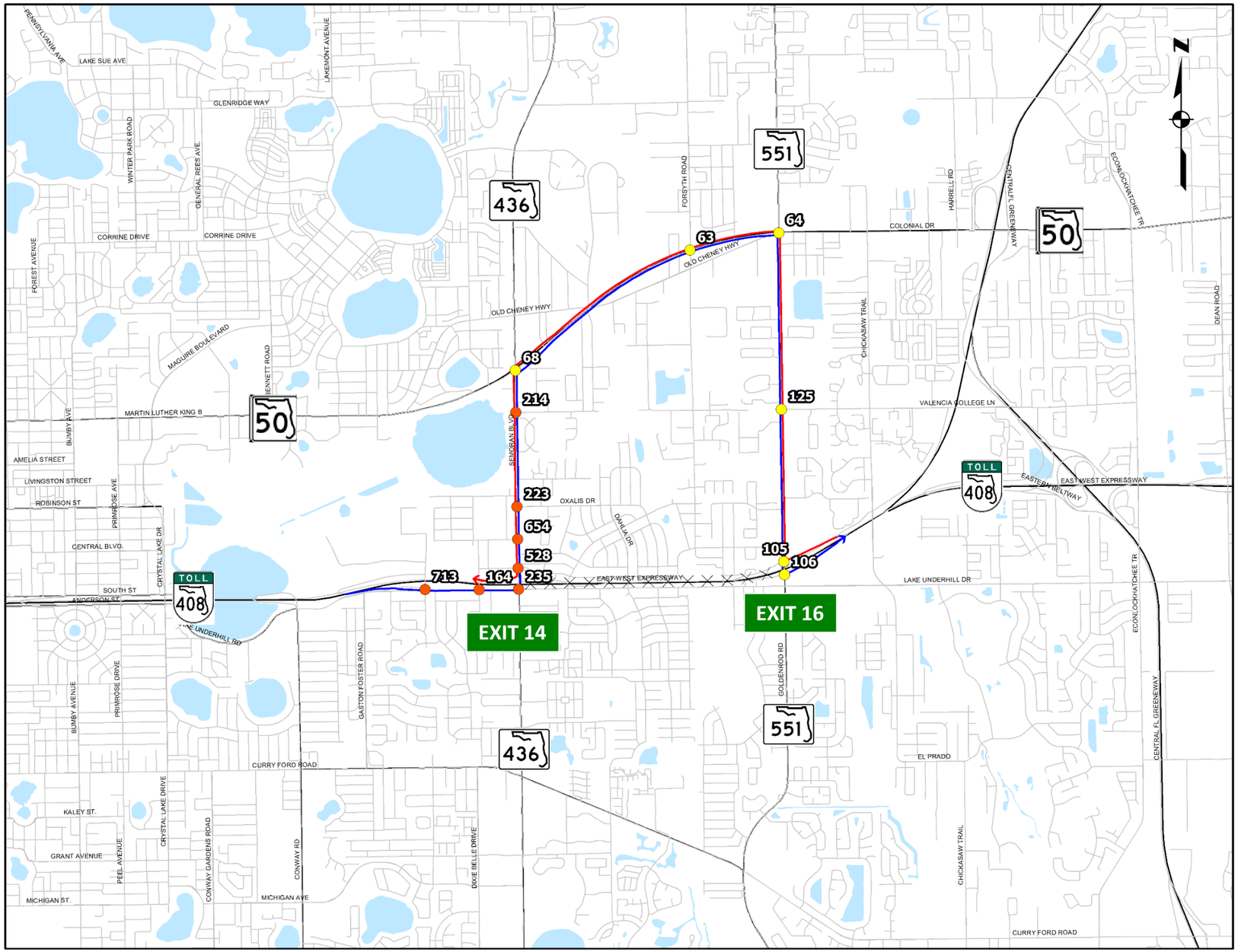
State Road 408 / East-West Expressway Diversion Route

Exit 12AB - Bumby Avenue / Crystal Lake Drive to Exit 14 - Semoran Blvd

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 12AB - Bumby Avenue	NA	NA	NA	NA	Exit from SR 408 Eastbound.
Anderson Street at Bumby Avenue	* 77	Orlando	13	170	Favor eastbound traffic.
Anderson Street at Primrose Drive	* 80	Orlando	12	170	Favor eastbound traffic.
Anderson Street at Crystal Lake Drive	* 78	Orlando	12	170	Favor eastbound left turn onto northbound Crystal Lake Drive.
Crystal Lake Drive at South Street	* 83	Orlando	13	170	Favor southbound right turn and northbound through traffic.
Crystal Lake Dr at Robinson Street	* 237	Orlando	12	170	Favor northbound and southbound traffic.
Maguire Blvd at Livingston Street	* 236	Orlando	12	170	Favor northbound and southbound traffic.
Maguire Blvd at Amelia Street	* 208	Orlando	12	170	Favor northbound and southbound traffic.
Maguire Blvd at Fairgreen Street	* 226	Orlando	13	170	Favor northbound and southbound traffic.
East Colonial Drive at Maguire Blvd	* 216	Orlando	12	FREE	Favor northbound right turn and westbound left turn.
E Colonial Dr at Fashion Square / Herndon Plaza	* 214	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Herndon Avenue	* 213	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Rickenbacker Dr	* 209	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Humphries Avenue	* 215	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Old Cheney Highway	* 217	Orlando	13	210	Favor eastbound and westbound traffic.
East Colonial Drive at Semoran Blvd	68	Orange County	102	210	Favor northbound left turn and eastbound right turn traffic.
Semoran Blvd at Oleander Drive	214	Orange County	102	210	Favor northbound and southbound traffic.
Semoran Blvd at Dahlia Drive	* 223	Orlando	13	210	Favor northbound and southbound traffic.
Semoran Blvd at Kalmia Street	* 654	Orlando	13	210	Favor northbound and southbound traffic.
Semoran Blvd at Yew Drive / SR 408 WB	* 528	Orlando	13	210	Favor southbound and westbound right turn traffic.
Semoran Blvd at Lake Underhill Drive	* 235	Orlando	13	210	Favor southbound left turn traffic onto Lake Underhill eastbound.
Lake Underhill Drive at Yucatan Drive	* 680	Orlando	13	210	Favor eastbound left turn onto northbound Yucatan Drive, then immediate right onto SR 408 eastbound on-ramp.
South Street at Primrose Drive	* 85	Orlando	12	170	Favor westbound traffic.
South Street at Bumby Avenue	* 82	Orlando	12	170	Favor westbound traffic then bear left onto westbound SR 408 on-ramp.
Exit 14 - Semoran Blvd	NA	NA	NA	NA	Exit from SR 408 Westbound.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 9*

ATMS.now Flex Group: SR 408 Diversion Scenario 9



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
State Road 436
(Semoran Boulevard) to
State Road 551
(Goldenrod Road)

SEGMENT 10 EB

State Road 408 / East-West Expressway Diversion Route

Exit 14 - Semoran Blvd to Exit 16 - Goldenrod Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 14 - Semoran Blvd	NA	NA	NA	NA	Exit from Eastbound SR 408.
Lake Underhill Drive at Andes Avenue	* 713	Orlando	11	210	Favor eastbound traffic.
Lake Underhill Drive at Mercado Avenue	* 164	Orlando	11	210	Favor eastbound traffic.
Semoran Blvd at Lake Underhill Drive	* 235	Orlando	11	210	Favor eastbound left turn onto northbound Semoran Blvd.
Semoran Blvd at Yew Drive / SR 408 WB	* 528	Orlando	11	210	Favor northbound traffic.
Semoran Blvd at Kalmia Street	* 654	Orlando	11	210	Favor northbound traffic.
Semoran Blvd at Dahlia Drive	* 223	Orlando	11	210	Favor northbound traffic.
Semoran Blvd at Oleander Drive	214	Orange County	103	210	Favor northbound traffic.
East Colonial Drive at Semoran Blvd	68	Orange County	103	210	Favor northbound right turn onto East Colonial Drive eastbound.
East Colonial Drive at Forsyth Road	63	Orange County	103	210	Favor eastbound traffic.
East Colonial Drive at Goldenroad Road	64	Orange County	103	FREE	Favor eastbound right turn onto southbound Goldenrod Road.
Goldenrod Road at Valencia College Lane	125	Orange County	2/3/3	210	Favor southbound traffic.
Goldenrod Road at SR 408 WB Off ramp	105	Orange County	2/3/3	210	Favor southbound traffic.
Goldenrod Road at SR 408 EB On-ramp	106	Orange County	2/3/3	210	Favor southbound left turn onto eastbound SR 408 on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 10*

SEGMENT 10 WB

State Road 408 / East-West Expressway Diversion Route

Exit 16 - Goldenrod Road to Exit 14 - Semoran Blvd

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 16 - Goldenrod Road	NA	NA	NA	NA	Exit from westbound SR 408,
Goldenrod Road at SR 408 WB Off ramp	105	Orange County	3/3/3	210	Favor westbound right turn onto northbound Goldenrod Road.
Goldenrod Road at Valencia College Lane	125	Orange County	3/3/3	210	Favor northbound traffic.
East Colonial Drive at Goldenroad Road	64	Orange County	104	210	Favor northbound left turn onto westbound East Colonial Drive.
East Colonial Drive at Forsyth Road	63	Orange County	104	210	Favor westbound traffic.
East Colonial Drive at Semoran Blvd	68	Orange County	104	210	Favor westbound left turn onto southbound Semoran Blvd.
Semoran Blvd at Oleander Drive	214	Orange County	104	210	Favor southbound traffic.
Semoran Blvd at Dahlia Drive	* 223	Orlando	12	210	Favor southbound traffic.
Semoran Blvd at Kalmia Street	* 654	Orlando	12	210	Favor southbound traffic.
Semoran Blvd at Yew Drive / SR 408 WB	* 528	Orlando	12	210	Favor southbound right turn onto SR 408 westbound on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 10*

SEGMENT 10 BiD

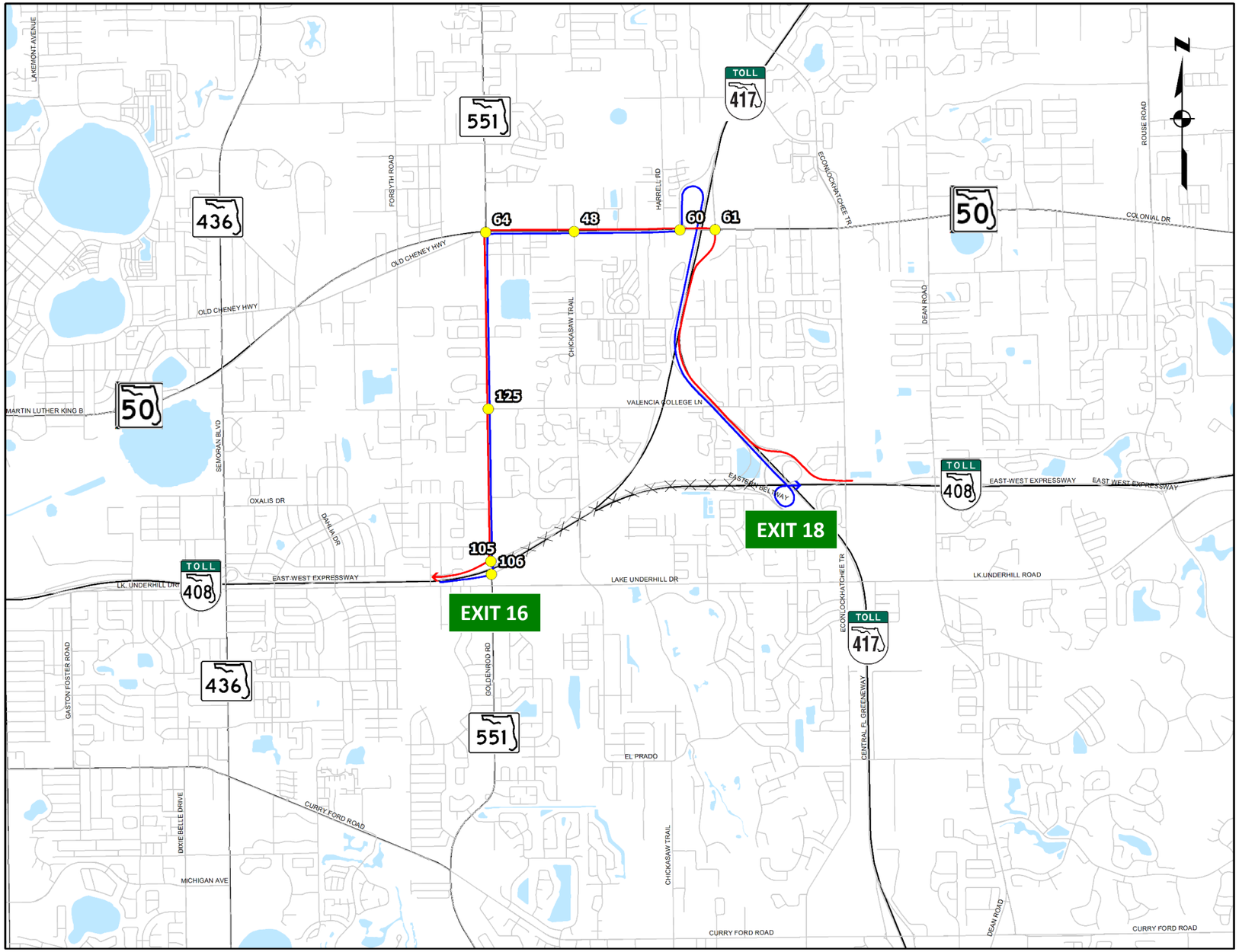
State Road 408 / East-West Expressway Diversion Route

Exit 14 - Semoran Blvd to Exit 16 - Goldenrod Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 14 - Semoran Blvd	NA	NA	NA	NA	Exit from Eastbound SR 408.
Lake Underhill Drive at Andes Avenue	* 713	Orlando	11	210	Favor eastbound traffic.
Lake Underhill Drive at Mercado Avenue	* 164	Orlando	11	210	Favor eastbound traffic.
Semoran Blvd at Lake Underhill Drive	* 235	Orlando	11	210	Favor eastbound left turn onto northbound Semoran Blvd.
Semoran Blvd at Yew Drive / SR 408 WB	* 528	Orlando	11	210	Favor southbound right turn and northbound traffic.
Semoran Blvd at Kalmia Street	* 654	Orlando	12	210	Favor northbound and southbound traffic.
Semoran Blvd at Dahlia Drive	* 223	Orlando	11	210	Favor northbound and southbound traffic.
Semoran Blvd at Oleander Drive	214	Orange County	105	210	Favor northbound and southbound traffic.
East Colonial Drive at Semoran Blvd	68	Orange County	105	210	Favor northbound right turn and westbound left turn traffic.
East Colonial Drive at Forsyth Road	63	Orange County	105	210	Favor eastbound and westbound traffic.
East Colonial Drive at Goldenroad Road	64	Orange County	105	FREE	Favor eastbound right turn and northbound left turn traffic.
Goldenrod Road at Valencia College Lane	125	Orange County	3/3/3	210	Favor northbound and southbound traffic.
Goldenrod Road at SR 408 WB Off ramp	105	Orange County	3/3/3	210	Favor westbound left turn and southbound traffic.
Goldenrod Road at SR 408 EB On-ramp	106	Orange County	2/3/3	210	Favor southbound left turn onto eastbound SR 408 on-ramp.

** Intersection included in ATMS.now Flex Group - SR 408 Diversion Scenario 10*

ATMS.now Flex Group: SR 408 Diversion Scenario 10



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
State Road 551
(Goldenrod Road) to
State Road 417

SEGMENT 11 EB

State Road 408 / East-West Expressway Diversion Route

Exit 16 - Goldenrod Road to Exit 18 - State Road 417

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 16 - Goldenrod Road	NA	NA	NA	NA	Exit from eastbound SR 408.
Goldenrod Road at SR 408 EB Off ramp	106	Orange County	1/3/3	210	Favor eastbound left turn onto northbound Goldenrod Road.
Goldenrod Road at SR 408 WB Off ramp	105	Orange County	1/3/3	210	Favor northbound traffic.
Goldenrod Road at Valencia College Lane	125	Orange County	1/3/3	210	Favor northbound traffic.
East Colonial Drive at Goldenroad Road	64	Orange County	100	FREE	Favor northbound right turn onto eastbound Colonial Drive.
East Colonial Drive at Chickasaw Trail	48	Orange County	100	220	Favor eastbound traffic.
East Colonial Drive at SR 417 SB Ramps	60	Orange County	100	220	Favor eastbound left turn onto SR 417 southbound loop ramp.
SR 417 SB: Exit 33A - SR 408	NA	NA	NA	NA	Exit SR 417 southbound onto SR 408 eastbound.

SEGMENT 11 WB

State Road 408 / East-West Expressway Diversion Route

Exit 18 - State Road 417 to Exit 16 - Goldenrod Road

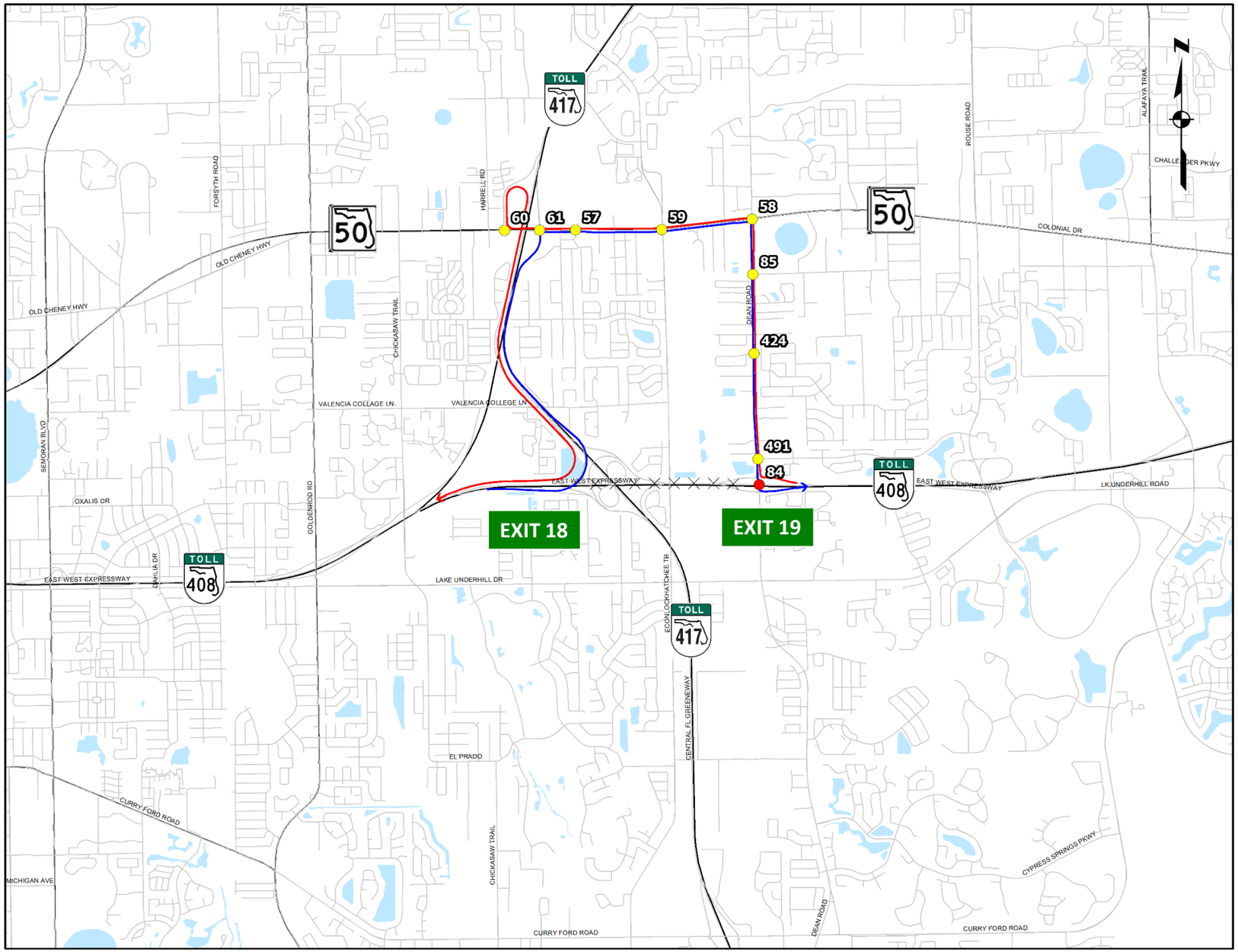
Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 18 - SR 417	NA	NA	NA	NA	Exit from westbound SR 408 onto northbound SR 417.
SR 417: Exit 34 - Colonial Drive	NA	NA	NA	NA	Exit from northbound SR 417.
East Colonial Drive at SR 417 NB Ramps	61	Orange County	101	220	Favor northbound left turn onto westbound Colonial Drive.
East Colonial Drive at SR 417 SB Ramps	60	Orange County	101	220	Favor westbound traffic.
East Colonial Drive at Chickasaw Trail	48	Orange County	101	220	Favor westbound traffic.
East Colonial Drive at Goldenroad Road	64	Orange County	101	FREE	Favor westbound left turn onto southbound Goldenrod Road.
Goldenrod Road at Valencia College Lane	125	Orange County	2/3/3	210	Favor southbound traffic.
Goldenrod Road at SR 408 WB Off ramp	105	Orange County	2/3/3	210	Favor southbound right turn onto westbound SR 408.

SEGMENT 11 BiD

State Road 408 / East-West Expressway Diversion Route

Exit 16 - Goldenrod Road to Exit 18 - State Road 417

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 16 - Goldenrod Road	NA	NA	NA	NA	Exit from eastbound SR 408.
Goldenrod Road at SR 408 EB Off ramp	106	Orange County	1/3/3	210	Favor eastbound left turn onto northbound Goldenrod Road.
Goldenrod Road at SR 408 WB Off ramp	105	Orange County	1/3/3	210	Favor southbound right turn and northbound through traffic.
Goldenrod Road at Valencia College Lane	125	Orange County	1/3/3	210	Favor northbound and southbound traffic.
East Colonial Drive at Goldenroad Road	64	Orange County	102	FREE	Favor westbound left turn and northbound right turn traffic.
East Colonial Drive at Chickasaw Trail	48	Orange County	102	220	Favor eastbound and westbound traffic.
East Colonial Drive at SR 417 SB Ramps	60	Orange County	102	220	Favor eastbound left turn and westbound through traffic.
East Colonial Drive at SR 417 NB Ramps	61	Orange County	102	220	Favor northbound left turn traffic.
SR 417: Exit 34 - Colonial Drive	NA	NA	NA	NA	Exit from northbound SR 417.
Exit 18 - SR 417	NA	NA	NA	NA	Exit from westbound SR 408 onto northbound SR 417.



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Prepared by: Albeck Gerken, Inc.

FDOT District 5 AAM
State Road 408 Diversion Routes
State Road 417 to
Dean Road

SEGMENT 12 EB

State Road 408 / East-West Expressway Diversion Route

Exit 18 - State Road 417 to Exit 19 - Dean Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 18 - SR 417	NA	NA	NA	NA	Exit from SR 408 eastbound to SR 417 northbound.
SR 417: Exit 34 - Colonial Drive	NA	NA	NA	NA	Exit from SR 417 northbound.
East Colonial Drive at SR 417 NB Ramps	61	Orange County	103	220	Favor northbound right turn onto eastbound Colonial Drive.
East Colonial Drive at Constantine Street	57	Orange County	103	220	Favor eastbound traffic.
East Colonial Drive at Econlockhatchee Trail	59	Orange County	103	220	Favor eastbound traffic.
East Colonial Drive at Dean Road	58	Orange County	103	FREE	Favor eastbound right turn onto southbound Dean Road.
Dean Road at Flowers Avenue	85	Orange County	103	200	Favor southbound traffic.
Dean Road at Piney Point Cir / Curaeng Drive	424	Orange County	103	200	Favor southbound traffic.
Dean Road at Bloomfield Drive	491	Orange County	103	200	Favor southbound traffic.
Dean Road at SR 408 WB Ramp	84	CFX	103	200	Favor southbound traffic.
Dean Road at SR 408 EB Ramp					Favor southbound left turn onto SR 408 EB on-ramp.

SEGMENT 12 WB

State Road 408 / East-West Expressway Diversion Route

Exit 19 - Dean Road to Exit 18 -State Road 417

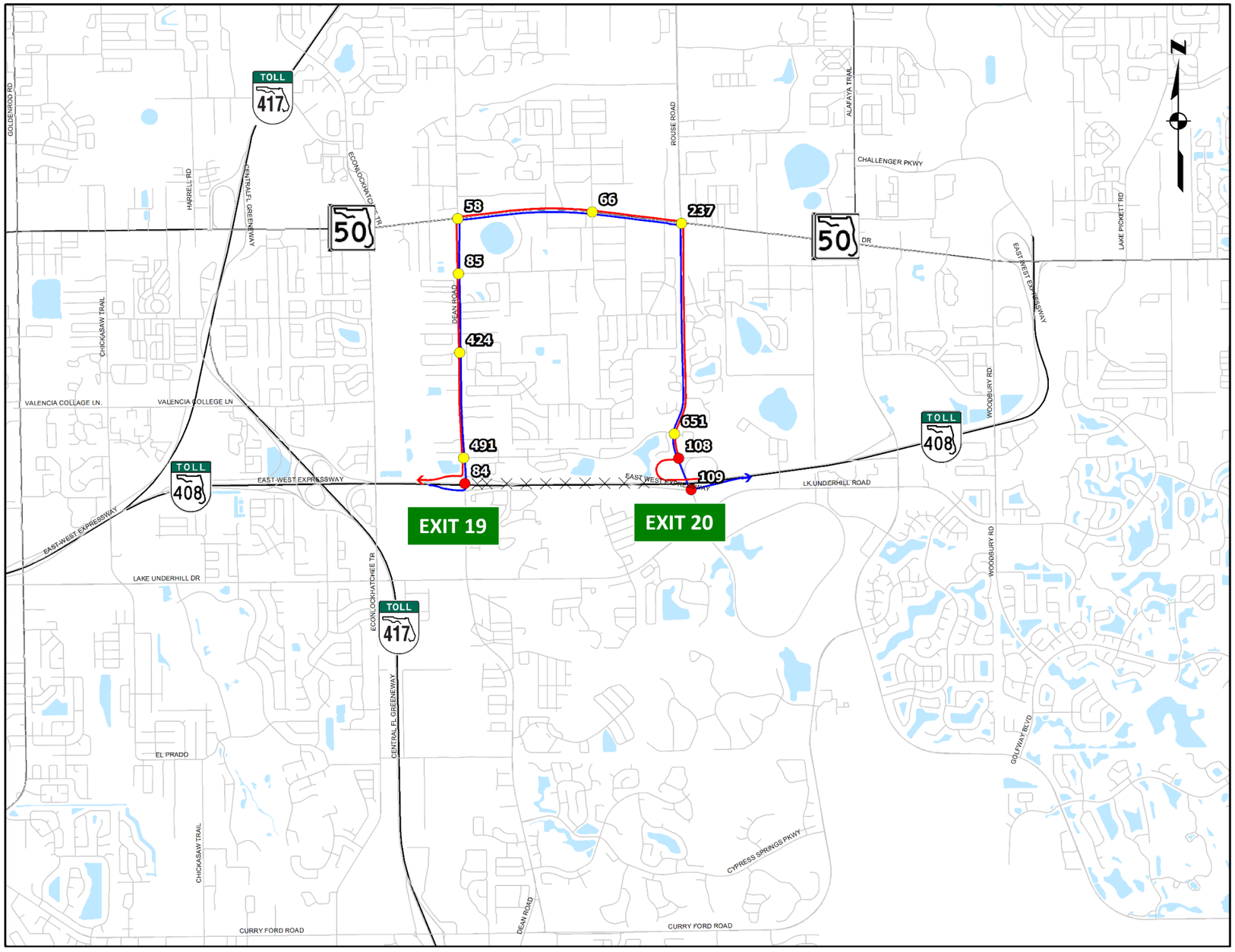
Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 19 - Dean Road	NA	NA	NA	NA	Exit from westbound SR 408
Dean Road at SR 408 WB Ramp	84	CFX	104	200	Favor westbound right turn onto northbound Dean Road
Dean Road at Bloomfield Drive	491	Orange County	104	200	Favor northbound traffic.
Dean Road at Piney Point Cir / Curaeng Drive	424	Orange County	104	200	Favor northbound traffic.
Dean Road at Flowers Avenue	85	Orange County	104	200	Favor northbound traffic.
East Colonial Drive at Dean Road	58	Orange County	104	FREE	Favor nortbound left turn onto westbound Colonial Drive.
East Colonial Drive at Econlockhatchee Trail	59	Orange County	104	220	Favor westbound traffic.
East Colonial Drive at Constantine Street	57	Orange County	104	220	Favor westbound traffic.
East Colonial Drive at SR 417 NB Ramps	61	Orange County	104	220	Favor westbound traffic.
East Colonial Drive at SR 417 SB Ramps	60	Orange County	104	220	Favor westbound right turn onto SR 417 SB loop ramp.
SR 417 SB: Exit 33A - SR 408	NA	NA	NA	NA	Exit to SR 408 westbound.

SEGMENT 12 BiD

State Road 408 / East-West Expressway Diversion Route

Exit 18 - State Road 417 to Exit 19 - Dean Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 18 - SR 417	NA	NA	NA	NA	Exit from eastbound SR 408 to northbound SR 417
SR 417: Exit 34 - Colonial Drive	NA	NA	NA	NA	Exit from northbound SR 417 to Colonial Drive
East Colonial Drive at SR 417 SB Ramps	60	Orange County	105	220	Favor westbound right turn onto SR 417 SB loop ramp.
East Colonial Drive at SR 417 NB Ramps	61	Orange County	105	220	Favor northbound right turn and westbound through movements.
East Colonial Drive at Constantine Street	57	Orange County	105	220	Favor eastbound and westbound traffic.
East Colonial Drive at Econlockhatchee Trail	59	Orange County	105	220	Favor eastbound and westbound traffic.
East Colonial Drive at Dean Road	58	Orange County	105	FREE	Favor northbound left turn and eastbound right turn.
Dean Road at Flowers Avenue	85	Orange County	105	200	Favor northbound and southbound traffic.
Dean Road at Piney Point Cir / Curaeng Drive	424	Orange County	105	200	Favor northbound and southbound traffic.
Dean Road at Bloomfield Drive	491	Orange County	105	200	Favor northbound and southbound traffic.
Dean Road at SR 408 WB Ramp	84	CFX	105	200	Favor westbound right turn and southbound traffic.
Dean Road at SR 408 EB Ramp					Favor southbound left turn to SR 408 eastbound.
Exit 19 - Dean Road	NA	NA	NA	NA	Exit from westbound SR 408



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Miles

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FDOT District 5 AAM
State Road 408 Diversion Routes
Dean Road to
Rouse Road

SEGMENT 13 EB

State Road 408 / East-West Expressway Diversion Route

Exit 19 - Dean Road to Exit 20 - Rouse Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 19 - Dean Road	NA	NA	NA	NA	Exit from SR 408 Eastbound.
Dean Road at SR 408 EB Ramp	84	CFX	100	200	Favor eastbound left turn onto Dean Road northbound.
Dean Road at SR 408 WB Ramp					Favor northbound traffic.
Dean Road at Bloomfield Drive	491	Orange County	100	200	Favor northbound traffic.
Dean Road at Piney Point Cir / Curaeng Drive	424	Orange County	100	200	Favor northbound traffic.
Dean Road at Flowers Avenue	85	Orange County	100	200	Favor northbound traffic.
East Colonial Drive at Dean Road	58	Orange County	100	FREE	Favor northbound right turn traffic.
East Colonial Drive at Murdock Blvd	66	Orange County	100	FREE	Favor eastbound traffic.
East Colonial Drive at Rouse Road	237	Orange County	100	FREE	Favor eastbound right turn traffic onto southbound Rouse Road.
Rouse Road at Bloomfield Drive	651	Orange County	100	120	Favor southbound traffic.
Rouse Road at SR 408 WB Ramp	108	CFX	100	120	Favor southbound traffic.
Rouse Road at SR 408 EB Ramp	109	CFX	100	120	Favor southbound left turn traffic onto eastbound SR 408.

SEGMENT 13 WB

State Road 408 / East-West Expressway Diversion Route

Exit 20 - Rouse Road to Exit 19 - Dean Road

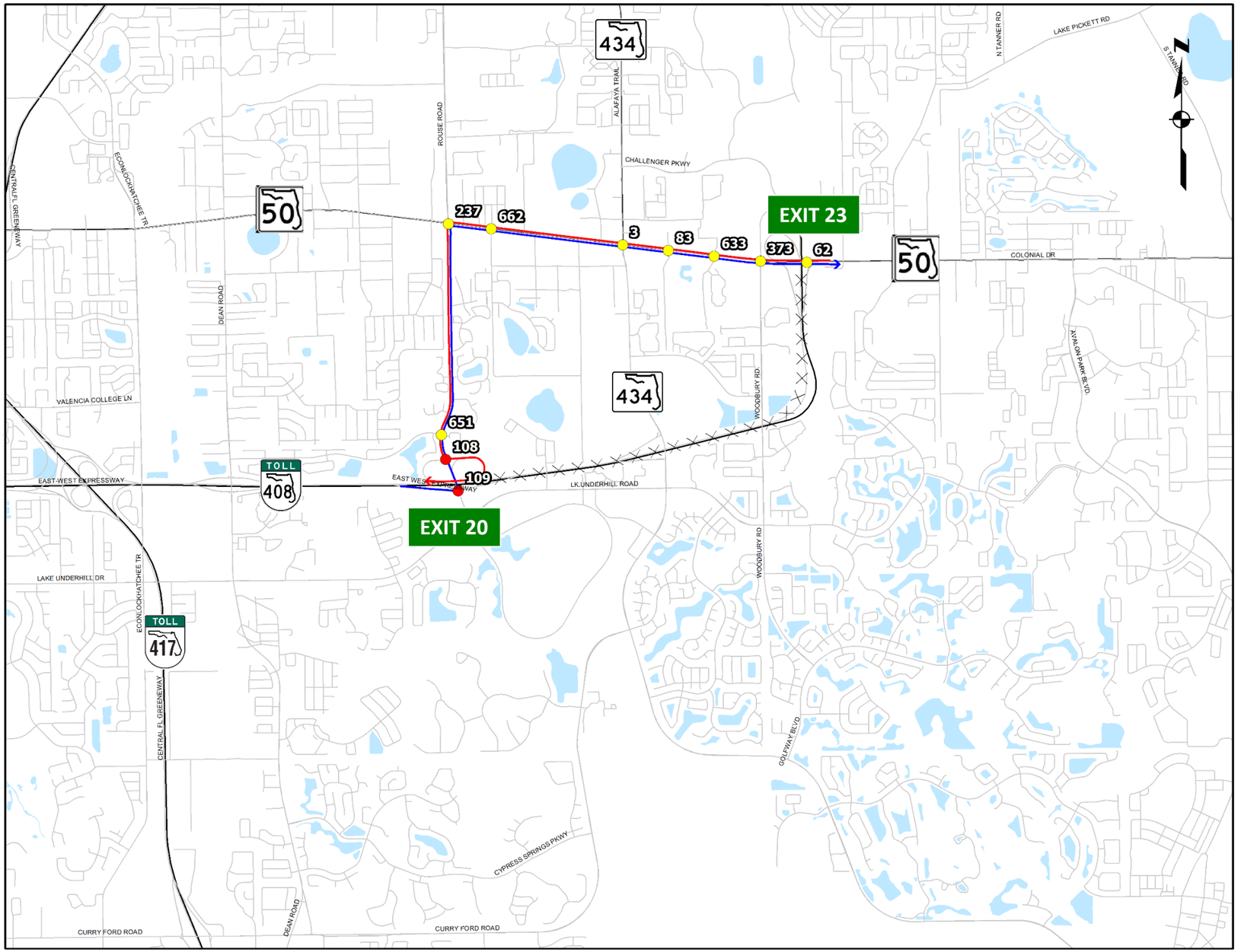
Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 20 - Rouse Road	NA	NA	NA	NA	Exit from westbound SR 408.
Rouse Road at SR 408 WB Ramp	109	CFX	101	120	Favor westbound left turn from loop ramp toward northbound Rouse Road.
Rouse Road at Bloomfield Drive	651	CFX	101	120	Favor northbound traffic.
East Colonial Drive at Rouse Road	237	Orange County	101	FREE	Favor northbound left turn onto Colonial Drive.
East Colonial Drive at Murdock Blvd	66	Orange County	101	FREE	Favor westbound traffic.
East Colonial Drive at Dean Road	58	Orange County	101	FREE	Favor westbound left turn onto southbound Dean Road.
Dean Road at Flowers Avenue	85	Orange County	101	200	Favor southbound traffic.
Dean Road at Piney Point Cir / Curaeng Drive	424	Orange County	101	200	Favor southbound traffic.
Dean Road at Bloomfield Drive	491	Orange County	101	200	Favor southbound traffic.
Dean Road at SR 408 WB Ramp	84	CFX	101	200	Favor southbound right turn onto westbound SR 408.

SEGMENT 13 BiD

State Road 408 / East-West Expressway Diversion Route

Exit 19 - Dean Road to Exit 20 - Rouse Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 19 - Dean Road	NA	NA	NA	NA	Exit from SR 408 Eastbound.
Dean Road at SR 408 EB Ramp	84	CFX	102	200	Favor eastbound left turn onto northbound Dean Road.
Dean Road at SR 408 WB Ramp					Favor southbound right turn and northbound through traffic.
Dean Road at Bloomfield Drive	491	Orange County	102	200	Favor northbound and southbound traffic.
Dean Road at Piney Point Cir / Curaeng Drive	424	Orange County	102	200	Favor northbound and southbound traffic.
Dean Road at Flowers Avenue	85	Orange County	102	200	Favor northbound and southbound traffic.
East Colonial Drive at Dean Road	58	Orange County	102	FREE	Favor northbound right turn and westbound left turn.
East Colonial Drive at Murdock Blvd	66	Orange County	102	FREE	Favor eastbound and westbound traffic.
East Colonial Drive at Rouse Road	237	Orange County	102	FREE	Favor northbound left turn and eastbound right turn traffic.
Rouse Road at Bloomfield Drive	651	Orange County	102	120	Favor northbound and southbound traffic.
Rouse Road at SR 408 WB Ramp	109	Orange County	102	120	Favor westbound to northbound turn from loop ramp and southbound through traffic.
Rouse Road at SR 408 EB Ramp	108	Orange County	102	120	Favor sourthbound left turn onto SR 408 eastbound.
Exit 20 - Rouse Road	NA	NA	NA	NA	Exit from SR 408 westbound.



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- City of Ocoee Signal
- Orange County Signal
- City of Orlando Signal
- CFX Signal

Updated January 3, 2019

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Miles

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FDOT District 5 AAM
State Road 408 Diversion Routes
Rouse Road to
State Road 408

SEGMENT 14 EB

State Road 408 / East-West Expressway Diversion Route

Exit 20 - Rouse Road to Exit 23 - East Colonial Drive

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 20 - Rouse Road	NA	NA	NA	NA	Exit SR 408 eastbound.
Rouse Road at SR 408 EB Ramp	109	CFX	103	120	Favor eastbound left turn onto northbound Rouse Road
Rouse Road at SR 408 WB Ramp	108	CFX	103	120	Favor northbound traffic.
Rouse Road at Bloomfield Drive	651	Orange County	103	120	Favor northbound traffic.
East Colonial Drive at Rouse Road	237	Orange County	103	FREE	Favor northbound right turn onto eastbound Colonial Drive.
East Colonial Drive at Lake Berge Road	662	Orange County	103	220	Favor eastbound traffic.
East Colonial Drive at Alafaya Trail	3	Orange County	103	220	Favor eastbound traffic.
East Colonial Drive at Sophie Blvd	83	Orange County	103	220	Favor eastbound traffic.
East Colonial Drive at Cricket Club Circle	633	Orange County	103	220	Favor eastbound traffic.
East Colonial Drive at Woodbury Road	373	Orange County	103	220	Favor eastbound traffic.
East Colonial Drive at SR 408 EB Ramp	62	CFX	103	220	Favor eastbound traffic.

SEGMENT 14 WB

State Road 408 / East-West Expressway Diversion Route

Exit 23 - East Colonial Drive to Exit 20 - Rouse Road

Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
East Colonial Drive at SR 408 EB Ramp	62	CFX	104	220	Favor westbound traffic.
East Colonial Drive at SR 408 Westbound On-Ramp	NA	NA	NA	NA	Close ramp here - diversion starts westbound.
East Colonial Drive at Woodbury Road	373	Orange County	104	220	Favor westbound traffic.
East Colonial Drive at Cricket Club Circle	633	Orange County	104	220	Favor westbound traffic.
East Colonial Drive at Sophie Blvd	83	Orange County	104	220	Favor westbound traffic.
East Colonial Drive at Alafaya Trail	3	Orange County	104	220	Favor westbound traffic.
East Colonial Drive at Lake Berge Road	662	Orange County	104	220	Favor westbound traffic.
East Colonial Drive at Rouse Road	237	Orange County	104	FREE	Favor westbound left turn onto southbound Rouse Road.
Rouse Road at Bloomfield Drive	651	Orange County	104	120	Favor southbound traffic.
Rouse Road at SR 408 WB Ramp	108	CFX	104	120	Favor southbound left turn onto loop ramp to SR 408 westbound.

SEGMENT 14 BiD

State Road 408 / East-West Expressway Diversion Route

Exit 20 - Rouse Road to Exit 23 - East Colonial Drive

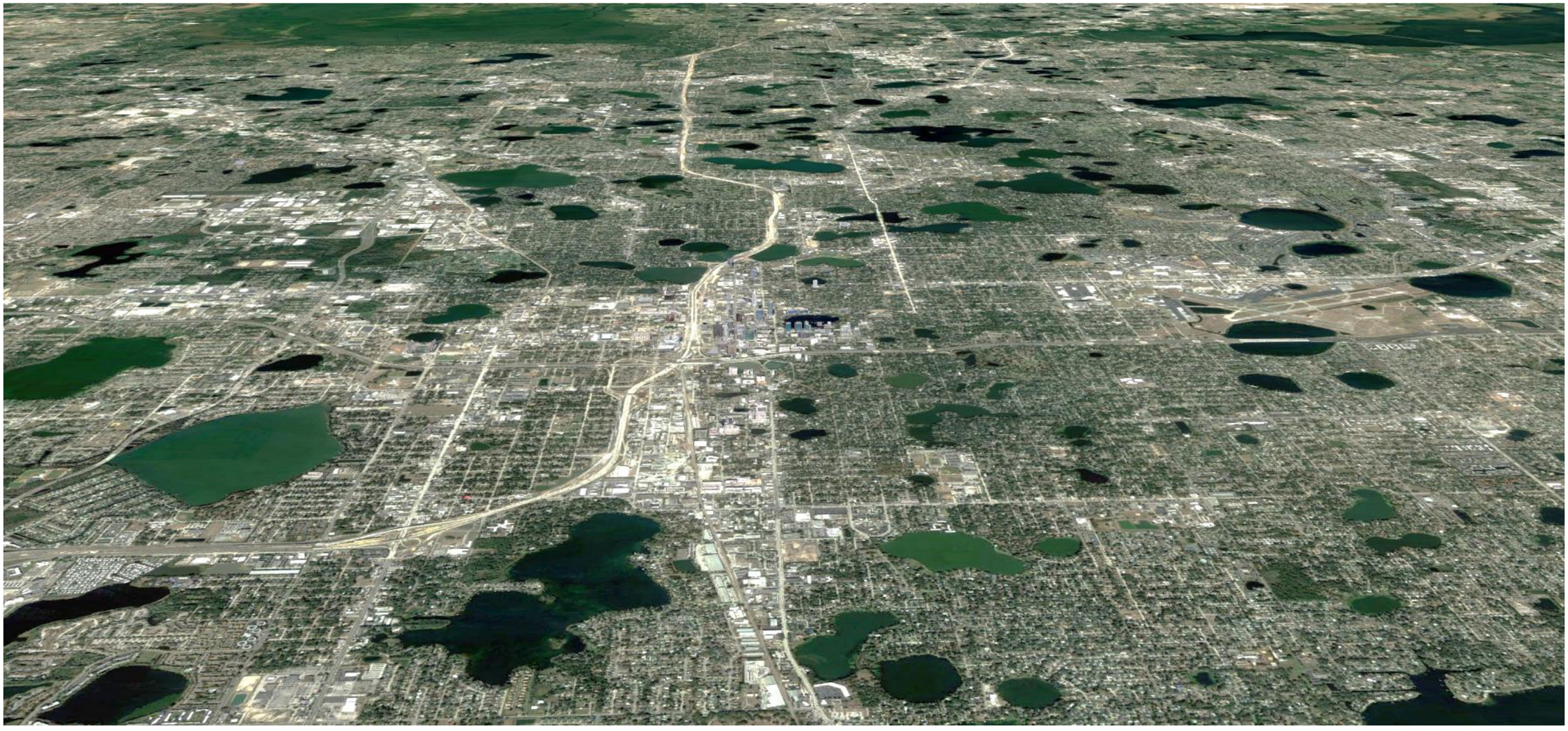
Intersection	Intersection ID	Maintaining Agency	Signal Control to be Implemented		Strategy
			Pattern	Cycle	
Exit 20 - Rouse Road	NA	NA	NA	NA	Exit SR 408 eastbound.
Rouse Road at SR 408 EB Ramp	109	CFX	105	120	Favor eastbound left turn onto northbound Rouse Road.
Rouse Road at SR 408 WB Ramp	108	CFX	105	120	Favor southbound left turn into loop ramp, and northbound through traffic.
Rouse Road at Bloomfield Drive	651	Orange County	105	120	Favor northbound and southbound traffic.
East Colonial Drive at Rouse Road	237	Orange County	105	FREE	Favor northbound right turn and westbound left turn.
East Colonial Drive at Lake Berge Road	662	Orange County	105	220	Favor eastbound and westbound traffic.
East Colonial Drive at Alafaya Trail	3	Orange County	105	220	Favor eastbound and westbound traffic.
East Colonial Drive at Sophie Blvd	83	Orange County	105	220	Favor eastbound and westbound traffic.
East Colonial Drive at Cricket Club Circle	633	Orange County	105	220	Favor eastbound and westbound traffic.
East Colonial Drive at Woodbury Road	373	Orange County	105	220	Favor eastbound and westbound traffic.
East Colonial Drive at SR 408 Westbound On-Ramp	NA	NA	NA	NA	Ramp closed, diversion proceeds westbound.
East Colonial Drive at SR 408 EB Ramp	62	CFX	105	220	Favor eastbound and westbound traffic.

Appendix R

I-4 Diversion Routes

DIVERSION ROUTE SIGNAL TIMING IMPLEMENTATION GUIDE

INTERSTATE 4



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Albeck Gerken, Inc.
1907 N US 301, Suite 120
Tampa, Florida 33619
(813) 319-3790
www.albeckgerken.com

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Introduction

This Diversion Route Timing Pattern Implementation Guide was developed to document traffic signal management measures to assist in incident management along Interstate 4 as part of the District Five Integrated Corridor Management program. Libraries of special traffic signal timing patterns have been developed, programmed, and tested; designed to minimize the surface street impacts of traffic being diverted from a closure of Interstate 4 due to a major incident.

The capabilities provided by the ATMS and the FMS play a major role in the implementation of these diversion routes. Traffic management staff will be able to monitor traffic conditions along both the freeway and the surface streets, provide current traffic information about delays to motorists, and implement traffic signal timing patterns to best accommodate the increased demands. Law enforcement officers can be relieved of the need to direct traffic or manually control signals, allowing them to concentrate on more important issues at the incident scene or along the diversion route.

This Implementation Guide is designed and intended to be used as a working document for the deployment of special timing patterns during emergency conditions. Every incident or event is unique; factors such as time of day, day of week, and season of the year all reflect different traffic volume demands, and the location and expected duration of the incident or event impact the strategies being used. As such, these timing patterns are designed as a starting point; particularly in longer term situations, fine tuning for the specific conditions is likely to be needed for optimal performance.

The infrastructure does not exist for a smooth diversion of traffic of this magnitude around an incident on the Interstate. There are alternate routes, all of them significantly less direct than the Interstate, and none with the capacity of the Interstate. And, each of those alternate routes already carries significant levels of traffic on a daily basis. It must be understood that the routing of Interstate 4 traffic to adjacent surface streets will result in significant congestion, no matter what diversion route tactics are employed. When considering that those alternate routes are also carrying significant amounts of traffic during normal conditions, it is apparent that these will not be perfect solutions.

The diversion routes are defined on the following pages. For each scenario, the alternate route is identified, signal timing pattern information provided, and traffic management strategy detailed.

When to Implement Diversion Timing Patterns

The decision to implement a diversion route timing plan is based upon a comparison of the relative advantages and disadvantages of implementing the plan. In short, will the implementation help or hurt the situation? The Traffic Incident Management Team has defined three levels of incidents on the Interstate system, based on their severity and impacts on traffic:

- Level 1 (Minor): Impact to the traveled roadway is estimated to be less than 30 minutes, with no lane blockage or minor lane blockage.
- Level 2 (Intermediate): Impact to the traveled road-way is estimated to be 30 minutes to two hours with lane blockages but not a full closure of the roadway.
- Level 3 (Major): Impact to the traveled roadway is estimated to be more than two hours or the roadway is fully closed in any single direction. Significant area-wide congestion is expected.

The severity and expected duration of the incident will be based on an assessment of conditions at the scene. In a Level 1 incident, as the impact on traffic is limited to minor main line delays, the amount of diversion to the surface street system will be minimal. There would be no need to implement a diversion timing pattern.

A Level 2 incident will create a greater level of mainline delay, for a longer period. However, the mainline will continue flowing; estimated travel times will likely be shown on the variable message signs so only those drivers with good local knowledge would consider exiting the Interstate for an alternate route. In this case, the need to implement a diversion route timing pattern would be unlikely.

The most severe incident, Level 3, will result in an impact for more than two hours or the closure of the roadway. With an extended impact, mainline queues will develop to the point that travel times will seem excessive to many drivers, who will then attempt to exit and find the alternate route to avoid the congestion. In this situation, the deployment of a diversion pattern becomes one of judgment, with considerations toward the prevailing traffic conditions both on the Interstate and on the surface streets that will serve as the alternate route. An inspection of current conditions on the alternate route, using video monitoring and real time vehicular travel time data, should be performed as part of this decision process.

In a Level 3 incident that is a complete closure of one direction of the Interstate, the need for a diversion route timing pattern is much better defined. With the exception of a middle-of-the-night incident, a complete closure would warrant strong consideration of a diversion pattern implementation. Again, the current conditions on the alternate route should be reviewed to ensure that there are no “fatal flaws” – for example, another incident being worked on the alternate route or the loss of ATMS communications to signals along a key part of the route.

For a long-term Level 3 incident (closures in excess of 24 hours), consideration should be given to the deployment of portable guide signs (ranging from temporary trailblazers to trailer mounted variable message signs) for in-route guidance.

Implementation Authority Matrix

Maintaining Agency	Level of Implementation Authority	TMC Contact Information
City of Orlando	RTMC advises on diversion route implementation, Maintaining Agency TMC makes all timing changes.	407 246-2020
Orange County	RTMC advises on diversion route implementation, Maintaining Agency TMC makes all timing changes.	407 836-7777
City of Maitland	RTMC has access and authority to activate predetermined diversion route timing patterns, informs maintaining agency of actions.	407 539-6217
City of Winter Park	RTMC has access and authority to activate predetermined diversion route timing patterns, informs maintaining agency of actions.	407 739-5639 (Jack Hartley)
Seminole County	RTMC has access and authority to activate predetermined diversion route timing patterns when maintaining agency personnel are not available. RTMC communicates all changes to maintaining agency.	407 665-5581

Implementation Process

It is the role of the ICM Signal Timing Engineer (or designee) to identify, analyze, and recommend appropriate action and to communicate recommendations to the local maintaining agencies in accordance with the Implementation Authority Matrix above. The ICM Signal Timing Engineer will likely have situational awareness of the region and shall make recommendations appropriate to the benefit of the region. After determining that the implementation of a diversion route timing pattern is the appropriate course of action, RTMC staff shall communicate to the appropriate maintaining agency TMC personnel the appropriate traffic signal flex groups and pattern numbers for the intersections along the route using this guide.

Diversion route timing patterns have been previously implemented into the local controller databases. Maintaining agency TMC staff should download the instant pattern command to the appropriate flex group(s). The ATMS should then be monitored to verify the status of the download and make sure that the intersections transition into the desired diversion route pattern.

Using the diversion route documentation included in this guide, RTMC staff should verify that the appropriate pattern has been implemented, by checking sequence, cycle lengths, offsets, and splits, and confirm that there are no issues after the download, i.e. intersections in flash, wrong pattern, and/or coordination failures. RTMC staff shall closely communicate with maintaining agency TMC staff to adjust to real-time conditions as needed.

While monitoring the implementation of the diversion route patterns, RTMC staff should note any preemption events, pedestrian push button actuations or any other such activities that could cause any of the intersections within the group to transition out of synchronization. Any such activities could affect the operation of the diversion route patterns.

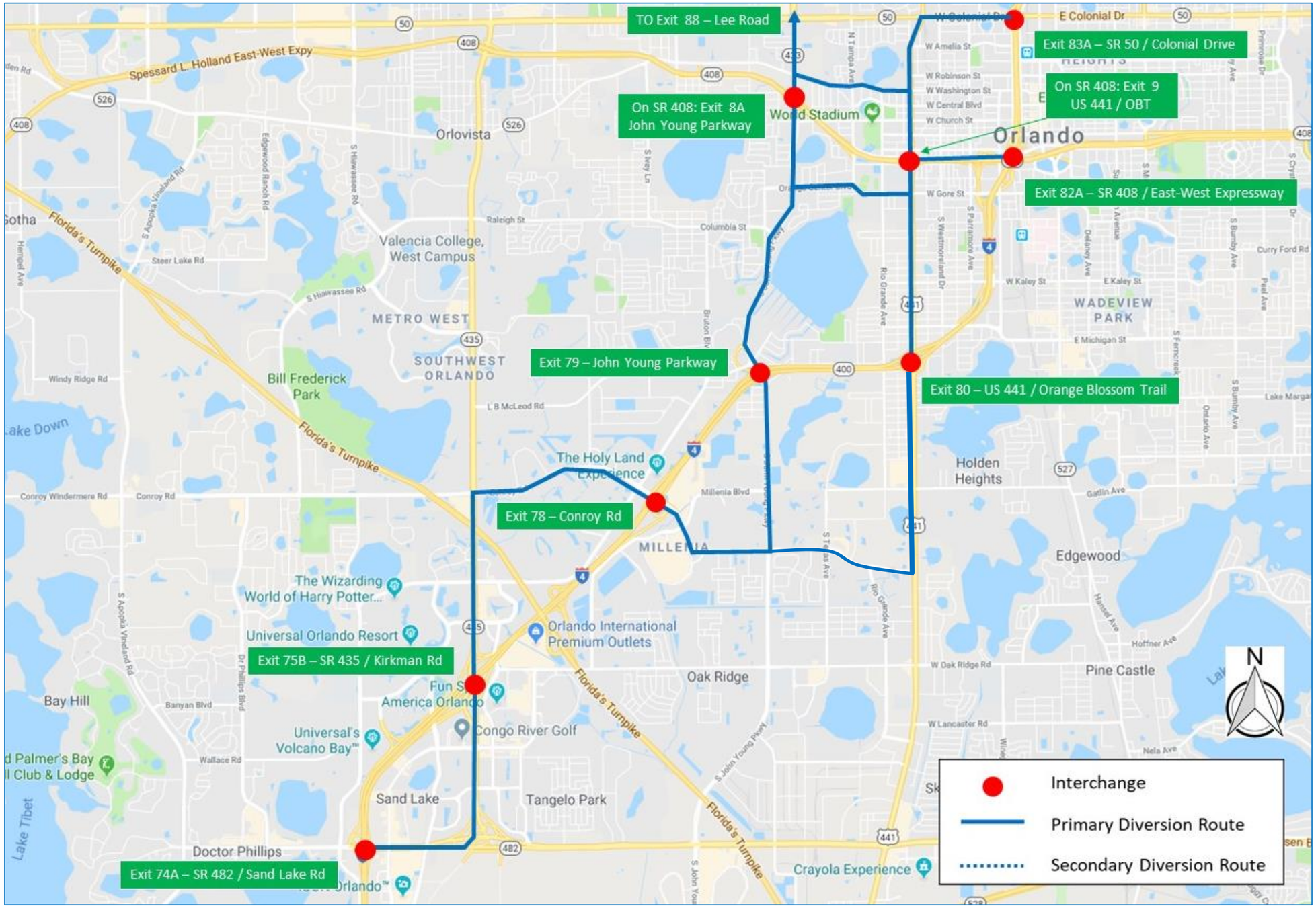
Once the diversion route pattern has been implemented, there is an opportunity to fine-tune the patterns based on observed conditions. Fine-tuning the pattern should be done on a location specific basis, and not done globally. Fine-tuning might include, but not be limited to, changes in offsets, splits, sequences, and cycle lengths, or placing one or more intersections in free operation to balance queues at large intersections.

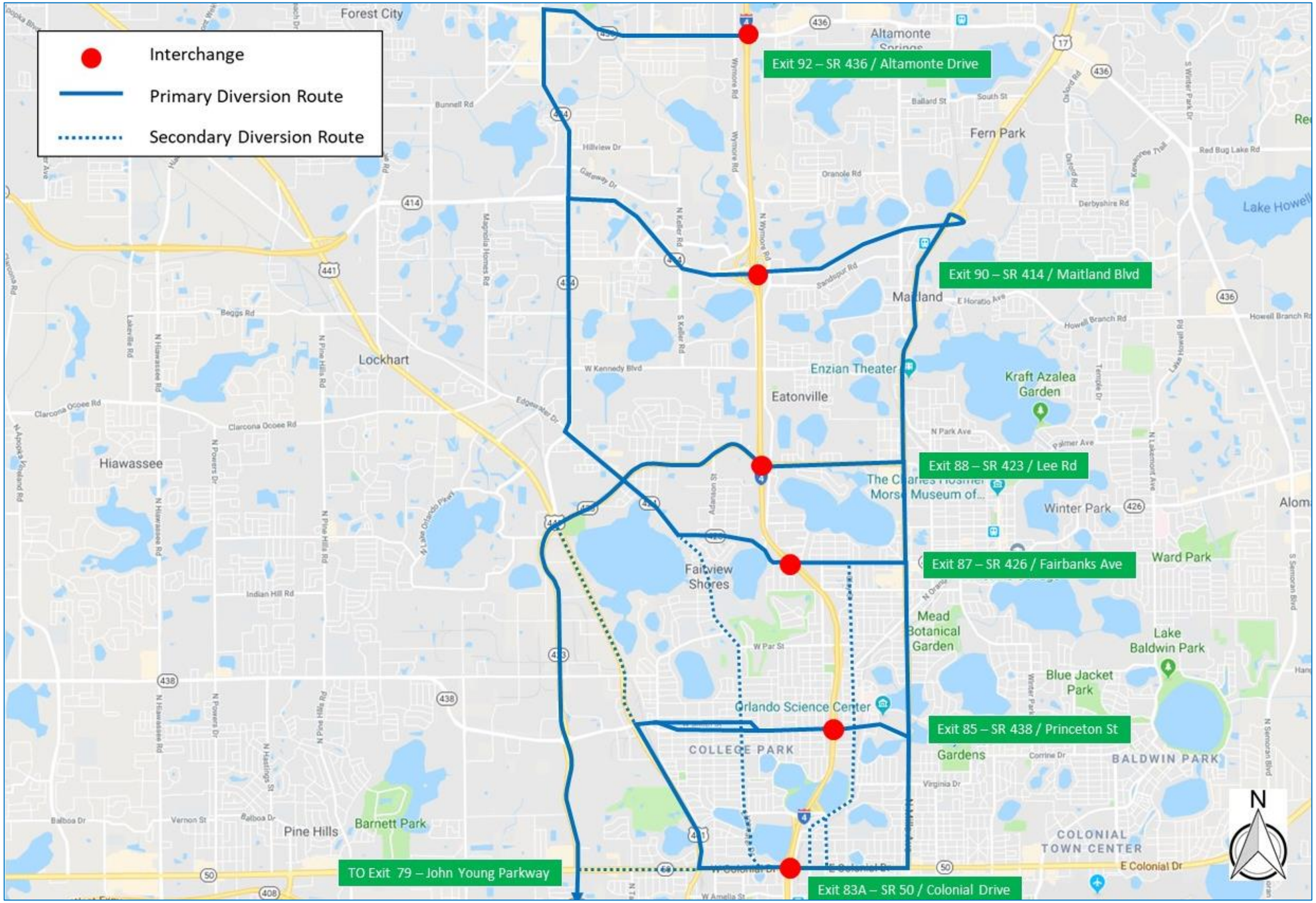
When to Discontinue Diversion Timing Patterns

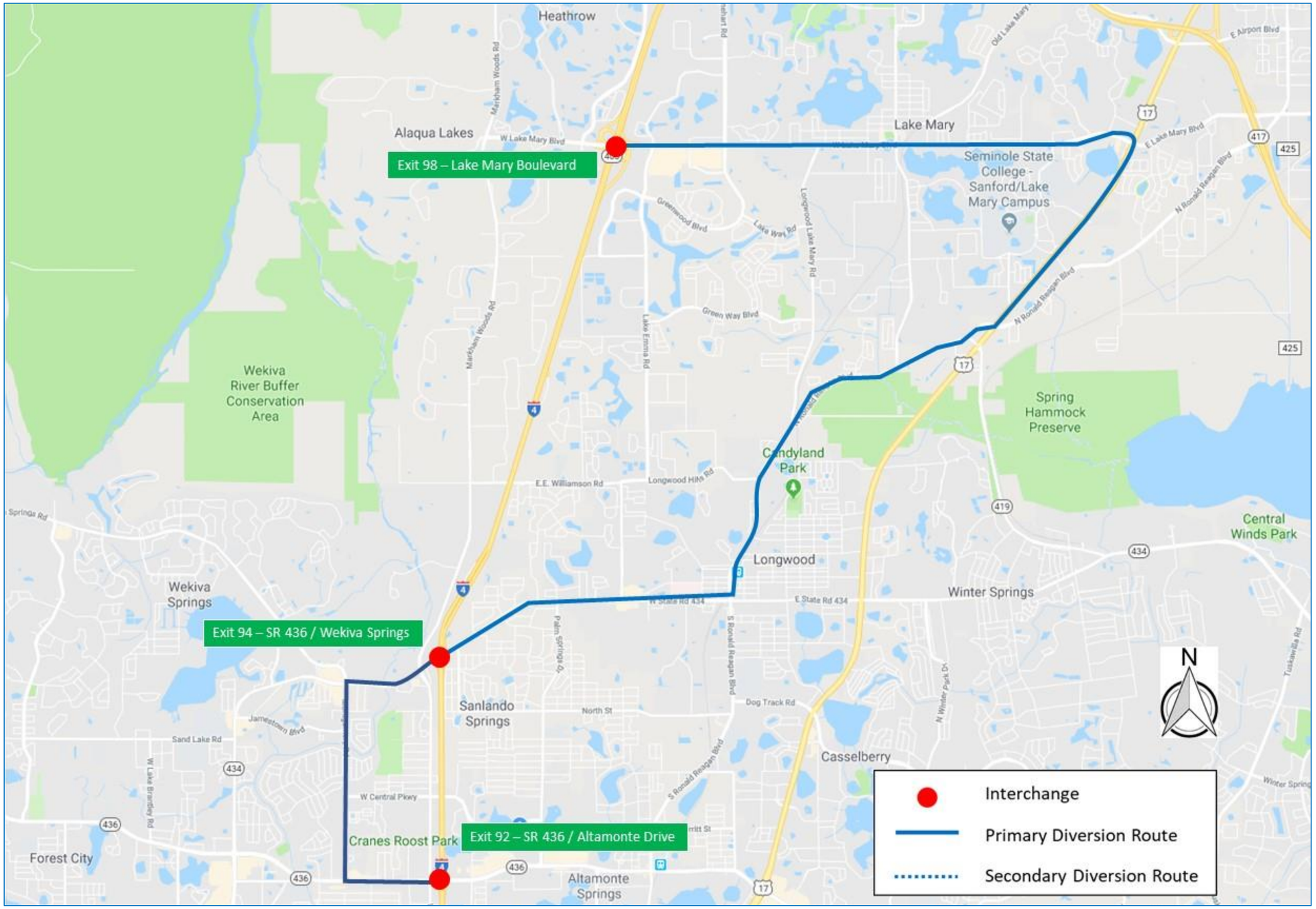
At the conclusion of an incident that had prompted the implementation of a diversion route timing pattern, traffic that had started on the route should be given sufficient time to complete the route. For some routes, this could be an hour or more after the incident cleared and main line traffic started flowing again, or after the closure has been removed.

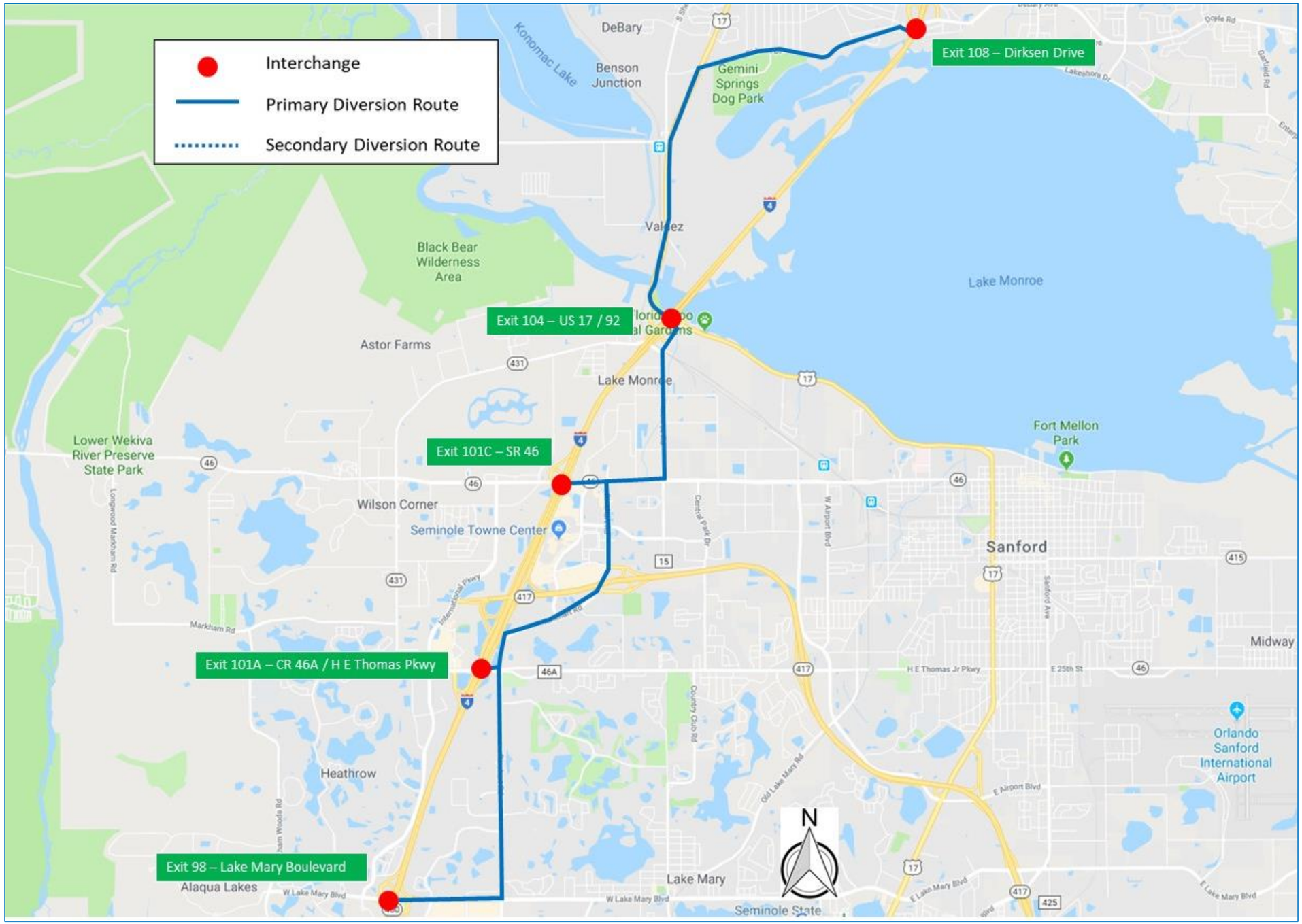
During this period, the alternate route should be monitored using video and travel time data to determine if traffic conditions are clearing earlier than expected. A goal should be to return to normal time-of-day operation as soon as possible after diverted traffic has cleared a section of the route.

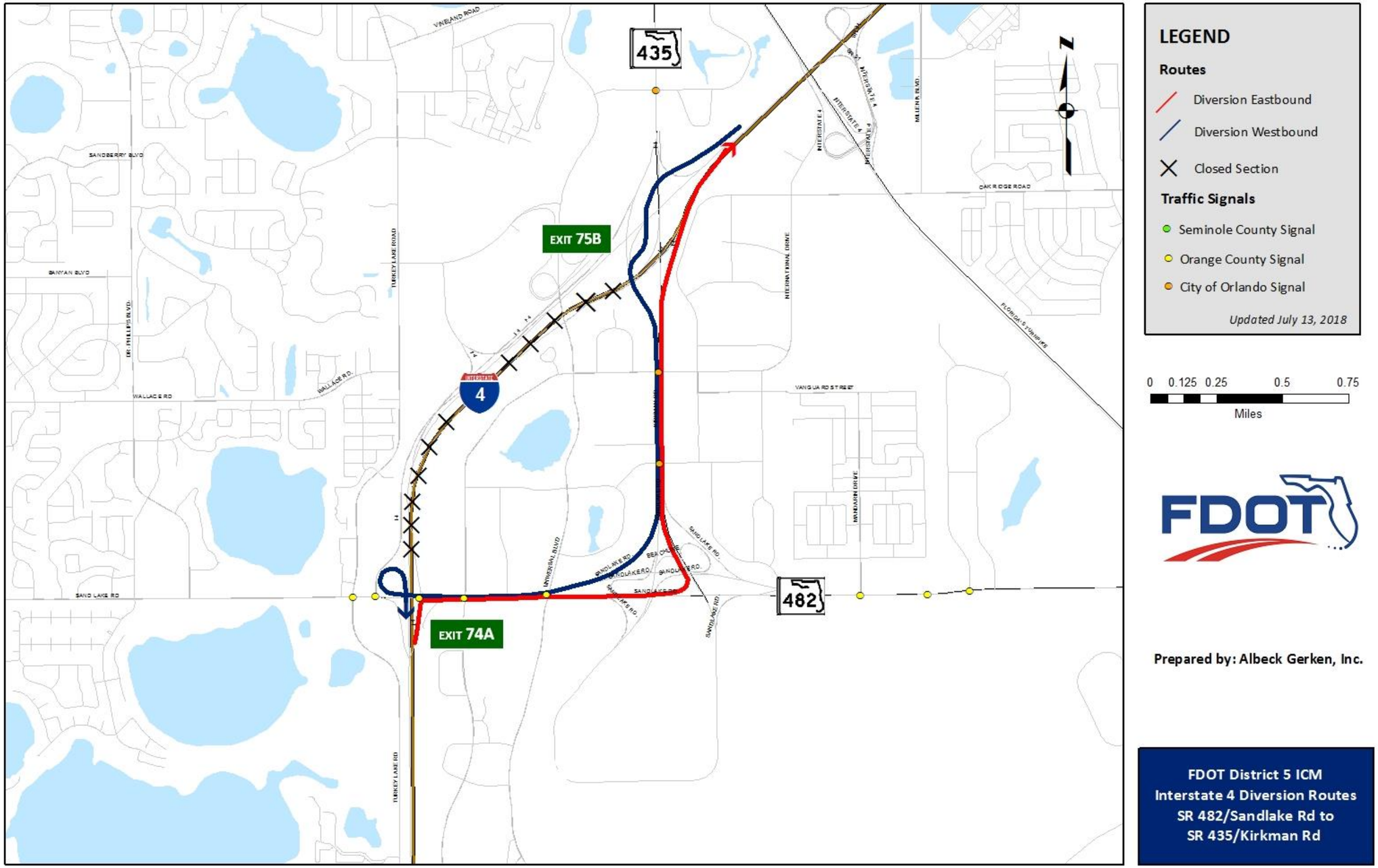
Upon the decision to terminate the diversion route pattern and return to normal operation, maintaining agency TMC staff should download the appropriate command to the flex group. This will direct the intersections to revert to the existing Time of Day (TOD) programming. It should be noted that the TOD programming could be another pattern with coordination or free operation. RTMC staff should be familiar with the TOD programming and should monitor ATMS to verify the status of the download and make sure that the intersections transition back into the appropriate TOD programming, verifying that there are no issues after the download, such as intersections in flash, an incorrect pattern, and/or coordination failures.


TO Exit 88 – Lee Road
Exit 83A – SR 50 / Colonial Drive
On SR 408: Exit 9
US 441 / OBT
On SR 408: Exit 8A
John Young Parkway
Exit 82A – SR 408 / East-West Expressway
Exit 79 – John Young Parkway
Exit 80 – US 441 / Orange Blossom Trail
Exit 78 – Conroy Rd
Exit 75B – SR 435 / Kirkman Rd
Exit 74A – SR 482 / Sand Lake Rd
Orlando
Orlovista
Valencia College, West Campus
METRO WEST
SOUTHWEST ORLANDO
Bill Frederick Park
The Holy Land Experience
MILLENIA
The Wizarding World of Harry Potter...
Universal Orlando Resort
Orlando International Premium Outlets
Fun Spot America Orlando
Universal's Volcano Bay™
Congo River Golf
Sand Lake
Tangelo Park
Doctor Phillips
Bay Hill
Oak Ridge
Holden Heights
Edgewood
Pine Castle
WADEVIEW PARK
Crayola Experience
Spessard L. Holland East-West Expy
Florida's Turpike
Interchange
Primary Diversion Route
Secondary Diversion Route
N


Interchange
Primary Diversion Route
Secondary Diversion Route
Exit 92 – SR 436 / Altamonte Drive
Exit 90 – SR 414 / Maitland Blvd
Exit 88 – SR 423 / Lee Rd
Exit 87 – SR 426 / Fairbanks Ave
Exit 85 – SR 438 / Princeton St
TO Exit 79 – John Young Parkway
Exit 83A – SR 50 / Colonial Drive
Forest City
Altamonte
Fern Park
Maitland
Lockhart
Eatonville
Enzian Theater
Kraft Azalea Garden
Hiawassee
Winter Park
Ward Park
Fairview Shores
Mead Botanical Garden
Lake Baldwin Park
Blue Jacket Park
Orlando Science Center
COLLEGE PARK
BALDWIN PARK
COLONIAL TOWN CENTER
Pine Hills
Barnett Park
Lake Howell
N


Heathrow
Alaqua Lakes
Exit 98 – Lake Mary Boulevard
Lake Mary
Seminole State College - Sanford/Lake Mary Campus
Wekiva River Buffer Conservation Area
Spring Hammock Preserve
Candyland Park
Central Winds Park
Longwood
Winter Springs
Wekiva Springs
Exit 94 – SR 436 / Wekiva Springs
Sanlando Springs
Casselberry
Cranes Roost Park
Exit 92 – SR 436 / Altamonte Drive
Forest City
Altamonte Springs
N
Interchange
Primary Diversion Route
Secondary Diversion Route


Interchange
Primary Diversion Route
Secondary Diversion Route
Exit 108 – Dirksen Drive
Exit 104 – US 17 / 92
Exit 101C – SR 46
Exit 101A – CR 46A / H E Thomas Pkwy
Exit 98 – Lake Mary Boulevard
DeBary
Benson Junction
Gemini Springs Dog Park
Konomac Lake
Valdez
Black Bear Wilderness Area
Lake Monroe
Astor Farms
Lake Monroe
Fort Mellon Park
Lower Wekiva River Preserve State Park
Wilson Corner
Seminole Towne Center
Sanford
Midway
Heathrow
Orlando Sanford International Airport
Alaqua Lakes
Lake Mary
Seminole State
N


435
EXIT 75B
4
482
EXIT 74A
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Orange County Signal
City of Orlando Signal
Updated July 13, 2018
0 0.125 0.25 0.5 0.75
Miles
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 482/Sandlake Rd to
SR 435/Kirkman Rd

EXIT 74A TO EXIT 75B — **SR 482 / Sand Lake Road** — **SR 435 / Kirkman Road** — **I-4 EB** — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 482 at I-4 EB Ramp	142	Orange County	Y	100	200	Right Turn onto SR 482 / Sand Lake Road
SR 482 at International Dr	147	Orange County	Y	100	200	Eastbound through on SR 482 / Sand Lake Road
SR 482 at Universal Blvd	340	Orange County	Y	100	200	Eastbound through on SR 482 / Sand Lake Road
SR 482 at SR 435 / Kirkman Road	NA	NA	NA	NA	NA	Interchange ramp to SR 435 Northbound
SR 435 at Carrier Dr	367	City of Orlando	Y	29	200	Northbound through on SR 435 / Kirkman Road
SR 435 at International Dr	380	City of Orlando	Y	29	200	Northbound through on SR 435 / Kirkman Road
SR 435 at I-4 EB Ramp	NA	NA	NA	NA	NA	Right turn onto to I-4 Eastbound ramp

City of Orlando ATMS Flex Group: I-4 Diversion Section 1
Orange County MaxView Action Set
Orange County TACTICS Zone: FDOT Sec1 Route 1 1/4/1

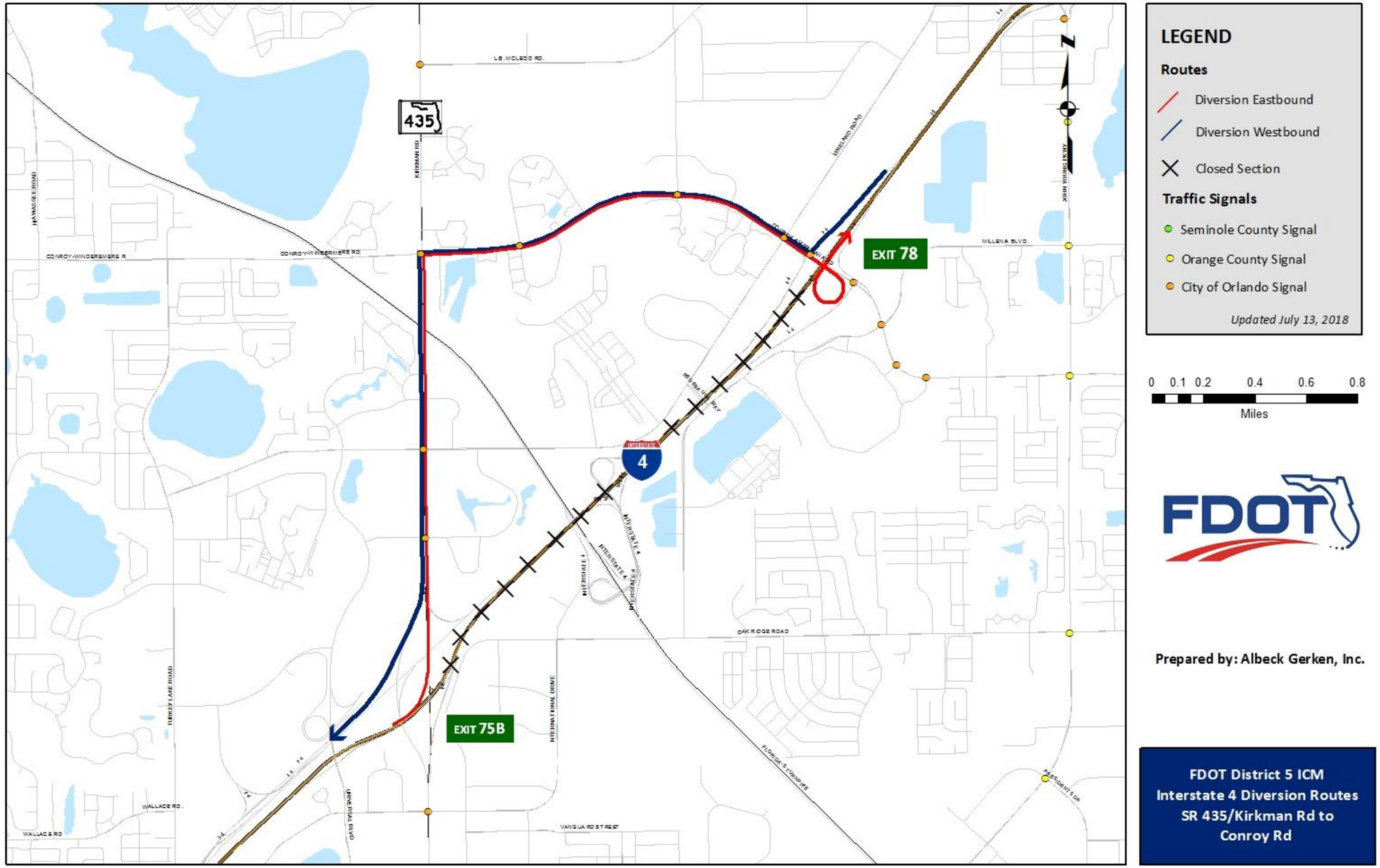
EXIT 75B TO EXIT 74A — **SR 435 / Kirkman Road** — **SR 482 / Sand Lake Road** — **I-4 WB** — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 435 at I-4 WB Ramp	NA	NA	NA	NA	NA	Ramp onto Southbound SR 435 / Kirkman Road
SR 435 at International Dr	380	City of Orlando	Y	30	190	Southbound through on SR 435 / Kirkman Road
SR 435 at Carrier Dr	367	City of Orlando	Y	30	190	Southbound through on SR 435 / Kirkman Road
SR 435 / Kirkman Road at SR 482	NA	NA	NA	NA	NA	Interchange ramp to SR 482 Westbound
SR 482 at Universal Blvd	340	Orange County	Y	101	190	Westbound through on SR 482 / Sand Lake Road
SR 482 at International Dr	147	Orange County	Y	101	190	Westbound through on SR 482 / Sand Lake Road
SR 482 at I-4 EB Ramp	142	Orange County	Y	101	190	Westbound through on SR 482 / Sand Lake Road
SR 482 at I-4 WB Ramp	NA	NA	NA	NA	NA	Right Turn onto I-4 Westbound ramp

City of Orlando ATMS Flex Group: I-4 Diversion Section 1
Orange County MaxView Action Set
Orange County TACTICS Zone: FDOT Sec1 Route 2 2/4/1

EXIT 74A TO EXIT 75B — **SR 482 / Sand Lake Road** — **SR 435 / Kirkman Road** — **I-4 BiD** — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 482 at I-4 WB Ramp	NA	NA	NA	NA	NA	Right Turn onto I-4 Westbound ramp
SR 482 at I-4 EB Ramp	142	Orange County	Y	102	200	Right Turn onto SR 482 from I-4 EB; WB through on SR 482
SR 482 at International Dr	147	Orange County	Y	102	200	EB and WB through on SR 482 / Sand Lake Road
SR 482 at Universal Blvd	340	Orange County	Y	102	200	EB and WB through on SR 482 / Sand Lake Road
SR 482 at SR 435 / Kirkman Road	NA	NA	NA	NA	NA	Interchange ramps to SR 435
SR 435 at Carrier Dr	367	City of Orlando	Y	31	200	NB and SB through on SR 435 / Kirkman Road
SR 435 at International Dr	380	City of Orlando	Y	31	200	NB and SB through on SR 435 / Kirkman Road
SR 435 at I-4 EB Ramp	NA	NA	NA	NA	NA	Right turn onto to I-4 Eastbound ramp
SR 435 at I-4 WB Ramp	NA	NA	NA	NA	NA	Ramp onto Southbound SR 435 / Kirkman Road


435
EXIT 78
EXIT 75B
4
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Orange County Signal
City of Orlando Signal
Updated July 13, 2018
0 0.1 0.2 0.4 0.6 0.8
Miles
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 435/Kirkman Rd to
Conroy Rd

EXIT 75B TO EXIT 78 — SR 435 / Kirkman Road — Conroy Road — I-4 EB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 435 at I-4 EB Ramp	NA	NA	NA	NA	NA	Ramp from I-4 EB to NB SR 435 / Kirkman Road
SR 435 at Major Blvd	393	City of Orlando	Y	26	200	Northbound through on SR 435 / Kirkman Road
SR 435 at Vineland Road	399	City of Orlando	Y	26	200	Northbound through on SR 435 / Kirkman Road
SR 435 at Conroy Road	385	City of Orlando	Y	26	200	Northbound right turn onto Conroy Road
Conroy Road at Middlebrook Road	731	City of Orlando	N	26	200	Eastbound through on Conroy Road
Conroy Road at Pres. Obama Parkway	386	City of Orlando	N	26	200	Eastbound through on Conroy Road
Conroy Road at Vineland Road	156	City of Orlando	N	26	200	Eastbound through on Conroy Road
Conroy Road at I-4 WB Ramp	735	City of Orlando	Y	26	200	Eastbound through on Conroy Road
Conroy Road at I-4 EB Ramp	668	City of Orlando	Y	26	100	Eastbound left onto I-4 Eastbound

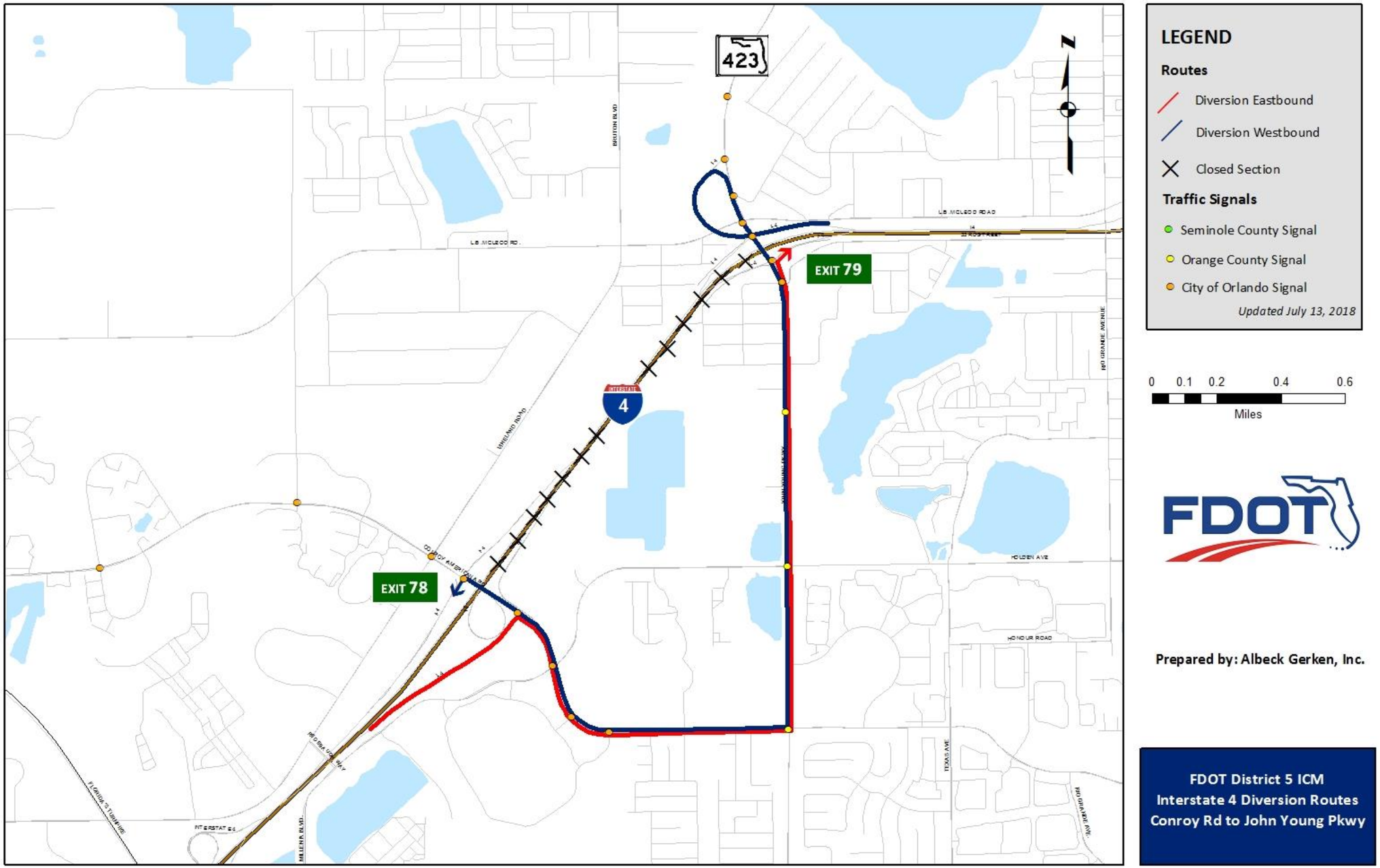
EXIT 78 TO EXIT 75B — Conroy Road — SR 435 / Kirkman Road — I-4 WB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
Conroy Road at I-4 EB Ramp	668	City of Orlando	Y	27	105	Maintain coordination with WB ramp to avoid jamming
Conroy Road at I-4 WB Ramp	735	City of Orlando	Y	27	210	Right turn from I-4 WB onto Westbound Conroy Road
Conroy Road at Vineland Road	156	City of Orlando	N	27	210	Westbound through on Conroy Road
Conroy Road at Pres. Obama Parkway	386	City of Orlando	N	27	210	Westbound through on Conroy Road
Conroy Road at Middlebrook Road	731	City of Orlando	N	27	210	Westbound through on Conroy Road
SR 435 at Conroy Road	385	City of Orlando	Y	27	210	Westbound left turn onto SR 435 southbound
SR 435 at Vineland Road	399	City of Orlando	Y	27	210	Southbound through on Conroy Road
SR 435 at Major Blvd	393	City of Orlando	Y	27	210	Southbound through on Conroy Road
SR 435 at I-4 WB Ramp	NA	NA	NA	NA	NA	Ramp to I-4 Westbound

EXIT 75B TO EXIT 78 — SR 435 / Kirkman Road — Conroy Road — I-4 BiD

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 435 at I-4 EB Ramp	NA	NA	NA	NA	NA	Ramp from I-4 EB to NB SR 435 / Kirkman Road
SR 435 at I-4 WB Ramp	NA	NA	NA	NA	NA	SB Right onto Ramp to I-4 Westbound
SR 435 at Major Blvd	393	City of Orlando	Y	28	210	NB & SB through on SR 435 / Kirkman Road
SR 435 at Vineland Road	399	City of Orlando	Y	28	210	NB & SB through on SR 435 / Kirkman Road
SR 435 at Conroy Road	385	City of Orlando	Y	28	210	NB right turn onto Conroy Road; WB left turn onto SR 435
Conroy Road at Middlebrook Road	731	City of Orlando	N	28	210	EB and WB through on Conroy Road
Conroy Road at Pres. Obama Parkway	386	City of Orlando	N	28	210	EB and WB through on Conroy Road
Conroy Road at Vineland Road	156	City of Orlando	N	28	210	EB and WB through on Conroy Road
Conroy Road at I-4 WB Ramp	735	City of Orlando	Y	28	210	EB through on Conroy Road; I-4 WB right onto WB Conroy
Conroy Road at I-4 EB Ramp	668	City of Orlando	Y	28	105	Eastbound left onto I-4 Eastbound

City of Orlando ATMS Flex Group: I-4 Diversion Section 2


423
EXIT 79
EXIT 78
4
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Orange County Signal
City of Orlando Signal
Updated July 13, 2018
0 0.1 0.2 0.4 0.6
Miles
FDOT
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
Conroy Rd to John Young Pkwy

EXIT 78 TO EXIT 79 — Conroy Road / John Young Parkway — I-4 EB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
Conroy Road at I-4 WB Ramp	735	City of Orlando	Y	29	200	Maintain coordination with EB ramp to avoid jamming
Conroy Road at I-4 EB Ramp	668	City of Orlando	Y	29	200	Right turn from I-4 EB onto Eastbound Conroy Road
Conroy Road at Millenia Blvd	665	City of Orlando	N	29	200	Eastbound through on Conroy Road
Conroy Road at Water Garden Dr	683	City of Orlando	N	29	200	Eastbound through on Conroy Road
Conroy Road at Eastgate Dr	684	City of Orlando	N	29	200	Eastbound through on Conroy Road
Conroy Road at John Young Pkwy	289	Orange County	N	100	200	Eastbound left turn onto John Young Pkwy
John Young Pkwy at Millenia Blvd	445	Orange County	N	100	200	Northbound through on John Young Pkwy
John Young Pkwy at Pine St / OCPW	455	Orange County	N	100	200	Northbound through on John Young Pkwy
John Young Pkwy at 33rd St	617	City of Orlando	N	29	200	Northbound through on John Young Pkwy
John Young Pkwy at I-4 EB Ramp	157	City of Orlando	Y	29	200	Northbound through on John Young Pkwy
John Young Pkwy at I-4 WB On Ramp	158	City of Orlando	Y	29	200	Northbound through on John Young Pkwy
John Young Pkwy at LB McLeod Rd	155	City of Orlando	Y	29	200	Northbound through on John Young Pkwy
John Young Pkwy at Clearway	627	City of Orlando	Y	29	200	Northbound through on John Young Pkwy
John Young Pkwy at I-4 WB Offramp	739	City of Orlando	Y	29	100	Northbound through on John Young Pkwy

City of Orlando ATMS Flex Group: I-4 Diversion Section 3
Orange County MaxView Action Set: I-4 Div - Sec 3

EXIT 79 TO EXIT 78 — John Young Parkway / Conroy Road — I-4 WB

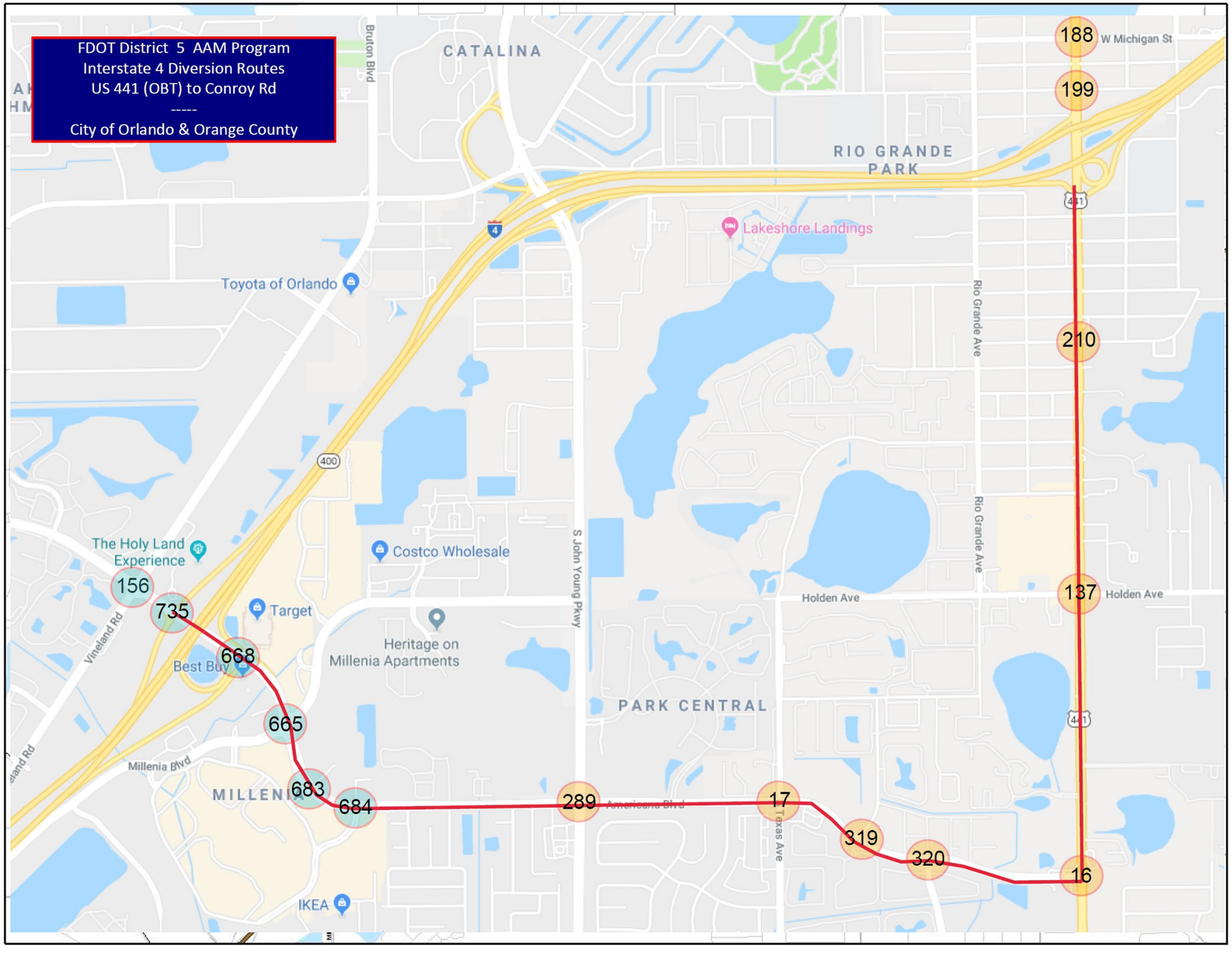
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
John Young Pkwy at I-4 WB Offramp	739	City of Orlando	Y	30	100	Right turn onto Southbound John Young Pkwy
John Young Pkwy at Clearway	627	City of Orlando	Y	30	200	Southbound through on John Young Pkwy
John Young Pkwy at LB McLeod Rd	155	City of Orlando	Y	30	200	Southbound through on John Young Pkwy
John Young Pkwy at I-4 WB On Ramp	158	City of Orlando	Y	30	200	Southbound through on John Young Pkwy
John Young Pkwy at I-4 EB Ramp	157	City of Orlando	Y	30	200	Southbound through on John Young Pkwy
John Young Pkwy at 33rd St	617	City of Orlando	N	30	200	Southbound through on John Young Pkwy
John Young Pkwy at Pine St / OCPW	455	Orange County	N	101	200	Southbound through on John Young Pkwy
John Young Pkwy at Millenia Blvd	445	Orange County	N	101	200	Southbound through on John Young Pkwy
Conroy Road at John Young Pkwy	289	Orange County	N	101	200	Southbound right turn onto westbound Conroy Road
Conroy Road at Eastgate Dr	684	City of Orlando	N	30	200	Westbound through on Conroy Road
Conroy Road at Water Garden Dr	683	City of Orlando	N	30	200	Westbound through on Conroy Road
Conroy Road at Millenia Blvd	665	City of Orlando	N	30	200	Westbound through on Conroy Road
Conroy Road at I-4 EB Ramp	668	City of Orlando	Y	30	200	Westbound through on Conroy Road
Conroy Road at I-4 WB Ramp	735	City of Orlando	Y	30	200	Westbound left turn onto I-4 WB Ramp

City of Orlando ATMS Flex Group: I-4 Diversion Section 3
Orange County MaxView Action Set: I-4 Div - Sec 3

EXIT 78 TO EXIT 79 — Conroy Road / John Young Parkway — I-4 BiD

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
Conroy Road at I-4 WB Ramp	735	City of Orlando	Y	31	200	Westbound left turn onto I-4 WB Ramp
Conroy Road at I-4 EB Ramp	668	City of Orlando	Y	31	200	Right turn from I-4 EB; Westbound through
Conroy Road at Millenia Blvd	665	City of Orlando	N	31	200	EB and WB through on Conroy Road
Conroy Road at Water Garden Dr	683	City of Orlando	N	31	200	EB and WB through on Conroy Road
Conroy Road at Eastgate Dr	684	City of Orlando	N	31	200	EB and WB through on Conroy Road
Conroy Road at John Young Pkwy	289	Orange County	N	102	200	Eastbound left turn and Southbound right turn
John Young Pkwy at Millenia Blvd	445	Orange County	N	102	200	NB and SB through on John Young Pkwy
John Young Pkwy at Pine St / OCPW	455	Orange County	N	102	200	NB and SB through on John Young Pkwy
John Young Pkwy at 33rd St	617	City of Orlando	N	31	200	NB and SB through on John Young Pkwy
John Young Pkwy at I-4 EB Ramp	157	City of Orlando	Y	31	200	NB and SB through on John Young Pkwy
John Young Pkwy at I-4 WB On Ramp	158	City of Orlando	Y	31	200	NB and SB through on John Young Pkwy
John Young Pkwy at LB McLeod Rd	155	City of Orlando	Y	31	200	NB and SB through on John Young Pkwy
John Young Pkwy at Clearway	627	City of Orlando	Y	31	200	NB and SB through on John Young Pkwy
John Young Pkwy at I-4 WB Offramp	739	City of Orlando	Y	31	100	NB and SB through on John Young Pkwy

City of Orlando ATMS Flex Group: I-4 Diversion Section 3
Orange County MaxView Action Set: I-4 Div - Sec 3



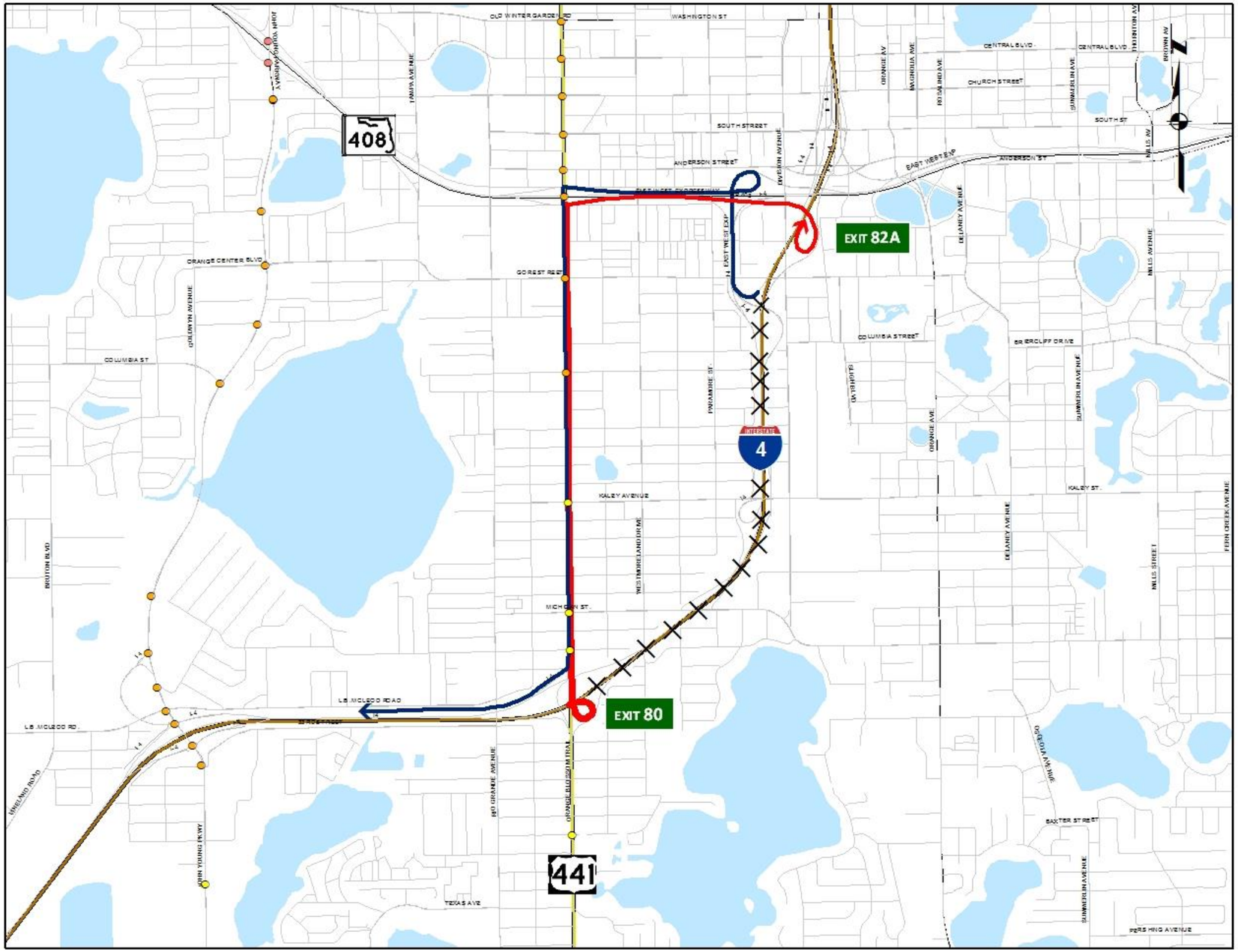
LEGEND

- ## Orange Co. intersection & ID
- ## Orlando intersection & ID
- Diversion Route

Prepared by: Albeck Gerken, Inc.

FDOT District 5 ICM
Interstate 4 Diversion Routes
Conroy Rd to John Young Pkwy

EXIT 78 TO EXIT 80	Conroy Road US 441 / OBT			DISTRICT FIVE ICM			
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented			
				I-4 EB	I-4 WB	I-4 Balanced	Cycle
				Pattern			
Conroy Road at Vineland	156	City of Orlando	N	29	30	31	200
Conroy Road at I-4 WB Ramp	735	City of Orlando	Y	29	30	31	200
Conroy Road at I-4 EB Ramp	668	City of Orlando	Y	29	30	31	200
Conroy Road at Millenia Blvd	665	City of Orlando	N	29	30	31	200
Conroy Road at Water Garden Dr	683	City of Orlando	N	29	30	31	200
Conroy Road at Eastgate Dr	684	City of Orlando	N	29	30	31	200
Conroy Road at John Young Pkwy	289	Orange County	N	103	104	105	200
Americana Blvd at Texas Ave	17	Orange County	N	103	104	105	200
Americana Blvd at San Antonio Ave	319	Orange County	N	103	104	105	200
Americana Blvd at Rio Grande Ave	320	Orange County	N	103	104	105	200
US 441 at Americana Blvd	16	Orange County	Y	103	104	105	200
US 441 at Holden Ave	137	Orange County	Y	103	104	105	200
US 441 at 39th St	210	Orange County	Y	103	104	105	200
US 441 at 29th St	199	Orange County	Y	103	104	105	200
US 441 at Michigan	188	Orange County	Y	103	104	105	200
City of Orlando ATMS Flex Group:	I-4 Diversion Section 3B (Conroy to OBT)						
Orange County MaxView Action Set	I-4 Div - Sec 3B (between Conroy & OBT)						



LEGEND

Routes

- Diversion Eastbound
- Diversion Westbound
- Closed Section

Traffic Signals

- Seminole County Signal
- Orange County Signal
- City of Orlando Signal

Updated July 13, 2018

0 0.125 0.25 0.5 0.75
Miles

Prepared by: Albeck Gerken, Inc.

**FDOT District 5 ICM
Interstate 4 Diversion Routes
US 441/Orange Blossom Trail to
SR 408 East-West Expwy**

EXIT 80 TO EXIT 82A — **US 441 / Orange Blossom Tr** — **SR 408 / East-West Expwy** — **I-4 EB**

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
US 441 / OBT at 29th Street	199	Orange County	Y	100	210	Northbound through on US 441 / OBT
US 441 / OBT at Michigan Street	188	Orange County	Y	100	210	Northbound through on US 441 / OBT
US 441 / OBT at Kaley Avenue	155	Orange County	Y	100	210	Northbound through on US 441 / OBT
US 441 / OBT at Grand Street	257	City of Orlando	Y	30	210	Northbound through on US 441 / OBT
US 441 / OBT at Gore Street	254	City of Orlando	Y	30	210	Northbound through on US 441 / OBT
US 441 / OBT at Carter St / Long St	248	City of Orlando	Y	30	210	Northbound right onto SR 408 / East-West Expwy

City of Orlando ATMS Flex Group: I-4 Diversion Section 4
Orange County MaxView Action Set: I-4 Div - Sec 4 & 5

EXIT 82A TO EXIT 80 — **SR 408 / East-West Expwy** — **US 441 / Orange Blossom Tr** — **I-4 WB**

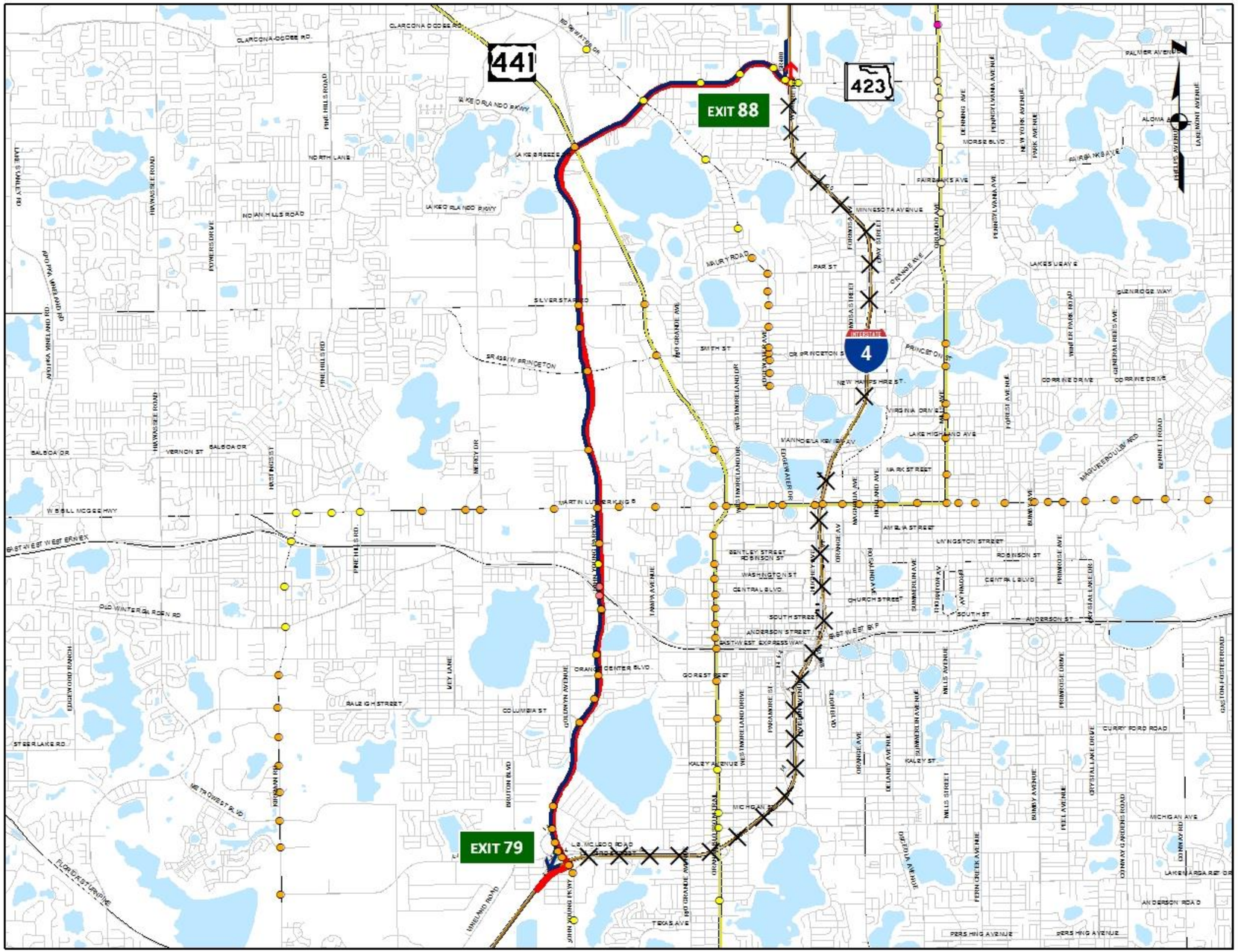
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
US 441 / OBT at Carter St / Long St	248	City of Orlando	Y	29	200	Westbound left onto southbound US 441 / OBT
US 441 / OBT at Gore Street	254	City of Orlando	Y	29	200	Southbound through on US 441 / OBT
US 441 / OBT at Grand Street	257	City of Orlando	Y	29	200	Southbound through on US 441 / OBT
US 441 / OBT at Kaley Avenue	155	Orange County	Y	101	200	Southbound through on US 441 / OBT
US 441 / OBT at Michigan Street	188	Orange County	Y	101	200	Southbound through on US 441 / OBT
US 441 / OBT at 29th Street	199	Orange County	Y	101	200	Southbound through on US 441 / OBT

City of Orlando ATMS Flex Group: I-4 Diversion Section 4
Orange County MaxView Action Set: I-4 Div - Sec 4 & 5

EXIT 80 TO EXIT 82A — **US 441 / Orange Blossom Tr** — **SR 408 / East-West Expwy** — **I-4 BiD**

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
US 441 / OBT at I-4 EB Ramp	NA	NA	NA	NA	NA	Ramp to northbound US 441 / OBT
US 441 / OBT at 29th Street	199	Orange County	Y	102	210	NB and SB through on US 441 / OBT
US 441 / OBT at Michigan Street	188	Orange County	Y	102	210	NB and SB through on US 441 / OBT
US 441 / OBT at Kaley Avenue	155	Orange County	Y	102	210	NB and SB through on US 441 / OBT
US 441 / OBT at Grand Street	257	City of Orlando	Y	31	210	NB and SB through on US 441 / OBT
US 441 / OBT at Gore Street	254	City of Orlando	Y	31	210	NB and SB through on US 441 / OBT
US 441 / OBT at Carter St / Long St	248	City of Orlando	Y	31	210	NB right turn and WB left turn

City of Orlando ATMS Flex Group: I-4 Diversion Section 4
Orange County MaxView Action Set: I-4 Div - Sec 4 & 5


441
423
EXIT 88
EXIT 79
4
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Orange County Signal
City of Orlando Signal
Central Florida Expwy Signal
Updated July 13, 2018
0 0.325 0.65 1.3 1.95
Miles
FDOT
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
John Young Pkwy to
SR 423/Lee Rd

EXIT 79 TO EXIT 88 — **John Young Parkway / SR 423 / Lee Road** — **I-4 EB** — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
JYP at 33rd Street/35th Street	617	City of Orlando	N	16	200	Southbound through on JYP to prevent jamming
JYP at I-4 Eastbound Ramps	157	City of Orlando	Y	16	200	Eastbound left turn to JYP northbound
JYP at I-4 Westbound Entrance Ramp	158	City of Orlando	Y	16	200	Northbound through on JYP
JYP at LB McLeod Road	155	City of Orlando	N	16	200	Northbound through on JYP
JYP at Clear Way	627	City of Orlando	N	16	200	Northbound through on JYP
JYP at I-4 Westbound Exit Ramp	739	City of Orlando	Y	16	200	Northbound through on JYP
JYP at First Baptist Church	611	City of Orlando	N	16	200	Northbound through on JYP
JYP at Columbia Street	607	City of Orlando	N	16	200	Northbound through on JYP
JYP at Monte Carlo Trail	138	City of Orlando	N	16	200	Northbound through on JYP
JYP at Orange Center Boulevard	149	City of Orlando	N	16	200	Northbound through on JYP
JYP at C.R. Smith Street	626	City of Orlando	N	16	200	Northbound through on JYP
SR 423 (JYP) at Church Street	460	Orange County	Y	106	200	Northbound through on JYP
SR 423 (JYP) at SR 408 EB Ramps	338	Orange County	Y	106	200	Northbound through on JYP
SR 423 (JYP) at SR 408 WB Ramps	339	Orange County	Y	106	200	Northbound through on JYP
SR 423 (JYP) at Old Winter Garden Rd	175	Orange County	Y	106	200	Northbound through on JYP
SR 423 (JYP) at Bus Ctr Blvd/Harwood St	706	City of Orlando	Y	29	200	Northbound through on JYP
SR 423 (JYP) at SR 50 (Colonial Drive)	410	City of Orlando	Y	29	200	Northbound through on JYP
SR 423 (JYP) at WD Judge Drive	411	City of Orlando	Y	29	200	Northbound through on JYP
SR 423 (JYP) at SR 438 (Princeton St)	456	City of Orlando	Y	29	200	Northbound through on JYP
SR 423 (JYP) at Lynx Lane	422	City of Orlando	Y	29	200	Northbound through on JYP
SR 423 (JYP) at SR 416 (Silver Star Rd)	455	City of Orlando	Y	29	200	Northbound through on JYP
SR 423 (JYP) at Shader Road	457	City of Orlando	Y	29	200	Northbound through on JYP
SR 423 (JYP/Lee Road) at US 441 (OBT)	519	City of Orlando	Y	29	180	Northbound through on Lee Road
SR 423 (Lee Rd) at SR 424 (Edgewater)	101	Orange County	Y	106	180	Eastbound through on Lee Road
SR 423 (Lee Road) at Kingswood Drive	160	Orange County	Y	106	180	Eastbound through on Lee Road
SR 423 (Lee Road) at Adanson Street	2	Orange County	Y	106	180	Eastbound through on Lee Road
SR 423 (Lee Road) at Diplomat Circle	92	Orange County	Y	4/2/1	180	Eastbound through on Lee Road
SR 423 (Lee Road) at I-4 WB Ramps	141	Orange County	Y	4/2/1	180	Eastbound through on Lee Road
SR 423 (Lee Road) at I-4 EB Ramps						Eastbound left turn to I-4 Eastbound
SR 423 (Lee Road) at Wymore Road	173	Orange County	Y	4/2/1	180	Eastbound through on Lee Road to prevent jamming

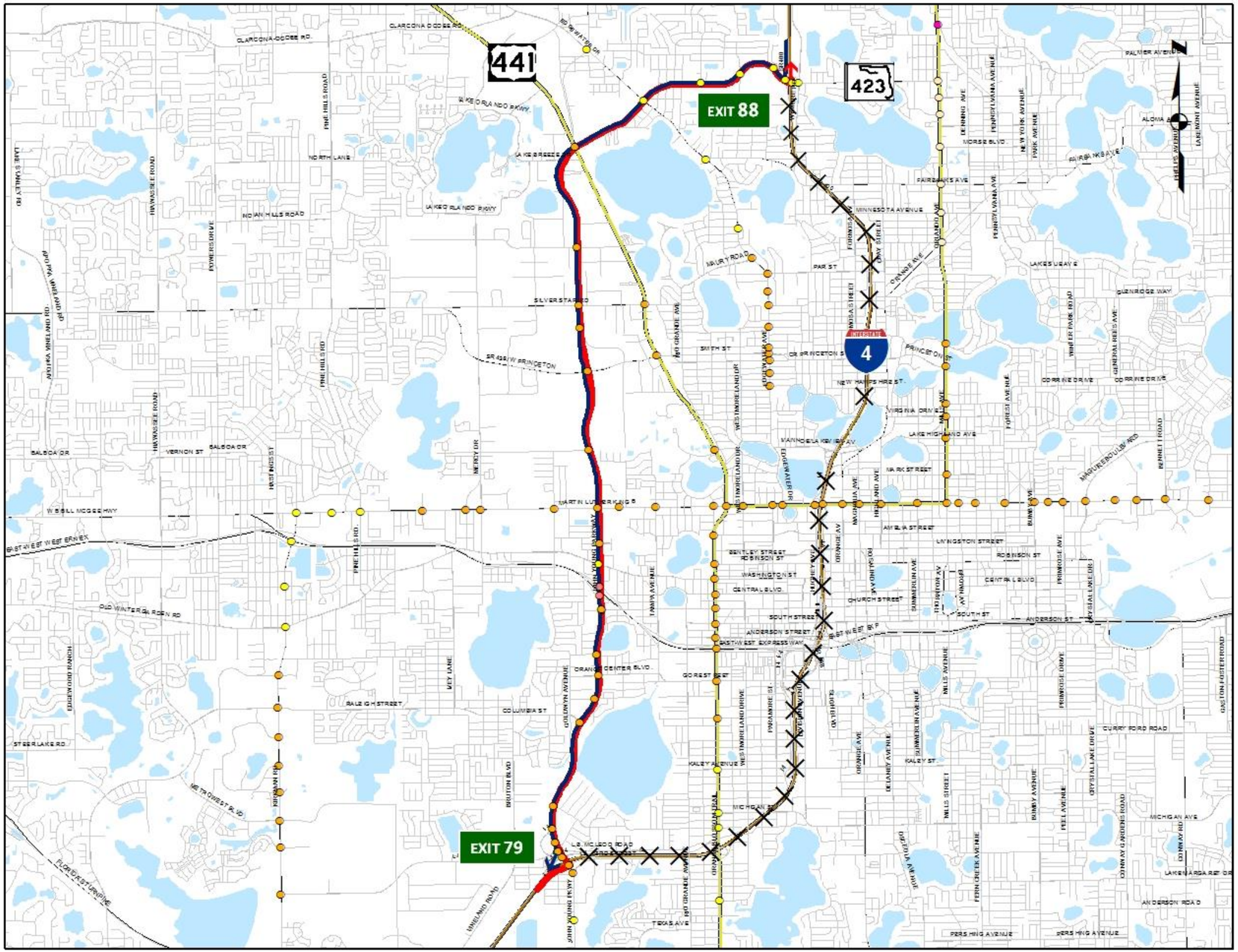
City of Orlando ATMS Flex Group: Diversion-JYP1, Diversion-LEE1
Orange County MaxView Action Set: I-4 Div - JYP1

EXIT 88 TO EXIT 79 — **SR 423 / Lee Road / John Young Parkway** — **I-4 WB** — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 423 (Lee Rd) at Wymore Rd	173	Orange County	Y	4/3/1	180	Eastbound through on Lee Road to prevent jamming
SR 423 (Lee Rd) at I-4 EB Ramps	141	Orange County	Y	4/3/1	180	Eastbound through on Lee Road to prevent jamming
SR 423 (Lee Rd) at I-4 WB Ramps						Southbound right turn onto Lee Road Westbound
SR 423 (Lee Rd) at Diplomat Circle	92	Orange County	Y	4/3/1	180	Westbound through on Lee Road
SR 423 (Lee Rd) at Adanson Street	2	Orange County	Y	107	180	Westbound through on Lee Road
SR 423 (Lee Rd) at Kingswood Drive	160	Orange County	Y	107	180	Westbound through on Lee Road
SR 423 (Lee Rd) at SR 424 (Edgewater)	101	Orange County	Y	107	180	Westbound through on Lee Road
SR 423 (JYP/Lee Rd) at US 441 (OBT)	519	City of Orlando	Y	30	180	Southbound through on Lee Road
SR 423 (JYP) at Shader Rd	457	City of Orlando	Y	30	200	Southbound through on JYP
SR 423 (JYP) at SR 416 (Silver Star Rd)	455	City of Orlando	Y	30	200	Southbound through on JYP
SR 423 (JYP) at Lynx Lane	422	City of Orlando	Y	30	200	Southbound through on JYP
SR 423 (JYP) at SR 438 (Princeton St)	456	City of Orlando	Y	30	200	Southbound through on JYP
SR 423 (JYP) at WD Judge Drive	411	City of Orlando	Y	30	200	Southbound through on JYP
SR 423 (JYP) at SR 50 (Colonial Drive)	410	City of Orlando	Y	30	200	Southbound through on JYP
SR 423 (JYP) at Bus Ctr Blvd/Harwood St	706	City of Orlando	Y	30	200	Southbound through on JYP
SR 423 (JYP) at Old Winter Garden Rd	175	Orange County	Y	107	200	Southbound through on JYP
SR 423 (JYP) at SR 408 WB Ramps	339	Orange County	Y	107	200	Southbound through on JYP
SR 423 (JYP) at SR 408 EB Ramps	338	Orange County	Y	107	200	Southbound through on JYP
SR 423 (JYP) at Church Street	460	Orange County	Y	107	200	Southbound through on JYP
JYP at C.R. Smith Street	626	City of Orlando	N	17	200	Southbound through on JYP
JYP at Orange Center Boulevard	149	City of Orlando	N	17	200	Southbound through on JYP
JYP at Monte Carlo Trail	138	City of Orlando	N	17	200	Southbound through on JYP
JYP at Columbia Street	607	City of Orlando	N	17	200	Southbound through on JYP
JYP at First Baptist Church	611	City of Orlando	N	17	200	Southbound through on JYP
JYP at I-4 WB Exit Ramp	739	City of Orlando	Y	17	200	Southbound through on JYP
JYP at Clear Way	627	City of Orlando	N	17	200	Southbound through on JYP
JYP at LB McLeod Rd	155	City of Orlando	N	17	200	Southbound through on JYP
JYP at I-4 WB Entrance Ramp	158	City of Orlando	Y	17	200	Southbound right turn onto I-4 Westbound
JYP at I-4 EB Ramps	157	City of Orlando	Y	17	200	Southbound through on JYP to prevent jamming
JYP at 33rd Street/35th Street	617	City of Orlando	N	17	200	Southbound through on JYP to prevent jamming

City of Orlando ATMS Flex Group: Diversion-JYP1, Diversion-LEE1
Orange County MaxView Action Set: I-4 Div - JYP1

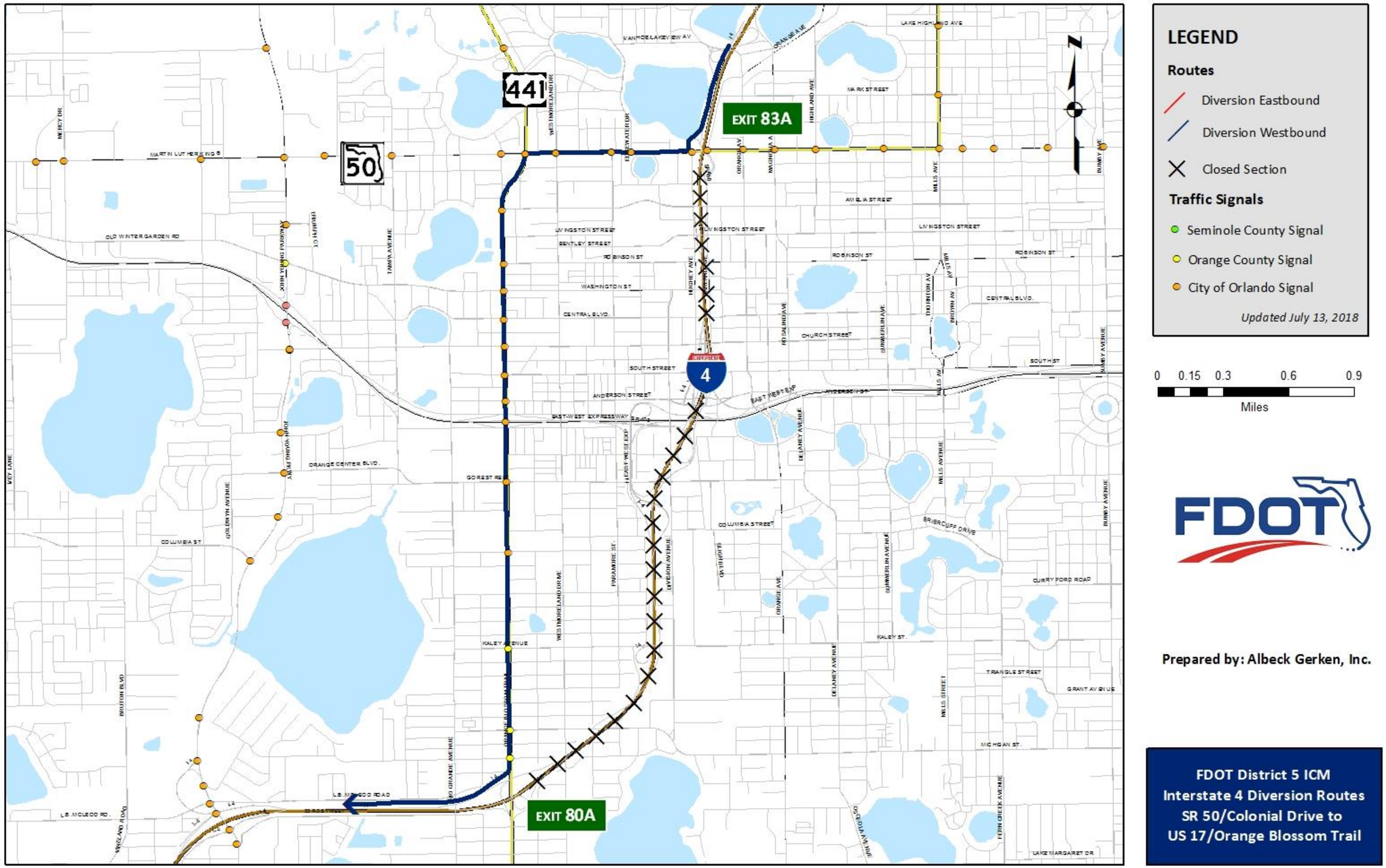
See Next Page for BiDirectional Diversion


441
423
EXIT 88
EXIT 79
4
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Orange County Signal
City of Orlando Signal
Central Florida Expwy Signal
Updated July 13, 2018
0 0.325 0.65 1.3 1.95
Miles
FDOT
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
John Young Pkwy to
SR 423/Lee Rd

EXIT 79 TO EXIT 88 | **John Young Parkway** | **SR 423 / Lee Road** | **I-4 BiD** | DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
JYP at 33rd Street/35th Street	617	City of Orlando	N	18	200	Southbound through on JYP to prevent jamming
JYP at I-4 Eastbound Ramps	157	City of Orlando	Y	18	200	Eastbound left turn to JYP northbound
JYP at I-4 Westbound Entrance Ramp	158	City of Orlando	Y	18	200	Northbound through and southbound right turn
JYP at LB McLeod Road	155	City of Orlando	N	18	200	NB and SB through on JYP
JYP at Clear Way	627	City of Orlando	N	18	200	NB and SB through on JYP
JYP at I-4 Westbound Exit Ramp	739	City of Orlando	Y	18	200	NB and SB through on JYP
JYP at First Baptist Church	611	City of Orlando	N	18	200	NB and SB through on JYP
JYP at Columbia Street	607	City of Orlando	N	18	200	NB and SB through on JYP
JYP at Monte Carlo Trail	138	City of Orlando	N	18	200	NB and SB through on JYP
JYP at Orange Center Boulevard	149	City of Orlando	N	18	200	NB and SB through on JYP
JYP at C.R. Smith Street	626	City of Orlando	N	18	200	NB and SB through on JYP
SR 423 (JYP) at Church Street	460	Orange County	Y	108	200	NB and SB through on JYP
SR 423 (JYP) at SR 408 EB Ramps	338	Orange County	Y	108	200	NB and SB through on JYP
SR 423 (JYP) at SR 408 WB Ramps	339	Orange County	Y	108	200	NB and SB through on JYP
SR 423 (JYP) at Old Winter Garden Rd	175	Orange County	Y	108	200	NB and SB through on JYP
SR 423 (JYP) at Bus Ctr Blvd/Harwood St	706	City of Orlando	Y	31	200	NB and SB through on JYP
SR 423 (JYP) at SR 50 (Colonial Drive)	410	City of Orlando	Y	31	200	NB and SB through on JYP
SR 423 (JYP) at WD Judge Drive	411	City of Orlando	Y	31	200	NB and SB through on JYP
SR 423 (JYP) at SR 438 (Princeton St)	456	City of Orlando	Y	31	200	NB and SB through on JYP
SR 423 (JYP) at Lynx Lane	422	City of Orlando	Y	31	200	NB and SB through on JYP
SR 423 (JYP) at SR 416 (Silver Star Rd)	455	City of Orlando	Y	31	200	NB and SB through on JYP
SR 423 (JYP) at Shader Road	457	City of Orlando	Y	31	200	NB and SB through on JYP
SR 423 (JYP/Lee Road) at US 441 (OBT)	519	City of Orlando	Y	31	200	NB and SB through on Lee Road
SR 423 (Lee Rd) at SR 424 (Edgewater)	101	Orange County	Y	108	180	EB and WB through on Lee Road
SR 423 (Lee Road) at Kingswood Drive	160	Orange County	Y	108	180	EB and WB through on Lee Road
SR 423 (Lee Road) at Adanson Street	2	Orange County	Y	108	180	EB and WB through on Lee Road
SR 423 (Lee Road) at Diplomat Circle	92	Orange County	Y	4/4/1	180	EB and WB through on Lee Road
SR 423 (Lee Road) at I-4 WB Ramps	141	Orange County	Y	4/4/1	180	Eastbound through and southbound right turn
SR 423 (Lee Road) at I-4 EB Ramps						Eastbound left turn to I-4 Eastbound
SR 423 (Lee Road) at Wymore Road	173	Orange County	Y	4/4/1	180	Eastbound through on Lee Road to prevent jamming

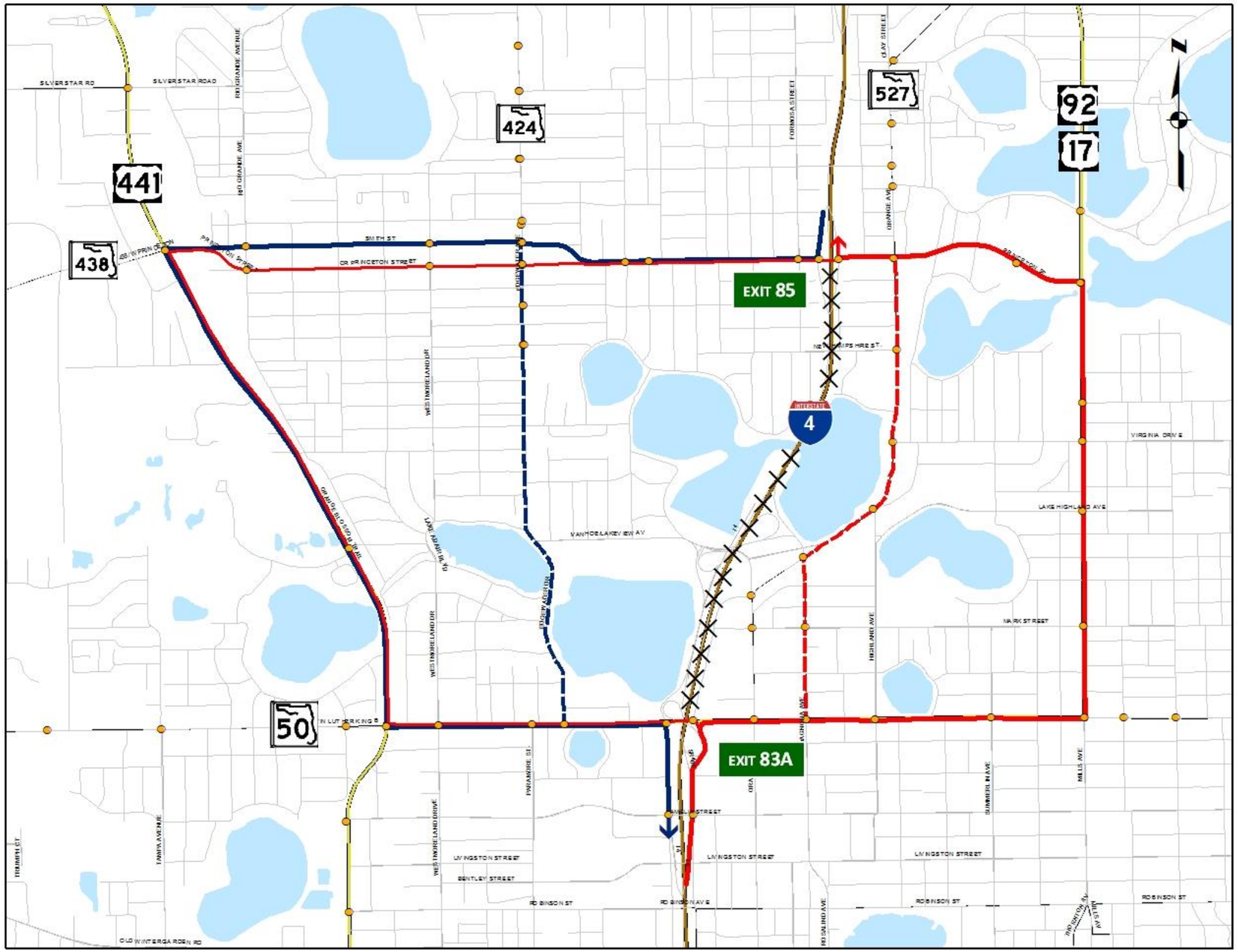
City of Orlando ATMS Flex Group:	Diversion-JYP1
	Diversion-LEE1
Orange County MaxView Action Set:	I-4 Div - JYP1


441
50
EXIT 83A
EXIT 80A
4
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Orange County Signal
City of Orlando Signal
Updated July 13, 2018
0 0.15 0.3 0.6 0.9
Miles
FDOT
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 50/Colonial Drive to
US 17/Orange Blossom Trail

Westbound Diversion Only

EXIT 83A TO EXIT 80A	SR 50 / Colonial Drive US 17-92 / Orange Blossom				I-4 WB	DISTRICT FIVE ICM
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
I-4 WB / Hughley at SR 50 / Colonial	70	City of Orlando	Y	28	200	Southbound right turn onto SR 50 / Colonial Dr WB
SR 50 / Colonial Dr at Edgewater Dr	119	City of Orlando	Y	28	200	Westbound through on SR 50 / Colonial Dr
SR 50 / Colonial Dr at Parramore Ave	121	City of Orlando	Y	28	200	Westbound through on SR 50 / Colonial Dr
SR 50 / Colonial Dr at Westmoreland Dr	123	City of Orlando	Y	28	200	Westbound through on SR 50 / Colonial Dr
SR 50 / Colonial Dr at US 441 / OBT	120	City of Orlando	Y	28	Free	Westbound left turn onto US 441 / OBT SB
US 441 / OBT at Amelia St	246	City of Orlando	Y	28	200	Southbound through on US 441 / OBT
US 441 / OBT at Robinson St	264	City of Orlando	Y	28	200	Southbound through on US 441 / OBT
US 441 / OBT at Washington St	266	City of Orlando	Y	28	200	Southbound through on US 441 / OBT
US 441 / OBT at Central Blvd	249	City of Orlando	Y	28	200	Southbound through on US 441 / OBT
US 441 / OBT at Church St	250	City of Orlando	Y	28	200	Southbound through on US 441 / OBT
US 441 / OBT at South St	265	City of Orlando	Y	28	200	Southbound through on US 441 / OBT
US 441 / OBT at Anderson St	247	City of Orlando	Y	28	200	Southbound through on US 441 / OBT
US 441 / OBT at Carter St / Long St	248	City of Orlando	Y	28	200	Southbound through on US 441 / OBT
US 441 / OBT at Gore St	254	City of Orlando	Y	28	200	Southbound through on US 441 / OBT
US 441 / OBT at Grand St	257	City of Orlando	Y	28	200	Southbound through on US 441 / OBT
US 441 / OBT at Kaley Ave	155	Orange County	Y	104	200	Southbound through on US 441 / OBT
US 441 / OBT at Michigan St	188	Orange County	Y	104	200	Southbound through on US 441 / OBT
US 441 / OBT at 29th Street	199	Orange County	Y	104	200	Southbound through on US 441 / OBT

City of Orlando ATMS Flex Group:	I-4 Diversion Section 5
Orange County MaxView Action Set:	I-4 Div - Sec 4 & 5



LEGEND

Routes

- Primary Diversion Eastbound
- Primary Diversion Westbound
- Secondary Diversion Eastbound
- Secondary Diversion Westbound
- Closed Section

Traffic Signals

- Seminole County Signal
- Orange County Signal
- City of Orlando Signal

Updated July 13, 2018

0 0.1 0.2 0.4 0.6
Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 50/Colonial Dr to
SR 438/Princeton St

EXIT 83A TO EXIT 85 — SR 50 / Colonial Drive — SR 438 / Princeton Street — I-4 EB EAST

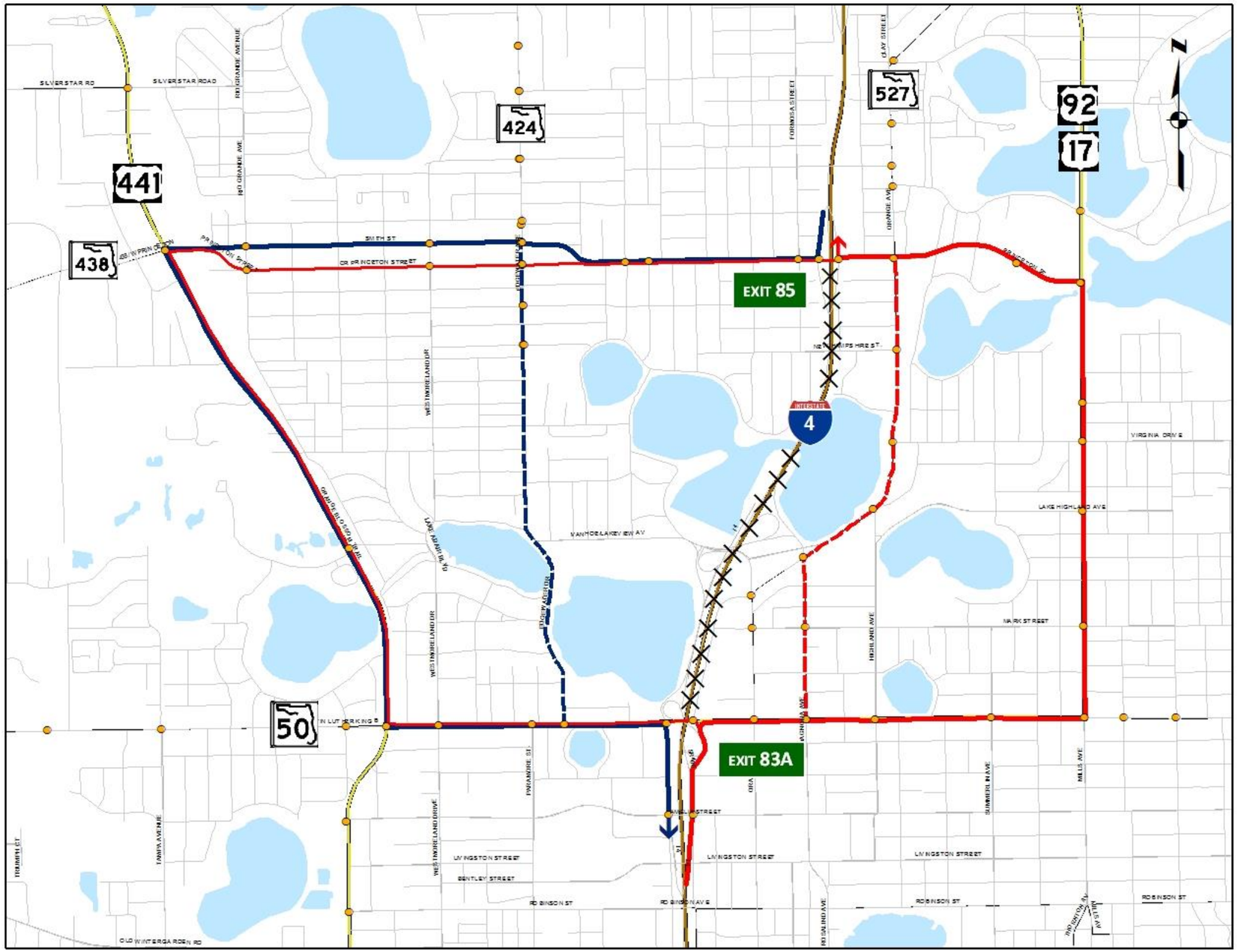
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 50 (Colonial) at Hughey Ave/I-4 WB	70	City of Orlando	Y	29	200	Westbound through to prevent jamming
SR 50 (Colonial) at I-4 EB/Garland Ave	67	City of Orlando	Y	29	200	Northbound right turn onto SR 50
SR 50 (Colonial) at SR 527 (Orange Ave)	73	City of Orlando	Y	29	200	Eastbound through on SR 50
SR 50 (Colonial Dr) at Magnolia Ave	71	City of Orlando	Y	29	200	Eastbound through on SR 50
SR 50 (Colonial Dr) at Highland Ave	69	City of Orlando	Y	29	200	Eastbound through on SR 50
SR 50 (Colonial Dr) at Summerlin Ave	76	City of Orlando	Y	29	200	Eastbound through on SR 50
SR 50 (Colonial) at US 17/92 (Mills)	72	City of Orlando	Y	29	200	Eastbound left turn onto US 17/92 northbound
US 17/92 (Mills Ave) at Marks St	203	City of Orlando	Y	29	200	Northbound through on US 17/92
US 17/92 (Mills) at Lake Highland Dr	202	City of Orlando	Y	29	200	Northbound through on US 17/92
US 17/92 (Mills Ave) at Virginia Dr	207	City of Orlando	Y	29	200	Northbound through on US 17/92
US 17/92 (Mills Ave) at Nebraska St	204	City of Orlando	Y	29	200	Northbound through on US 17/92
US 17/92 (Mills) at SR 438 (Princeton)	205	City of Orlando	Y	29	150	Northbound left turn onto Princeton Westbound
SR 438 (Princeton St) at Science Center	637	City of Orlando	Y	29	150	Westbound through on Princeton
SR 438 (Princeton St) at Alden Road	643	City of Orlando	Y	29	150	Westbound through on Princeton
SR 438 (Princeton) at SR 527 (Orange)	188	City of Orlando	Y	29	150	Westbound through (and NB left if Secondary used)
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	29	150	Westbound right turn onto I-4 eastbound
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	29	150	Westbound through on Princeton to prevent jamming
SR 438 (Princeton St) at Formosa Ave	176	City of Orlando	Y	29	150	Westbound through on Princeton to prevent jamming
SR 527 (Magnolia Ave) at Marks St	184	City of Orlando	Y	29	150	Secondary - Northbound through on Magnolia
SR 527 (Orange Ave) at Marks St	186	City of Orlando	Y	29	150	Secondary - Southbound through on Orange Ave
SR 527 (Orange Ave) at Garland/Legion	177	City of Orlando	Y	29	150	Secondary - Northbound through on Orange Ave
SR 527 (Orange Ave) at Magnolia Ave	185	City of Orlando	Y	29	150	Secondary - Northbound through on Orange Ave
SR 527 (Orange Ave) at Highland Ave	180	City of Orlando	Y	29	150	Secondary - Northbound through on Orange Ave
SR 527 (Orange Ave) at Virginia Drive	190	City of Orlando	Y	29	150	Secondary - Northbound through on Orange Ave
SR 527 (Orange) at New Hampshire St	187	City of Orlando	Y	29	150	Secondary - Northbound through on Orange Ave

EXIT 85 TO EXIT 83A — SR 438 / Princeton Street — SR 50 / Colonial Drive — I-4 WB EAST

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 438 (Princeton St) at Formosa Ave	176	City of Orlando	Y	30	150	Westbound through on Princeton to avoid jamming
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	30	150	Southbound left turn onto eastbound Princeton
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	30	150	Eastbound through on Princeton
SR 438 (Princeton) at SR 527 (Orange)	188	City of Orlando	Y	30	150	Eastbound through and right
SR 438 (Princeton St) at Alden Road	643	City of Orlando	Y	30	150	Eastbound through on Princeton
SR 438 (Princeton St) at Science Center	637	City of Orlando	Y	30	150	Eastbound through on Princeton
US 17/92 (Mills) at SR 438 (Princeton)	205	City of Orlando	Y	30	150	Eastbound right turn at US 17/92
US 17/92 (Mills Ave) at Nebraska St	204	City of Orlando	Y	30	200	Southbound through on US 17/92
US 17/92 (Mills Ave) at Virginia Dr	207	City of Orlando	Y	30	200	Southbound through on US 17/92
US 17/92 (Mills) at Lake Highland Dr	202	City of Orlando	Y	30	200	Southbound through on US 17/92
US 17/92 (Mills Ave) at Marks St	203	City of Orlando	Y	30	200	Southbound through on US 17/92
SR 50 (Colonial) at US 17/92 (Mills)	72	City of Orlando	Y	30	200	Southbound right turn onto SR 50 westbound
SR 50 (Colonial Dr) at Summerlin Ave	76	City of Orlando	Y	30	200	Westbound through on SR 50
SR 50 (Colonial Dr) at Highland Ave	69	City of Orlando	Y	30	200	Westbound through on SR 50
SR 50 (Colonial Dr) at Magnolia Ave	71	City of Orlando	Y	30	200	Westbound through on SR 50
SR 50 (Colonial) at SR 527 (Orange Ave)	73	City of Orlando	Y	30	200	Westbound through on SR 50
SR 50 (Colonial) at I-4 EB/Garland Ave	67	City of Orlando	Y	30	200	Westbound through on SR 50
SR 50 (Colonial) at Hughey Ave/I-4 WB	70	City of Orlando	Y	30	200	Westbound left turn onto I-4 WB
SR 527 (Orange) at New Hampshire St	187	City of Orlando	Y	30	150	Secondary - Southbound through on Orange
SR 527 (Orange Ave) at Virginia Drive	190	City of Orlando	Y	30	150	Secondary - Southbound through on Orange
SR 527 (Orange Ave) at Highland Ave	180	City of Orlando	Y	30	150	Secondary - Southbound through on Orange
SR 527 (Orange Ave) at Magnolia Ave	185	City of Orlando	Y	30	150	Secondary - Southbound through on Orange
SR 527 (Orange Ave) at Garland/Legion	177	City of Orlando	Y	30	150	Secondary - Southbound through on Orange
SR 527 (Orange Ave) at Marks St	186	City of Orlando	Y	30	150	Secondary - Southbound through on Orange
SR 527 (Magnolia Ave) at Marks St	184	City of Orlando	Y	30	150	Secondary - Northbound through on Magnolia

City of Orlando ATMS Flex Group:	Diversion-COL1
	Diversion-MILL1
	Diversion-PRI2
	Diversion-ORG1
	Diversion-ORG1_S

See Next Page for BiDirectional Diversion



LEGEND

Routes

- Primary Diversion Eastbound
- Primary Diversion Westbound
- Secondary Diversion Eastbound
- Secondary Diversion Westbound
- Closed Section

Traffic Signals

- Seminole County Signal
- Orange County Signal
- City of Orlando Signal

Updated July 13, 2018

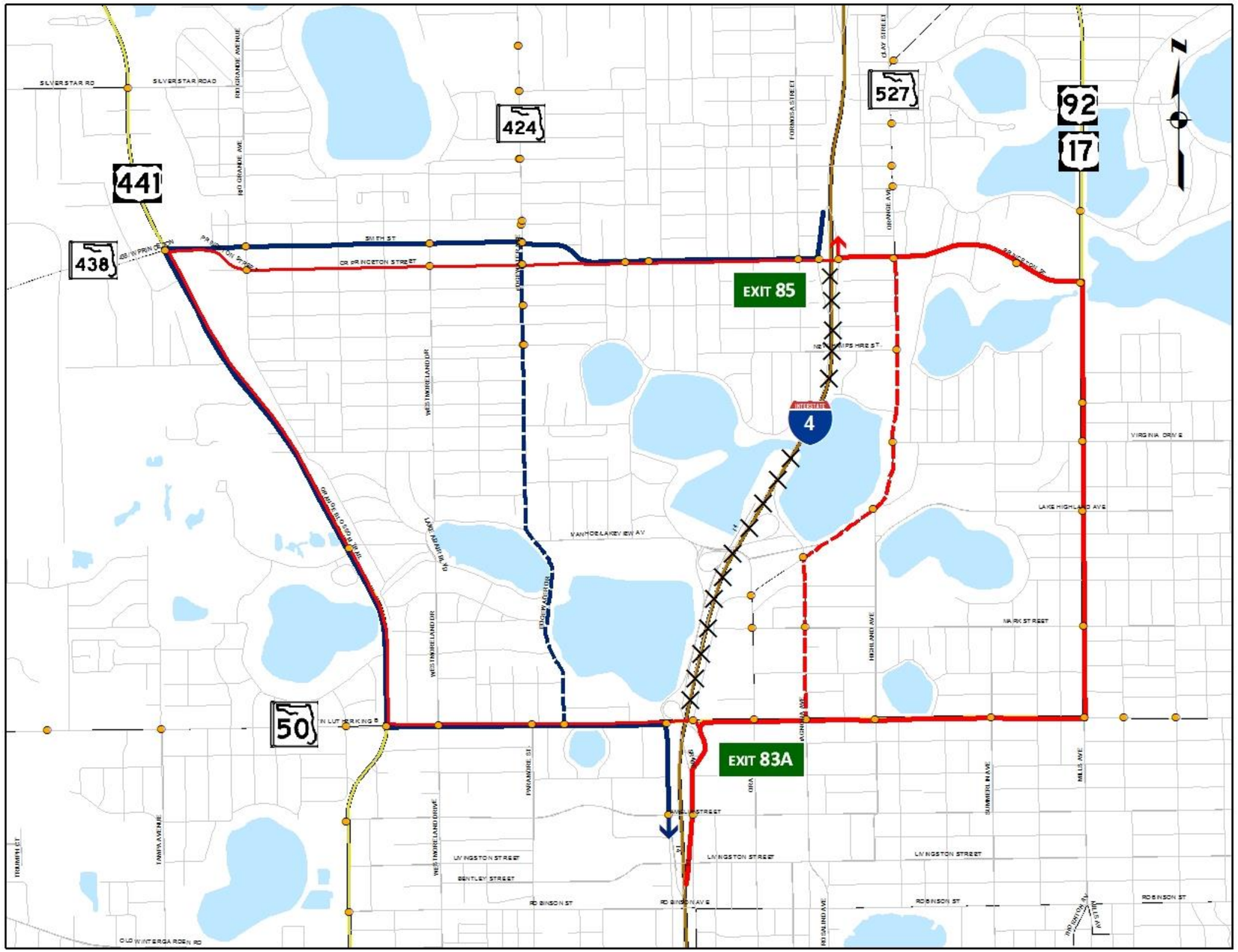
0 0.1 0.2 0.4 0.6
Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 50/Colonial Dr to
SR 438/Princeton St

EXIT 83A TO EXIT 85	SR 50 / Colonial Drive SR 438 / Princeton Street				I-4 BiD EAST	DISTRICT FIVE ICM
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 50 (Colonial) at Hughey Ave/I-4 WB	70	City of Orlando	Y	31	200	Westbound through to prevent jamming
SR 50 (Colonial) at I-4 EB/Garland Ave	67	City of Orlando	Y	31	200	Northbound right turn onto SR 50
SR 50 (Colonial) at SR 527 (Orange Ave)	73	City of Orlando	Y	31	200	Eastbound through on SR 50
SR 50 (Colonial Dr) at Magnolia Ave	71	City of Orlando	Y	31	200	Eastbound through on SR 50
SR 50 (Colonial Dr) at Highland Ave	69	City of Orlando	Y	31	200	Eastbound through on SR 50
SR 50 (Colonial Dr) at Summerlin Ave	76	City of Orlando	Y	31	200	Eastbound through on SR 50
SR 50 (Colonial) at US 17/92 (Mills)	72	City of Orlando	Y	31	200	Eastbound left turn onto US 17/92 northbound
US 17/92 (Mills Ave) at Marks St	203	City of Orlando	Y	31	200	Northbound through on US 17/92
US 17/92 (Mills) at Lake Highland Dr	202	City of Orlando	Y	31	200	Northbound through on US 17/92
US 17/92 (Mills Ave) at Virginia Dr	207	City of Orlando	Y	31	200	Northbound through on US 17/92
US 17/92 (Mills Ave) at Nebraska St	204	City of Orlando	Y	31	200	Northbound through on US 17/92
US 17/92 (Mills) at SR 438 (Princeton)	205	City of Orlando	Y	31	150	Northbound left turn onto Princeton Westbound
SR 438 (Princeton St) at Science Center	637	City of Orlando	Y	31	150	Westbound through on Princeton
SR 438 (Princeton St) at Alden Road	643	City of Orlando	Y	31	150	Westbound through on Princeton
SR 438 (Princeton) at SR 527 (Orange)	188	City of Orlando	Y	31	150	Westbound through (and NB left if Secondary used)
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	31	150	Westbound right turn onto I-4 eastbound
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	31	150	Westbound through on Princeton to prevent jamming
SR 438 (Princeton St) at Formosa Ave	176	City of Orlando	Y	31	150	Westbound through on Princeton to prevent jamming
SR 527 (Magnolia Ave) at Marks St	184	City of Orlando	Y	31	150	Secondary - Northbound through on Magnolia
SR 527 (Orange Ave) at Marks St	186	City of Orlando	Y	31	150	Secondary - Southbound through on Orange Ave
SR 527 (Orange Ave) at Garland/Legion	177	City of Orlando	Y	31	150	Secondary - Northbound through on Orange Ave
SR 527 (Orange Ave) at Magnolia Ave	185	City of Orlando	Y	31	150	Secondary - Northbound through on Orange Ave
SR 527 (Orange Ave) at Highland Ave	180	City of Orlando	Y	31	150	Secondary - Northbound through on Orange Ave
SR 527 (Orange Ave) at Virginia Drive	190	City of Orlando	Y	31	150	Secondary - Northbound through on Orange Ave
SR 527 (Orange) at New Hampshire St	187	City of Orlando	Y	31	150	Secondary - Northbound through on Orange Ave

City of Orlando ATMS Flex Group:	Diversion-COL1
	Diversion-MILL1
	Diversion-PRI2
	Diversion-ORG1
	Diversion-ORG1_S



LEGEND

Routes

- Primary Diversion Eastbound
- Primary Diversion Westbound
- Secondary Diversion Eastbound
- Secondary Diversion Westbound
- Closed Section

Traffic Signals

- Seminole County Signal
- Orange County Signal
- City of Orlando Signal

Updated July 13, 2018

0 0.1 0.2 0.4 0.6
Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 50/Colonial Dr to
SR 438/Princeton St

EXIT 83A TO EXIT 85 — SR 50 / Colonial Drive — SR 438 / Princeton Street — I-4 EB WEST

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 50 (Colonial Dr) at I-4 EB/Garland	67	City of Orlando	Y	29	200	Northbound left turn onto SR 50 westbound
SR 50 (Colonial) at Hughey/I-4 WB Exit	70	City of Orlando	Y	29	200	Westbound through on SR 50
SR 50 (Colonial) at SR 424 (Edgewater)	119	City of Orlando	Y	29	200	Westbound through on SR 50
SR 50 (Colonial Dr) at Parramore Ave	121	City of Orlando	Y	29	200	Westbound through on SR 50
SR 50 (Colonial Dr) at Westmoreland Dr	123	City of Orlando	Y	29	200	Westbound through on SR 50
SR 50 (Colonial Dr) at US 441 (OBT)	120	City of Orlando	Y	29	200	Westbound right turn onto US 441 (OBT) northbound
US 441 (OBT) at Country Club Dr	124	City of Orlando	Y	29	180	Northbound through on US 441
US 441 (OBT) at SR 438 (Princeton St)	165	City of Orlando	Y	29	180	Northbound right turn onto SR 438 eastbound
SR 438 (Princeton St) at Rio Grande Ave	169	City of Orlando	Y	29	100	Eastbound through on SR 438
SR 438 (Princeton) at Westmoreland	170	City of Orlando	Y	29	100	Eastbound through on SR 438
SR 424(Edgewater) at SR 438(Princeton)	427	City of Orlando	Y	29	150	Eastbound through on SR 438
SR 438 (Princeton St) at Harrison Ave	178	City of Orlando	Y	29	150	Eastbound through on SR 438
SR 438 (Princeton St) at Formosa Ave	176	City of Orlando	Y	29	150	Eastbound through on SR 438
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	29	150	Eastbound through on SR 438
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	29	150	Eastbound left turn onto I-4 eastbound
SR 424 (Edgewater Dr) at Dartmouth St	424	City of Orlando	Y	29	150	Secondary - Northbound through on SR 424
SR 424 (Edgewater Dr) at Yale St	431	City of Orlando	Y	29	150	Secondary - Northbound through on SR 424

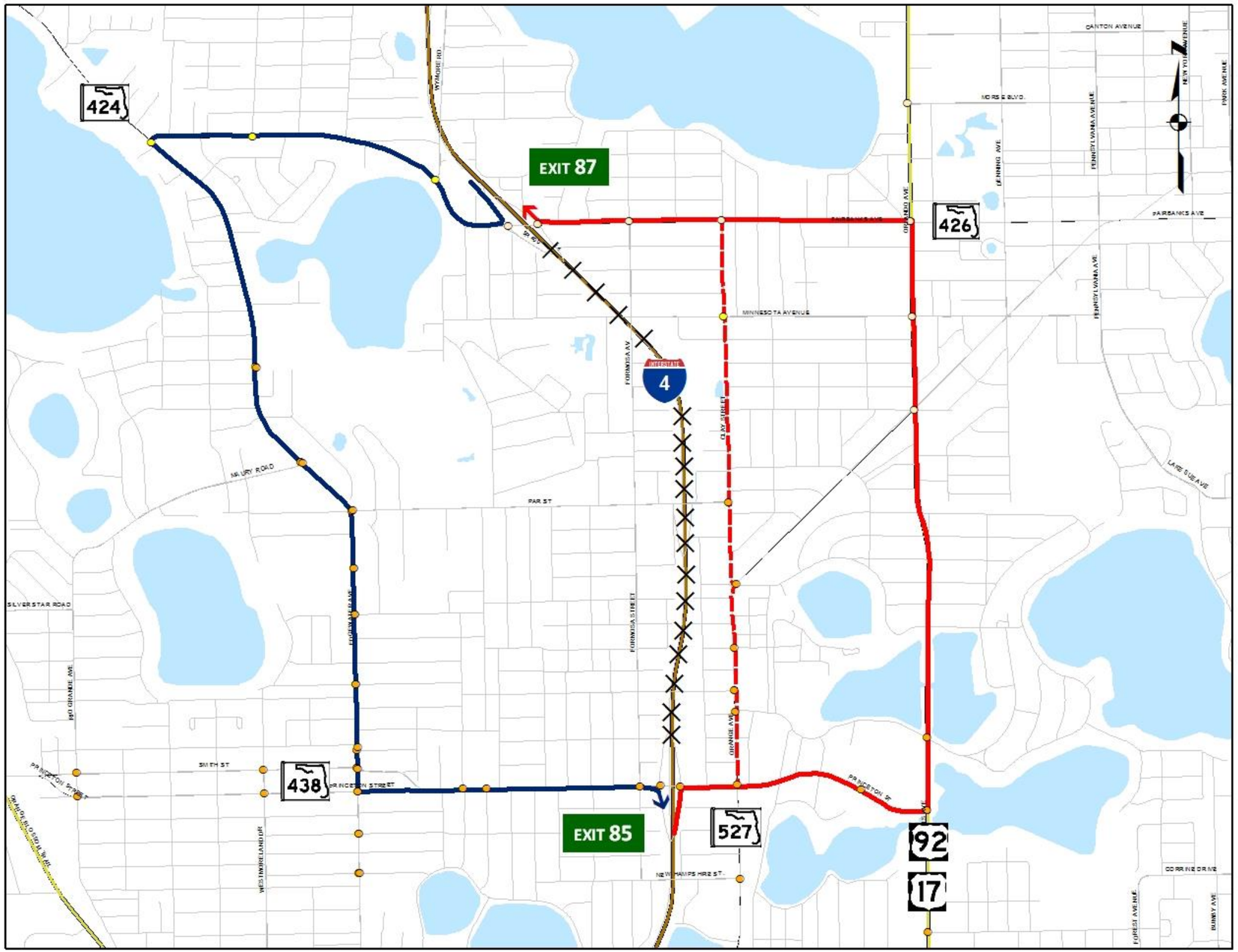
EXIT 85 TO EXIT 83A — SR 438 / Princeton Street — SR 50 / Colonial Drive — I-4 WB WEST

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	30	150	Eastbound through on Princeton to avoid jamming
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	30	150	Southbound right turn onto Princeton westbound
SR 438 (Princeton St) at Formosa Ave	176	City of Orlando	Y	30	150	Westbound through on Princeton
SR 438 (Princeton St) at Harrison Ave	178	City of Orlando	Y	30	150	Westbound through on Princeton
SR 424(Edgewater) at SR 438(Princeton)	427	City of Orlando	Y	30	150	Westbound through on Princeton
SR 438 (Smith) at Westmoreland	172	City of Orlando	Y	30	100	Westbound through on Smith
SR 438 (Smith) at Rio Grande Ave	171	City of Orlando	Y	30	100	Westbound through on Smith
US 441 (OBT) at SR 438 (Princeton St)	165	City of Orlando	Y	30	180	Westbound left turn onto US 441 (OBT) Southbound
US 441 (OBT) at Country Club Dr	124	City of Orlando	Y	30	180	Southbound through on US 441 (OBT)
SR 50 (Colonial Dr) at US 441 (OBT)	120	City of Orlando	Y	30	200	Southbound left turn onto SR 50 Eastbound
SR 50 (Colonial Dr) at Westmoreland Dr	123	City of Orlando	Y	30	200	Eastbound through on SR 50
SR 50 (Colonial Dr) at Parramore Ave	121	City of Orlando	Y	30	200	Eastbound through on SR 50
SR 50 (Colonial) at SR 424 (Edgewater)	119	City of Orlando	Y	30	200	Eastbound through on SR 50
SR 50 (Colonial) at Hughey/I-4 WB Exit	70	City of Orlando	Y	30	200	Eastbound right turn onto I-4 WB
SR 50 (Colonial Dr) at I-4 EB/Garland	67	City of Orlando	Y	30	200	Eastbound through to avoid jamming
SR 424 (Edgewater Dr) at Yale St	431	City of Orlando	Y	30	150	Secondary - Southbound through on SR 424
SR 424 (Edgewater Dr) at Dartmouth St	424	City of Orlando	Y	30	150	Secondary - Southbound through on SR 424

EXIT 83A TO EXIT 85 — SR 50 / Colonial Drive — SR 438 / Princeton Street — I-4 BiD WEST

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 50 (Colonial Dr) at I-4 EB/Garland	67	City of Orlando	Y	31	200	Northbound left turn onto SR 50
SR 50 (Colonial) at Hughey/I-4 WB Exit	70	City of Orlando	Y	31	200	Westbound through and eastbound right turn
SR 50 (Colonial) at SR 424 (Edgewater)	119	City of Orlando	Y	31	200	EB and WB through on SR 50
SR 50 (Colonial Dr) at Parramore Ave	121	City of Orlando	Y	31	200	EB and WB through on SR 50
SR 50 (Colonial Dr) at Westmoreland Dr	123	City of Orlando	Y	31	200	EB and WB through on SR 50
SR 50 (Colonial Dr) at US 441 (OBT)	120	City of Orlando	Y	31	200	Southbound left turn and westbound right turn
US 441 (OBT) at Country Club Dr	124	City of Orlando	Y	31	180	NB and SB through on US 441 (OBT)
US 441 (OBT) at SR 438 (Princeton St)	165	City of Orlando	Y	31	180	Northbound right turn and westbound left turn
SR 438 (Princeton St) at Rio Grande Ave	169	City of Orlando	Y	31	100	Eastbound through on Princeton
SR 438 (Princeton) at Westmoreland	170	City of Orlando	Y	31	100	Eastbound through on Princeton
SR 438 (Smith) at Westmoreland	172	City of Orlando	Y	31	100	Westbound through on Smith
SR 438 (Smith) at Rio Grande Ave	171	City of Orlando	Y	31	100	Westbound through on Smith
SR 424(Edgewater) at SR 438(Princeton)	427	City of Orlando	Y	31	150	EB and WB through on Princeton
SR 438 (Princeton St) at Harrison Ave	178	City of Orlando	Y	31	150	EB and WB through on Princeton
SR 438 (Princeton St) at Formosa Ave	176	City of Orlando	Y	31	150	EB and WB through on Princeton
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	31	150	Southbound right turn and eastbound through
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	31	150	Eastbound left turn onto I-4 eastbound
SR 424 (Edgewater Dr) at Dartmouth St	424	City of Orlando	Y	31	150	Secondary - NB and SB through on SR 424
SR 424 (Edgewater Dr) at Yale St	431	City of Orlando	Y	31	150	Secondary - NB and SB through on SR 424

City of Orlando ATMS Flex Group:
Diversion-COL1
Diversion-OBT1
Diversion-PRI1
Diversion-EDGE1



LEGEND

Routes

- Primary Diversion Eastbound
- Primary Diversion Westbound
- Secondary Diversion Eastbound
- Secondary Diversion Westbound
- Closed Section

Traffic Signals

- Seminole County Signal
- Orange County Signal
- City of Orlando Signal
- City of Winter Park Signal

Updated July 13, 2018

0 0.1 0.2 0.4 0.6
Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 438/Princeton St to
SR 426/Fairbanks Ave

EXIT 85 TO EXIT 87 — SR 438 / Princeton Street — SR 426 / Fairbanks Avenue — I-4 EB EAST

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	29	150	Westbound through on Princeton to avoid jamming
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	29	150	Northbound right turn onto Princeton eastbound
SR 438 (Princeton) at SR 527 (Orange)	188	City of Orlando	Y	29	150	Eastbound through and left
SR 438 (Princeton St) at Alden Road	643	City of Orlando	Y	29	150	Eastbound through on Princeton
SR 438 (Princeton St) at Science Center	637	City of Orlando	Y	29	150	Eastbound through on Princeton
US 17/92 (Mills) at SR 438 (Princeton)	205	City of Orlando	Y	29	150	Eastbound left turn onto US 17/92 northbound
US 17/92 (Mills) at Lake Shore/Rollins	206	City of Orlando	Y	29	150	Northbound through on US 17/92
US 17/92 (Orlando) at SR 527 (Orange)	3030	City of Winter Park	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando Av) at Minnesota Av	3025	City of Winter Park	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando) at SR 426 (Fairbanks)	3020	City of Winter Park	Y	100	220	Northbound left turn onto SR 426 westbound
SR 426 (Fairbanks Av) at Clay St	1017	City of Winter Park	Y	100	220	Westbound through on SR 426
SR 426 (Fairbanks Av) at Formosa Av	1016	City of Winter Park	Y	100	220	Westbound through on SR 426
SR 426 (Fairbanks Av) at I-4 EB Ramps	1018	FDOT	Y	4/1/1	220	Westbound right turn onto I-4 eastbound
SR 426 (Fairbanks Av) at I-4 WB Ramps						Westbound through on SR 426 to avoid jamming
SR 527 (Orange Av) at Rollins St	189	City of Orlando	Y	29	150	Secondary - northbound through on SR 527
SR 527 (Orange Av) at Winter Park St	191	City of Orlando	Y	29	150	Secondary - northbound through on SR 527
SR 527 (Orange Av) at King St	183	City of Orlando	Y	29	150	Secondary - northbound through on SR 527
SR 527 (Orange) at Wilkinson/Clay	174	City of Orlando	Y	29	150	Secondary - northbound through on SR 527
Clay Av at Par St	173	City of Orlando	N	29	150	Secondary - northbound through on Clay Ave
Clay St at Minnesota Av	56	Orange County	N	4/1/1	150	Secondary - northbound through on Clay Ave

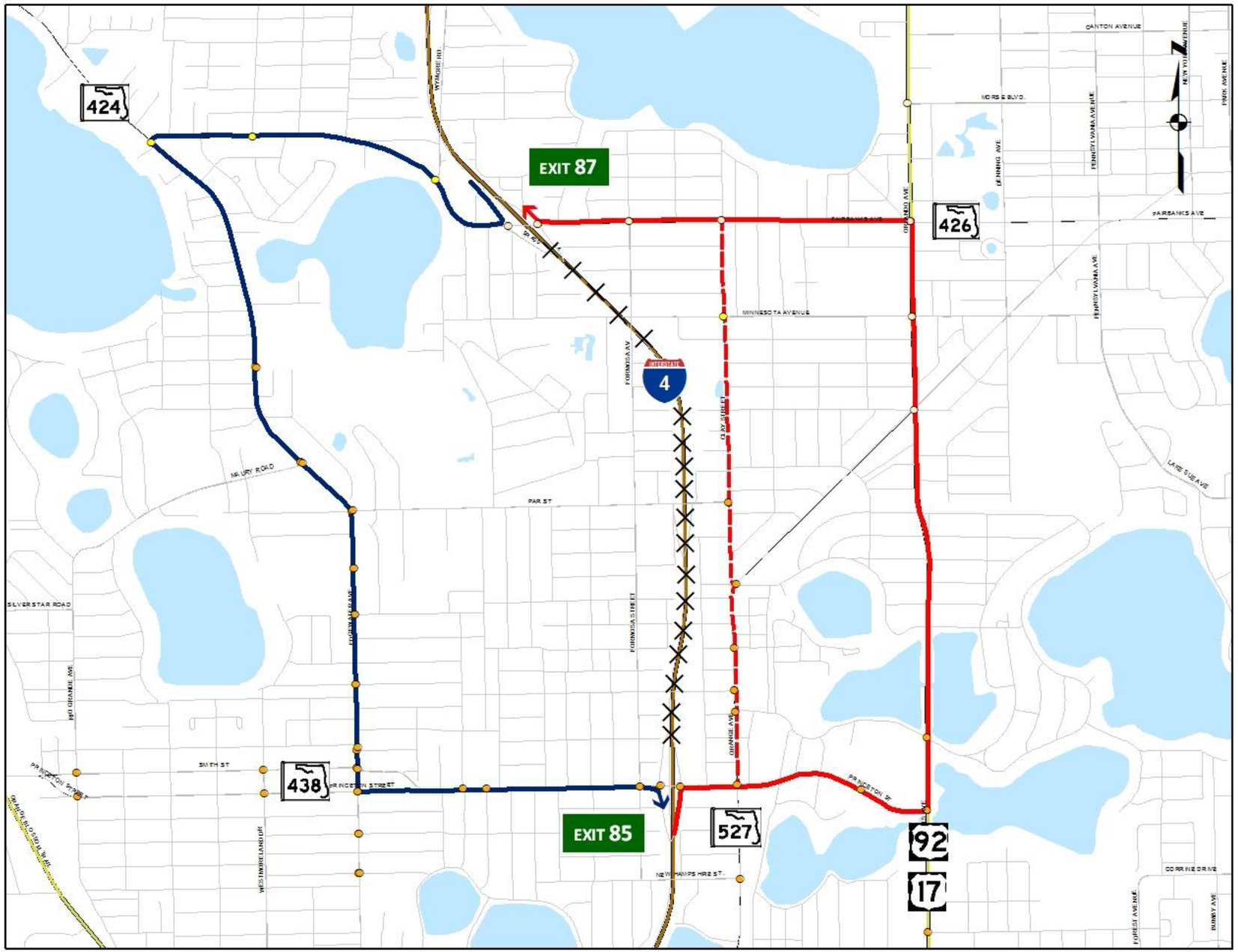
EXIT 87 TO EXIT 85 — SR 426 / Fairbanks Avenue — SR 438 / Princeton Street — I-4 WB EAST

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 426 (Fairbanks Av) at I-4 WB Ramps	1018	FDOT	Y	4/2/1	220	Southbound left onto SR 426 eastbound
SR 426 (Fairbanks Av) at I-4 EB Ramps						Eastbound through on SR 426
SR 426 (Fairbanks Av) at Formosa Av	1016	City of Winter Park	Y	4/4/1	220	Eastbound through on SR 426
SR 426 (Fairbanks Av) at Clay St	1017	City of Winter Park	Y	4/4/1	220	Eastbound through and right
US 17/92 (Orlando) at SR 426 (Fairbanks)	3020	City of Winter Park	Y	101	220	Eastbound right turn onto US 17/92 southbound
US 17/92 (Orlando Av) at Minnesota Av	3025	City of Winter Park	Y	101	220	Southbound through on US 17/92
US 17/92 (Orlando) at SR 527 (Orange)	3030	City of Winter Park	Y	101	220	Southbound through on US 17/92
US 17/92 (Mills) at Lake Shore/Rollins	206	City of Orlando	Y	30	150	Southbound through on US 17/92
US 17/92 (Mills) at SR 438 (Princeton)	205	City of Orlando	Y	30	150	Southbound right turn onto SR 438 westbound
SR 438 (Princeton St) at Science Center	637	City of Orlando	Y	30	150	Westbound through on SR 438
SR 438 (Princeton St) at Alden Road	643	City of Orlando	Y	30	150	Westbound through on SR 438
SR 438 (Princeton) at SR 527 (Orange)	188	City of Orlando	Y	30	150	Westbound through on SR 438
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	30	150	Westbound through on SR 438
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	30	150	Westbound left turn onto I-4 westbound
Clay St at Minnesota Av	56	Orange County	N	4/4/1	150	Secondary - southbound through on SR 527
Clay Av at Par St	173	City of Orlando	N	30	150	Secondary - southbound through on SR 527
SR 527 (Orange) at Wilkinson/Clay	174	City of Orlando	Y	30	150	Secondary - southbound through on SR 527
SR 527 (Orange Av) at King St	183	City of Orlando	Y	30	150	Secondary - southbound through on SR 527
SR 527 (Orange Av) at Winter Park St	191	City of Orlando	Y	30	150	Secondary - southbound through on SR 527
SR 527 (Orange Av) at Rollins St	189	City of Orlando	Y	30	150	Secondary - southbound through on SR 527

EXIT 85 TO EXIT 87 — SR 438 / Princeton Street — SR 426 / Fairbanks Avenue — I-4 BiD EAST

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	31	150	Westbound left turn onto I-4 Westbound
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	31	150	Northbound right turn and westbound through
SR 438 (Princeton) at SR 527 (Orange)	188	City of Orlando	Y	31	150	EB and WB through
SR 438 (Princeton St) at Alden Road	643	City of Orlando	Y	31	150	EB and WB through on Princeton
SR 438 (Princeton St) at Science Center	637	City of Orlando	Y	31	150	EB and WB through on Princeton
US 17/92 (Mills) at SR 438 (Princeton)	205	City of Orlando	Y	31	150	Eastbound left turn and southbound right turn
US 17/92 (Mills) at Lake Shore/Rollins	206	City of Orlando	Y	31	150	NB and SB through on US 17/92
US 17/92 (Orlando) at SR 527 (Orange)	3030	City of Winter Park	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando Av) at Minnesota Av	3025	City of Winter Park	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando) at SR 426 (Fairbanks)	3020	City of Winter Park	Y	102	220	Northbound left turn and eastbound right turn
SR 426 (Fairbanks Av) at Clay St	1017	City of Winter Park	Y	4/4/1	220	EB and WB through on SR 426
SR 426 (Fairbanks Av) at Formosa Av	1016	City of Winter Park	Y	4/4/1	220	EB and WB through on SR 426
SR 426 (Fairbanks Av) at I-4 EB Ramps	1018	FDOT	Y	4/4/1	220	Westbound right turn and eastbound through
SR 426 (Fairbanks Av) at I-4 WB Ramps					220	Southbound left turn onto SR 426 eastbound
SR 527 (Orange Av) at Rollins St	189	City of Orlando	Y	31	150	Secondary - NB and SB through on SR 527
SR 527 (Orange Av) at Winter Park St	191	City of Orlando	Y	31	150	Secondary - NB and SB through on SR 527
SR 527 (Orange Av) at King St	183	City of Orlando	Y	31	150	Secondary - NB and SB through on SR 527
SR 527 (Orange) at Wilkinson/Clay	174	City of Orlando	Y	31	150	Secondary - NB and SB through on SR 527
Clay Av at Par St	173	City of Orlando	N	31	150	Secondary - NB and SB through on Clay Ave
Clay St at Minnesota Av	56	Orange County	N	4/4/1	150	Secondary - NB and SB through on Clay Ave

City of Orlando ATMS Flex Group:	Diversion-PRI2
	Diversion-ORG1
	Diversion-MILL1
	Diversion-EDGE1
FDOT MaxView Action Set:	Winter Park - US 1792



LEGEND

Routes

- Primary Diversion Eastbound
- Primary Diversion Westbound
- Secondary Diversion Eastbound
- Secondary Diversion Westbound
- Closed Section

Traffic Signals

- Seminole County Signal
- Orange County Signal
- City of Orlando Signal
- City of Winter Park Signal

Updated July 13, 2018

0 0.1 0.2 0.4 0.6
Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 438/Princeton St to
SR 426/Fairbanks Ave

EXIT 85 TO EXIT 87 — SR 438 / Princeton Street — SR 426 / Fairbanks Avenue — I-4 EB WEST — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	29	150	Northbound left turn onto westbound SR 438
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	29	150	Westbound through on SR 438
SR 438 (Princeton St) at Formosa Av	176	City of Orlando	Y	29	150	Westbound through on SR 438
SR 438 (Princeton St) at Harrison Av	178	City of Orlando	Y	29	150	Westbound through on SR 438
SR424 (Edgewater) at SR438 (Princeton)	427	City of Orlando	Y	29	150	Westbound right turn onto SR 424 northbound
SR 424 (Edgewater Dr) at Smith St	428	City of Orlando	Y	29	150	Northbound through on SR 424
SR 424 (Edgewater Dr) at Vassar St	429	City of Orlando	Y	29	150	Northbound through on SR 424
SR 424 (Edgewater Dr) at Winter Park St	430	City of Orlando	Y	29	150	Northbound through on SR 424
SR 424 (Edgewater Dr) at Hazel St	425	City of Orlando	Y	29	150	Northbound through on SR 424
SR 424 (Edgewater Dr) at Eagle Way	467	City of Orlando	Y	29	150	Northbound through on SR 424
SR 424 (Edgewater Dr) at Par St	432	City of Orlando	Y	29	150	Northbound through on SR 424
SR 424 (Edgewater Dr) at Maury Road	426	City of Orlando	Y	29	150	Northbound through on SR 424
SR 424 (Edgewater) at Bishop Moore HS	32	Orange County	Y	4/2/1	150	Northbound through on SR 424
SR 424(Edgewater) at SR 426(Fairbanks)	99	Orange County	Y	4/2/1	150	Northbound right turn onto SR 426 eastbound
SR 426 (Fairbanks Av) at Adanson St	1	Orange County	Y	4/2/1	150	Eastbound through on SR 426
SR 426 (Fairbanks Av) at Wymore Road	112	Orange County	Y	4/2/1	150	Eastbound through on SR 426
SR 426 (Fairbanks Av) at I-4 WB Ramps	1018	City of Winter Park	Y	4/1/1	220	Eastbound through on SR 426
SR 426 (Fairbanks Av) at I-4 EB Ramps	1018	City of Winter Park	Y	4/1/1	220	Eastbound left turn onto I-4 eastbound

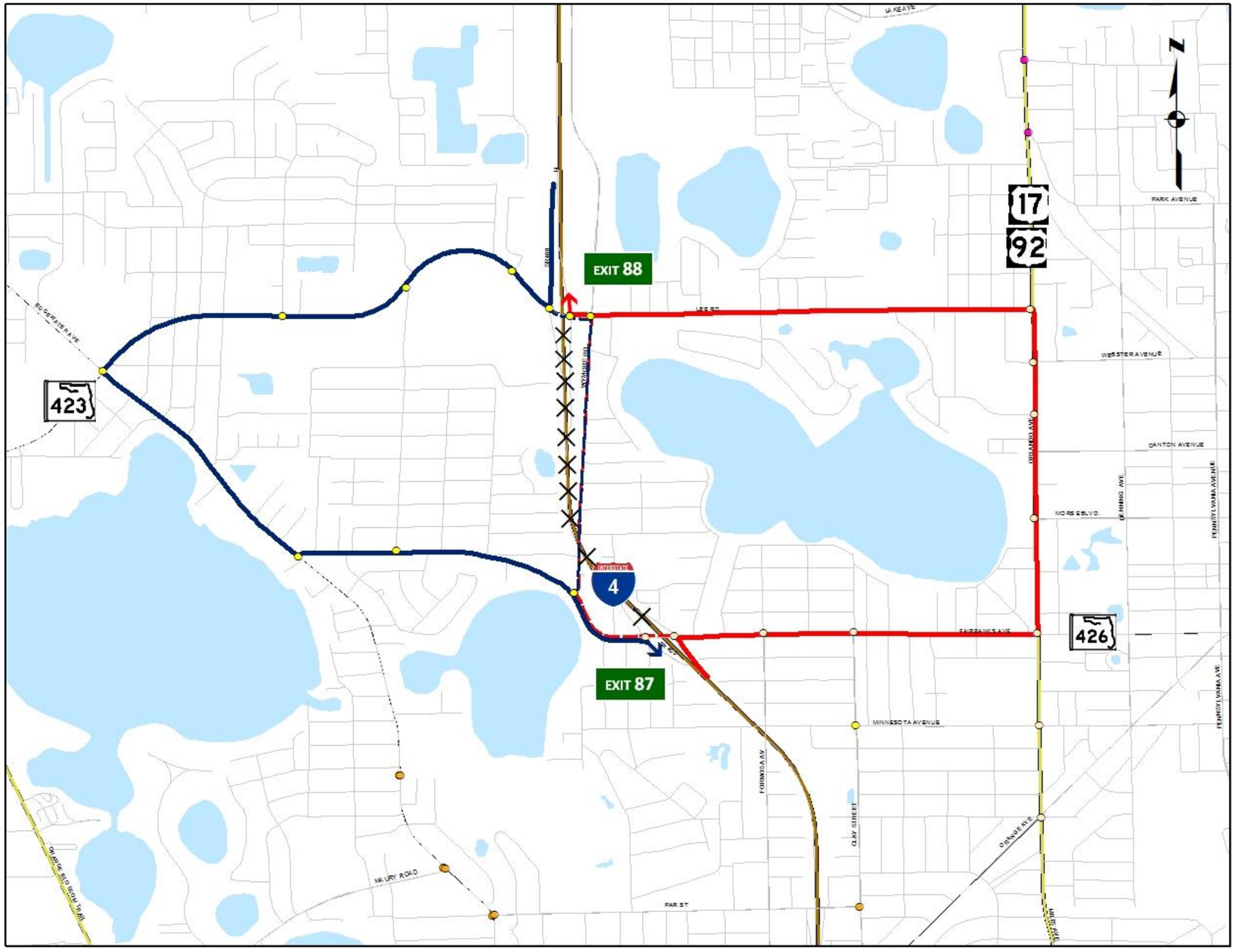
EXIT 87 TO EXIT 85 — SR 426 / Fairbanks Avenue — SR 438 / Princeton Street — I-4 WB WEST — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 426 (Fairbanks Av) at I-4 EB Ramps	1018	City of Winter Park	Y	4/3/1	220	Eastbound through on SR 426 to avoid jamming
SR 426 (Fairbanks Av) at I-4 WB Ramps	1018	City of Winter Park	Y	4/3/1	220	Southbound right turn onto westbound SR 426
SR 426 (Fairbanks Av) at Wymore Road	112	Orange County	Y	4/3/1	150	Westbound through on SR 426
SR 426 (Fairbanks Av) at Adanson St	1	Orange County	Y	4/3/1	150	Westbound through on SR 426
SR 424(Edgewater) at SR 426(Fairbanks)	99	Orange County	Y	4/3/1	150	Westbound left turn onto SR 424 southbound
SR 424 (Edgewater) at Bishop Moore HS	32	Orange County	Y	4/3/1	150	Southbound through on SR 424
SR 424 (Edgewater Dr) at Maury Road	426	City of Orlando	Y	30	150	Southbound through on SR 424
SR 424 (Edgewater Dr) at Par St	432	City of Orlando	Y	30	150	Southbound through on SR 424
SR 424 (Edgewater Dr) at Eagle Way	467	City of Orlando	Y	30	150	Southbound through on SR 424
SR 424 (Edgewater Dr) at Hazel St	425	City of Orlando	Y	30	150	Southbound through on SR 424
SR 424 (Edgewater Dr) at Winter Park St	430	City of Orlando	Y	30	150	Southbound through on SR 424
SR 424 (Edgewater Dr) at Vassar St	429	City of Orlando	Y	30	150	Southbound through on SR 424
SR 424 (Edgewater Dr) at Smith St	428	City of Orlando	Y	30	150	Southbound through on SR 424
SR424 (Edgewater) at SR438 (Princeton)	427	City of Orlando	Y	30	150	Southbound left turn onto SR 438 eastbound
SR 438 (Princeton St) at Harrison Av	178	City of Orlando	Y	30	150	Eastbound through on SR 438
SR 438 (Princeton St) at Formosa Av	176	City of Orlando	Y	30	150	Eastbound through on SR 438
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	30	150	Eastbound right turn onto I-4 westbound
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	30	150	Eastbound through on SR 438 to avoid jamming

EXIT 85 TO EXIT 87 — SR 438 / Princeton Street — SR 426 / Fairbanks Avenue — I-4 BiD WEST — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 438 (Princeton St) at I-4 EB Ramps	181	City of Orlando	Y	31	150	Northbound left turn onto westbound SR 438
SR 438 (Princeton St) at I-4 WB Ramps	182	City of Orlando	Y	31	150	Westbound through and eastbound right turn
SR 438 (Princeton St) at Formosa Av	176	City of Orlando	Y	31	150	EB and WB through on SR 438
SR 438 (Princeton St) at Harrison Av	178	City of Orlando	Y	31	150	EB and WB through on SR 438
SR424 (Edgewater) at SR438 (Princeton)	427	City of Orlando	Y	31	150	Westbound right turn and southbound left turn
SR 424 (Edgewater Dr) at Smith St	428	City of Orlando	Y	31	150	NB and SB through on SR 424
SR 424 (Edgewater Dr) at Vassar St	429	City of Orlando	Y	31	150	NB and SB through on SR 424
SR 424 (Edgewater Dr) at Winter Park St	430	City of Orlando	Y	31	150	NB and SB through on SR 424
SR 424 (Edgewater Dr) at Hazel St	425	City of Orlando	Y	31	150	NB and SB through on SR 424
SR 424 (Edgewater Dr) at Eagle Way	467	City of Orlando	Y	31	150	NB and SB through on SR 424
SR 424 (Edgewater Dr) at Par St	432	City of Orlando	Y	31	150	NB and SB through on SR 424
SR 424 (Edgewater Dr) at Maury Road	426	City of Orlando	Y	31	150	NB and SB through on SR 424
SR 424 (Edgewater) at Bishop Moore HS	32	Orange County	Y	4/4/1	150	NB and SB through on SR 424
SR 424(Edgewater) at SR 426(Fairbanks)	99	Orange County	Y	4/4/1	150	Northbound right turn and westbound left turn
SR 426 (Fairbanks Av) at Adanson St	1	Orange County	Y	4/4/1	150	EB and WB through on SR 426
SR 426 (Fairbanks Av) at Wymore Road	112	Orange County	Y	4/4/1	150	EB and WB through on SR 426
SR 426 (Fairbanks Av) at I-4 WB Ramps	1018	City of Winter Park	Y	4/4/1	220	Eastbound through and southbound left
SR 426 (Fairbanks Av) at I-4 EB Ramps	1018	City of Winter Park	Y	4/4/1	220	Eastbound left turn onto I-4 eastbound

City of Orlando ATMS Flex Group:	Diversion-PRI2
	Diversion-EDGE1
Orange County TACTICS Zone:	N/A
City of Winter Park TACTICS Zone:	N/A



LEGEND

Routes

- Primary Diversion Eastbound
- Primary Diversion Westbound
- Secondary Diversion Eastbound
- Secondary Diversion Westbound
- Closed Section

Traffic Signals

- Seminole County Signal
- Orange County Signal
- City of Orlando Signal
- City of Winter Park Signal

Updated July 13, 2018

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Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 426/Fairbanks Ave to
SR 423/Lee Rd

EXIT 87 TO EXIT 88 — **SR 426 / Fairbanks Avenue** — **SR 423 / Lee Road** — **I-4 EB EAST**

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 426 (Fairbanks Av) at I-4 WB Ramps	1018	FDOT	Y	4/1/1	220	Westbound through on SR 426 to avoid jamming
SR 426 (Fairbanks Av) at I-4 EB Ramps					220	Northbound right turn onto SR 426 eastbound
SR 426 (Fairbanks Av) at Formosa Av	1016	City of Winter Park	Y	4/1/1	220	Eastbound through on SR 426
SR 426 (Fairbanks Av) at Clay St	1017	City of Winter Park	Y	4/1/1	220	Eastbound through on SR 426
SR 426(Fairbanks) at US 17/92(Orlando)	3020	City of Winter Park	Y	4/1/1	220	Eastbound left turn onto US 17/92 northbound
US 17/92 (Orlando Av) at Morse Blvd	3015	City of Winter Park	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando Av) at Gay Road	3010	City of Winter Park	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando Av) at Webster Av	3005	City of Winter Park	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando) at SR 423 (Lee Rd)	3000	City of Winter Park	Y	100	220	Northbound left turn onto SR 423 westbound
SR 423 (Lee Road) at Wymore Road	173	City of Winter Park	Y	4/2/1	180	Westbound through on SR 423
SR 423 (Lee Road) at I-4 EB Ramps	141	Orange County	Y	4/2/1	180	Westbound right turn onto I-4 eastbound
SR 423 (Lee Road) at I-4 WB Ramps	143	Orange County	Y	4/2/1	180	Westbound through on SR 423 to avoid jamming

Orange County TACTICS Zone: N/A
FDOT MaxView Action Set: Winter Park - US 1792

EXIT 88 TO EXIT 87 — **SR 423 / Lee Road** — **SR 426 / Fairbanks Avenue** — **I-4 WB EAST**

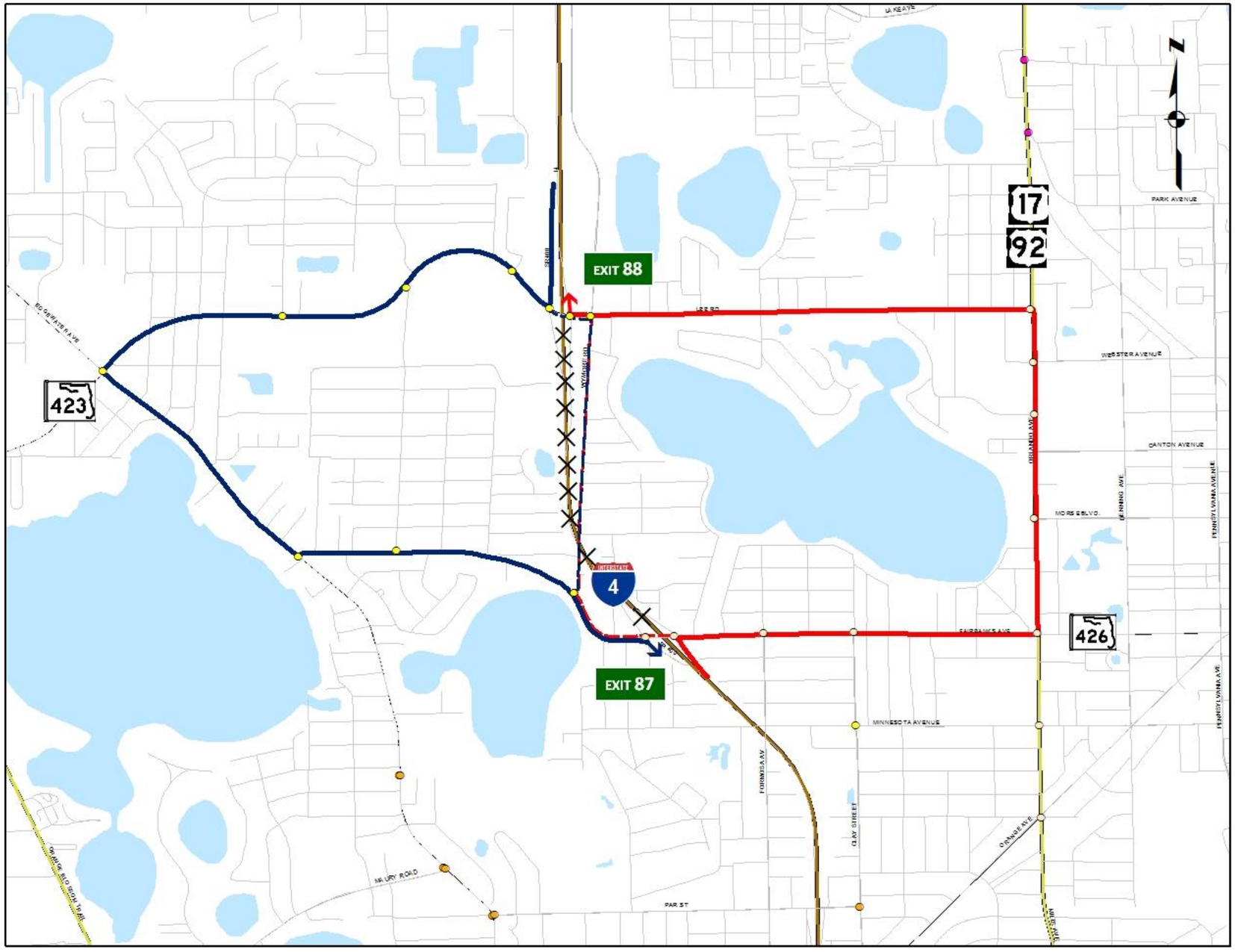
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 423 (Lee Road) at I-4 WB Ramps	143	Orange County	Y	4/3/1	180	Southbound left turn on SR 423 eastbound
SR 423 (Lee Road) at I-4 EB Ramps	141	Orange County	Y	4/3/1	180	Eastbound through on SR 423
SR 423 (Lee Road) at Wymore Road	173	City of Winter Park	Y	4/3/1	180	Eastbound through on SR 423
US 17/92 (Orlando) at SR 423 (Lee Rd)	3000	City of Winter Park	Y	101	220	Eastbound right turn onto US 17/92 southbound
US 17/92 (Orlando Av) at Webster Av	3005	City of Winter Park	Y	101	220	Southbound through on US 17/92
US 17/92 (Orlando Av) at Gay Road	3010	City of Winter Park	Y	101	220	Southbound through on US 17/92
US 17/92 (Orlando Av) at Morse Blvd	3015	City of Winter Park	Y	101	220	Southbound through on US 17/92
SR 426(Fairbanks) at US 17/92(Orlando)	3020	City of Winter Park	Y	101	220	Southbound right turn onto SR 426 westbound
SR 426 (Fairbanks Av) at Clay St	1017	City of Winter Park	Y	4/4/1	220	Westbound through on SR 426
SR 426 (Fairbanks Av) at Formosa Av	1016	City of Winter Park	Y	4/4/1	220	Westbound through on SR 426
SR 426 (Fairbanks Av) at I-4 EB Ramps	1018	FDOT	Y	4/4/1	220	Westbound through on SR 426
SR 426 (Fairbanks Av) at I-4 WB Ramps					220	Westbound left turn onto I-4 westbound

Orange County TACTICS Zone: N/A
FDOT MaxView Action Set: Winter Park - US 1792

EXIT 87 TO EXIT 88 — **SR 426 / Fairbanks Avenue** — **SR 423 / Lee Road** — **I-4 BiD EAST**

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 426 (Fairbanks Av) at I-4 WB Ramps	1018	FDOT	Y	4/4/1	220	Westbound left turn onto I-4 westbound
SR 426 (Fairbanks Av) at I-4 EB Ramps					220	Northbound right turn and westbound through
SR 426 (Fairbanks Av) at Formosa Av	1016	City of Winter Park	Y	4/4/1	220	EB and WB through on SR 426
SR 426 (Fairbanks Av) at Clay St	1017	City of Winter Park	Y	4/4/1	220	EB and WB through on SR 426
SR 426(Fairbanks) at US 17/92(Orlando)	3020	City of Winter Park	Y	102	220	Eastbound left turn and southbound right turn
US 17/92 (Orlando Av) at Morse Blvd	3015	City of Winter Park	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando Av) at Gay Road	3010	City of Winter Park	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando Av) at Webster Av	3005	City of Winter Park	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando) at SR 423 (Lee Rd)	3000	City of Winter Park	Y	102	220	Northbound left turn and eastbound right turn
SR 423 (Lee Road) at Wymore Road	173	City of Winter Park	Y	4/4/1	180	EB and WB through on SR 423
SR 423 (Lee Road) at I-4 EB Ramps	141	Orange County	Y	4/4/1	180	Westbound right turn and eastbound through
SR 423 (Lee Road) at I-4 WB Ramps	143	Orange County	Y	4/4/1	180	Southbound left turn

Orange County TACTICS Zone: N/A
FDOT MaxView Action Set: Winter Park - US 1792



LEGEND

Routes

- Primary Diversion Eastbound
- Primary Diversion Westbound
- Secondary Diversion Eastbound
- Secondary Diversion Westbound
- Closed Section

Traffic Signals

- Seminole County Signal
- Orange County Signal
- City of Orlando Signal
- City of Winter Park Signal

Updated July 13, 2018

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Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 426/Fairbanks Ave to
SR 423/Lee Rd

EXIT 87 TO EXIT 88 — **SR 426 / Fairbanks Avenue** — **SR 423 / Lee Road** — **I-4 EB WEST** — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 426 (Fairbanks Av) at I-4 EB Ramps	1018	FDOT	Y	4/1/1	220	Northbound left turn onto SR 426 westbound
SR 426 (Fairbanks Av) at I-4 WB Ramps					220	Westbound through on SR 426
SR 426 (Fairbanks Av) at Wymore Rd	112	Orange County	Y	4/2/1	150	Westbound through on SR 426
SR 426 (Fairbanks Av) at Adanson St	1	Orange County	Y	4/2/1	150	Westbound through on SR 426
SR 426(Fairbanks) at SR 424(Edgewater)	99	Orange County	Y	4/2/1	150	Westbound through on SR 424
SR 423(Lee Rd) at SR 424(Edgewater Dr)	101	Orange County	Y	106	180	Westbound right turn onto SR 423
SR 423 (Lee Rd) at Kingswood Dr	160	Orange County	Y	106	180	Eastbound through on SR 423
SR 423 (Lee Rd) at Adanson St	2	Orange County	Y	106	180	Eastbound through on SR 423
SR 423 (Lee Rd) at Diplomat Circle	92	Orange County	Y	4/2/1	180	Eastbound through on SR 423
SR 423 (Lee Rd) at I-4 WB Ramps	143	Orange County	Y	4/2/1	180	Eastbound through on SR 423
SR 423 (Lee Rd) at I-4 EB Ramps	141	Orange County	Y	4/2/1	180	Eastbound left turn onto I-4 eastbound
SR 423 (Lee Rd) at Wymore Rd	173	Orange County	Y	4/2/1	180	Eastbound through on SR 423 to prevent jamming

Orange County TACTICS Zone: N/A
Orange County MaxView Action Set: I-4 Div - LEE1

EXIT 88 TO EXIT 87 — **SR 423 / Lee Road** — **SR 426 / Fairbanks Avenue** — **I-4 WB WEST** — DISTRICT FIVE ICM

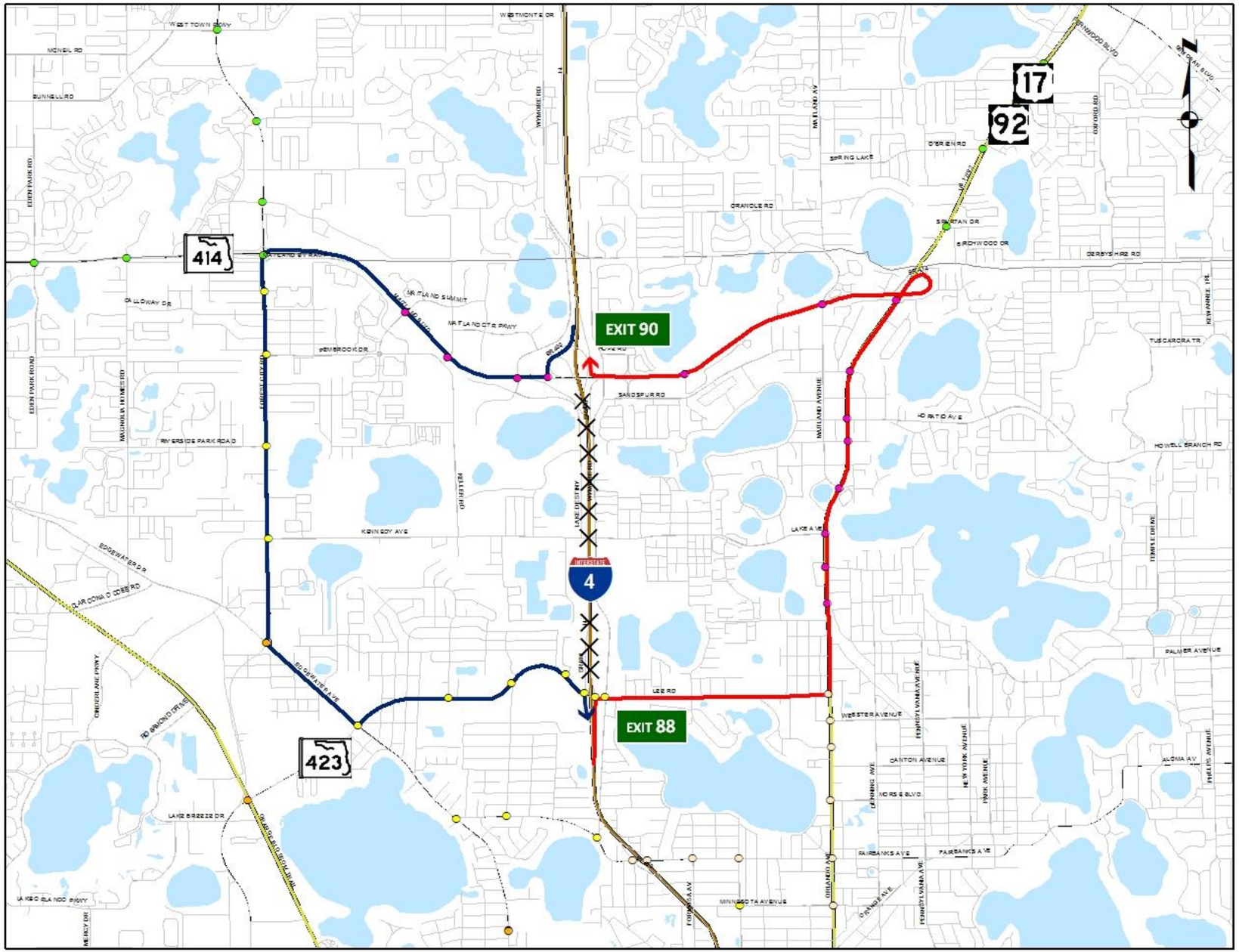
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 423 (Lee Rd) at Wymore Rd	173	Orange County	Y	4/3/1	180	Eastbound through on SR 423 to prevent jamming
SR 423 (Lee Rd) at I-4 EB Ramps	141	Orange County	Y	4/3/1	180	Eastbound through on SR 423 to prevent jamming
SR 423 (Lee Rd) at I-4 WB Ramps	143	Orange County	Y	4/3/1	180	Southbound right turn onto SR 423 westbound
SR 423 (Lee Rd) at Diplomat Circle	92	Orange County	Y	4/3/1	180	Westbound through on SR 423
SR 423 (Lee Rd) at Adanson St	2	Orange County	Y	107	180	Westbound through on SR 423
SR 423 (Lee Rd) at Kingswood Dr	160	Orange County	Y	107	180	Westbound through on SR 423
SR 423(Lee Rd) at SR 424(Edgewater Dr)	101	Orange County	Y	107	180	Westbound left turn onto SR 424 southbound
SR 426(Fairbanks) at SR 424(Edgewater)	99	Orange County	Y	4/4/1	150	Eastbound through on SR 426
SR 426 (Fairbanks Av) at Adanson St	1	Orange County	Y	4/4/1	150	Eastbound through on SR 426
SR 426 (Fairbanks Av) at Wymore Rd	112	Orange County	Y	4/4/1	150	Eastbound through on SR 426
SR 426 (Fairbanks Av) at I-4 WB Ramps	1018	FDOT	Y	4/4/1	220	Eastbound right turn onto I-4 westbound
SR 426 (Fairbanks Av) at I-4 EB Ramps					220	Eastbound through on SR 426 to prevent jamming

Orange County TACTICS Zone: N/A
Orange County MaxView Action Set: I-4 Div - LEE1

EXIT 87 TO EXIT 88 — **SR 426 / Fairbanks Avenue** — **SR 423 / Lee Road** — **I-4 BiD WEST** — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 426 (Fairbanks Av) at I-4 EB Ramps	1018	FDOT	Y	4/4/1	220	Northbound left turn onto SR 426 westbound
SR 426 (Fairbanks Av) at I-4 WB Ramps					220	Westbound through and eastbound right turn
SR 426 (Fairbanks Av) at Wymore Rd	112	Orange County	Y	4/4/1	150	EB and WB through on SR 426
SR 426 (Fairbanks Av) at Adanson St	1	Orange County	Y	4/4/1	150	EB and WB through on SR 426
SR 426(Fairbanks) at SR 424(Edgewater)	99	Orange County	Y	4/4/1	150	EB and WB through on SR 426
SR 423(Lee Rd) at SR 424(Edgewater Dr)	101	Orange County	Y	107	180	Westbound right turn and southbound left turn
SR 423 (Lee Rd) at Kingswood Dr	160	Orange County	Y	107	180	EB and WB through on SR 423
SR 423 (Lee Rd) at Adanson St	2	Orange County	Y	107	180	EB and WB through on SR 423
SR 423 (Lee Rd) at Diplomat Circle	92	Orange County	Y	4/4/1	180	EB and WB through on SR 423
SR 423 (Lee Rd) at I-4 WB Ramps	143	Orange County	Y	4/4/1	180	EB through and southbound right turn
SR 423 (Lee Rd) at I-4 EB Ramps	141	Orange County	Y	4/4/1	180	Eastbound left turn onto I-4 eastbound
SR 423 (Lee Rd) at Wymore Rd	173	Orange County	Y	4/4/1	180	Eastbound through on SR 423 to prevent jamming

Orange County TACTICS Zone: N/A
Orange County MaxView Action Set: I-4 Div - LEE1



LEGEND

Routes

- Primary Diversion Eastbound
- Primary Diversion Westbound
- Secondary Diversion Eastbound
- Secondary Diversion Westbound
- Closed Section

Traffic Signals

- Seminole County Signal
- Orange County Signal
- City of Orlando Signal
- City of Winter Park Signal
- City of Maitland Signal

Updated July 13, 2018

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Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 423/Lee Rd to
SR 414 Maitland Blvd

EXIT 88 TO EXIT 90 — SR 423 / Lee Road — SR 414 / Maitland Blvd — I-4 EB EAST

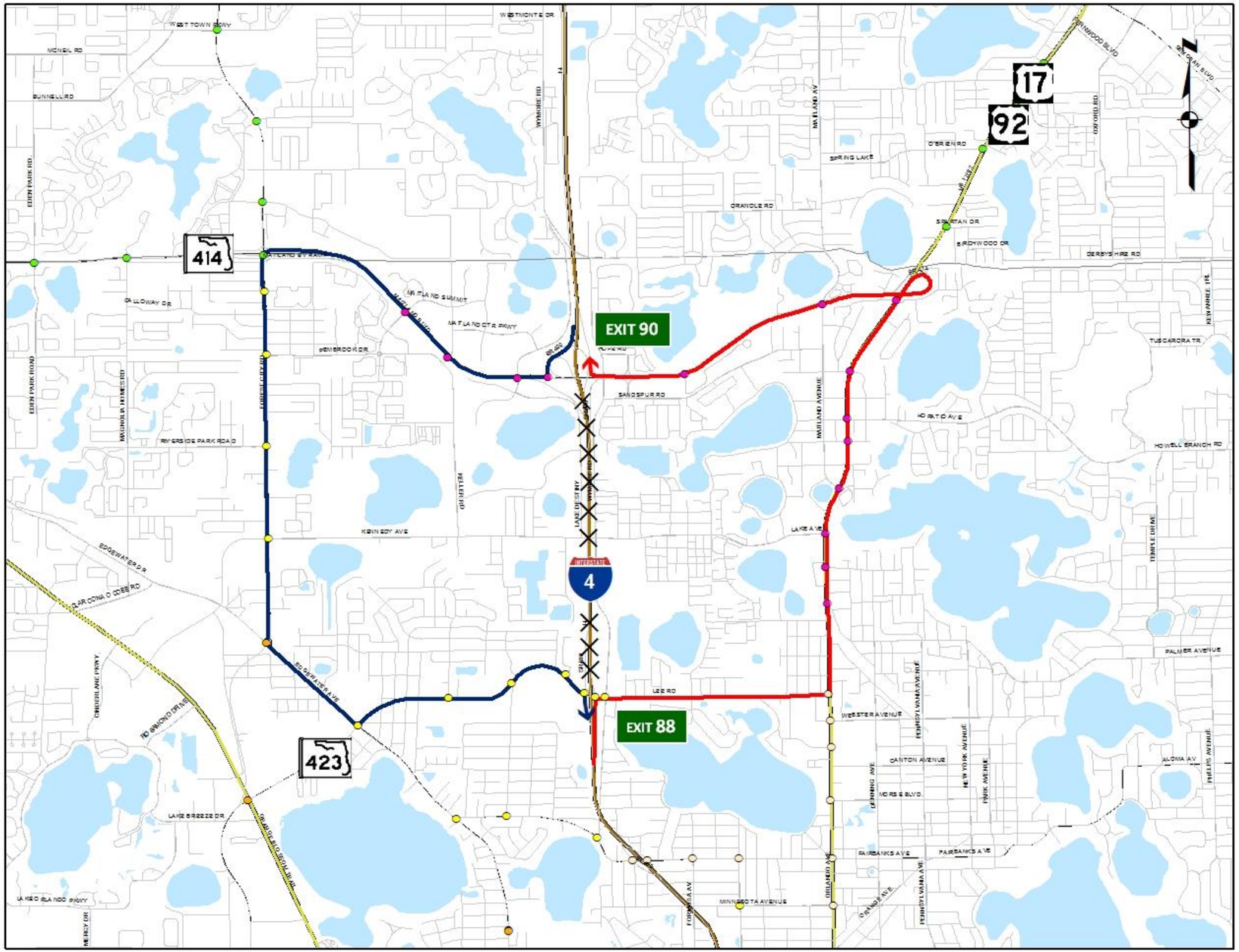
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 423 (Lee Rd) at I-4 WB Ramps	143	Orange County	Y	4/2/1	180	Westbound through on SR 423 to avoid jamming
SR 423 (Lee Rd) at I-4 EB Ramps	141	Orange County	Y	4/2/1	180	Northbound right turn onto SR 423 eastbound
SR 423 (Lee Rd) at Wymore Rd	173	City of Winter Park	Y	4/2/1	180	Eastbound through movement on SR 423
US 17/92 (Orlando) at SR 423 (Lee Rd)	3000	City of Winter Park	Y	100	220	Eastbound left turn movement onto US 17/92 northbound
US 17/92 (Orlando Av) at Park Av	2035	City of Maitland	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando Av) at Magnolia Rd	2030	City of Maitland	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando Av) at Lake Av	2025	City of Maitland	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando) at Manor/Maitland	2020	City of Maitland	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando Av) at Packwood Av	2015	City of Maitland	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando Av) at Horatio Av	2010	City of Maitland	Y	100	220	Northbound through on US 17/92
US 17/92 (Orlando Av) at Sybelia Pkwy	2005	City of Maitland	Y	100	220	Northbound through on US 17/92
US 17/92(Orlando) at Mayo/Greenwood	2000	City of Maitland	Y	100	220	Northbound through on US 17/92; exit right onto loop
SR 414 (Maitland Blvd) at Maitland Av	1019	City of Maitland	Y	4/1/1	220	Westbound through on SR 414
SR 414 (Maitland) at Concourse Pkwy	1021	City of Maitland	Y	4/1/1	220	Westbound through on SR 414
SR 414 (Maitland) at Hope Rd	2050	City of Maitland	Y	4/1/1	220	Westbound through on SR 414
SR 414 at I-4 EB	NA	NA	NA	NA	NA	Westbound right turn onto I-4 eastbound ramp

EXIT 90 TO EXIT 88 — SR 414 / Maitland Blvd — SR 423 / Lee Road — I-4 WB EAST

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 414 at I-4 EB	NA	NA	NA	NA	NA	Southbound left turn onto SR 414 eastbound
SR 414 (Maitland) at Hope Rd	2050	City of Maitland	Y	4/2/1	220	Eastbound through on SR 413
SR 414 (Maitland) at Concourse Pkwy	1021	City of Maitland	Y	4/2/1	220	Eastbound through on SR 414
SR 414 (Maitland Blvd) at Maitland Av	1019	City of Maitland	Y	4/2/1	220	Eastbound through on SR 414
US 17/92(Orlando) at Mayo/Greenwood	2000	City of Maitland	Y	101	220	Eastbound right turn onto US 17/92 southbound
US 17/92 (Orlando Av) at Sybelia Pkwy	2005	City of Maitland	Y	101	220	Southbound through on US 17/92
US 17/92 (Orlando Av) at Horatio Av	2010	City of Maitland	Y	101	220	Southbound through on US 17/92
US 17/92 (Orlando Av) at Packwood Av	2015	City of Maitland	Y	101	220	Southbound through on US 17/92
US 17/92 (Orlando) at Manor/Maitland	2020	City of Maitland	Y	101	220	Southbound through on US 17/92
US 17/92 (Orlando Av) at Lake Av	2025	City of Maitland	Y	101	220	Southbound through on US 17/92
US 17/92 (Orlando Av) at Magnolia Rd	2030	City of Maitland	Y	101	220	Southbound through on US 17/92
US 17/92 (Orlando Av) at Park Av	2035	City of Maitland	Y	101	220	Southbound through on US 17/92
US 17/92 (Orlando) at SR 423 (Lee Rd)	3000	City of Winter Park	Y	101	220	Southbound right turn onto SR 423 westbound
SR 423 (Lee Rd) at Wymore Rd	173	City of Winter Park	Y	4/3/1	180	Westbound through on SR 423
SR 423 (Lee Rd) at I-4 EB Ramps	141	Orange County	Y	4/3/1	180	Westbound through on SR 423
SR 423 (Lee Rd) at I-4 WB Ramps	143	Orange County	Y	4/3/1	180	Westbound left turn onto I-4 westbound

EXIT 88 TO EXIT 90 — SR 423 / Lee Road — SR 414 / Maitland Blvd — I-4 BiD EAST

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 423 (Lee Rd) at I-4 WB Ramps	143	Orange County	Y	4/4/1	180	Westbound left turn onto I-4 westbound
SR 423 (Lee Rd) at I-4 EB Ramps	141	Orange County	Y	4/4/1	180	Northbound right turn and westbound through
SR 423 (Lee Rd) at Wymore Rd	173	City of Winter Park	Y	4/4/1	180	EB and WB through movement on SR 423
US 17/92 (Orlando) at SR 423 (Lee Rd)	3000	City of Winter Park	Y	102	220	Eastbound left turn and southbound right turn
US 17/92 (Orlando Av) at Park Av	2035	City of Maitland	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando Av) at Magnolia Rd	2030	City of Maitland	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando Av) at Lake Av	2025	City of Maitland	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando) at Manor/Maitland	2020	City of Maitland	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando Av) at Packwood Av	2015	City of Maitland	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando Av) at Horatio Av	2010	City of Maitland	Y	102	220	NB and SB through on US 17/92
US 17/92 (Orlando Av) at Sybelia Pkwy	2005	City of Maitland	Y	102	220	NB and SB through on US 17/92
US 17/92(Orlando) at Mayo/Greenwood	2000	City of Maitland	Y	102	220	Northbound right onto loop, eastbound right
SR 414 (Maitland Blvd) at Maitland Av	1019	City of Maitland	Y	4/3/1	220	EB and WB through on SR 414
SR 414 (Maitland) at Concourse Pkwy	1021	City of Maitland	Y	4/3/1	220	EB and WB through on SR 414
SR 414 (Maitland) at Hope Rd	2050	City of Maitland	Y	4/3/1	220	EB and WB through on SR 415
SR 414 at I-4 EB	NA	NA	NA	NA	NA	Westbound right turn and southbound left turn



LEGEND

Routes

- Primary Diversion Eastbound
- Primary Diversion Westbound
- Secondary Diversion Eastbound
- Secondary Diversion Westbound
- Closed Section

Traffic Signals

- Seminole County Signal
- Orange County Signal
- City of Orlando Signal
- City of Winter Park Signal
- City of Maitland Signal

Updated July 13, 2018

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Miles

Prepared by: Albeck Gerken, Inc.

FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 423/Lee Rd to
SR 414 Maitland Blvd

EXIT 88 TO EXIT 90 — **SR 423 / Lee Road** — **SR 414 / Maitland Blvd** — **I-4 EB WEST** — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 423 (Lee Rd) at Wymore Rd	173	Orange County	Y	4/2/1	180	Eastbound through on SR 423 to avoid jamming
SR 423 (Lee Rd) at I-4 EB Ramps	141	Orange County	Y	4/2/1	180	Northbound left turn onto SR 423
SR 423 (Lee Rd) at I-4 WB Ramps	143	Orange County	Y	4/2/1	180	Westbound through on SR 423
SR 423 (Lee Rd) at Diplomat Circle	92	Orange County	Y	4/2/1	180	Westbound through on SR 423
SR 423 (Lee Rd) at Adanson Street	2	Orange County	Y	106	180	Westbound through on SR 423
SR 423 (Lee Rd) at Kingswood Dr	160	Orange County	Y	106	180	Westbound through on SR 423
SR 423 (Lee) at SR 424 (Edgewater)	101	Orange County	Y	106	180	Westbound right turn onto SR 424
SR424(Edgewater) @ SR434(Forest City)	100	Orange County	Y	106	180	Westbound right turn onto SR 434 northbound
SR 434 at Kennedy/All American	115	Orange County	Y	106	180	Northbound through on SR 434
SR 434 (Forest City) at Riverside Pk Rd	116	Orange County	Y	106	180	Northbound through on SR 434
SR 434 (Forest City) at Pembrook Dr	380	Orange County	Y	106	180	Northbound through on SR 434
SR 434 (Forest City) at Calumet Dr	40	Orange County	Y	106	180	Northbound through on SR 434
SR 434 (Forest City) at SR 414	1190	Seminole County	Y	X	X	Northbound right turn onto SR 414
SR 414 at I-4 EB	54	City of Maitland	Y	X	X	Eastbound left turn onto I-4 eastbound

Orange County MaxView Action Set: I-4 Div - LEE1/FCR1
City of Maitland TACTICS Zone: N/A

EXIT 90 TO EXIT 88 — **SR 414 / Maitland Blvd** — **SR 423 / Lee Road** — **I-4 WB WEST** — DISTRICT FIVE ICM

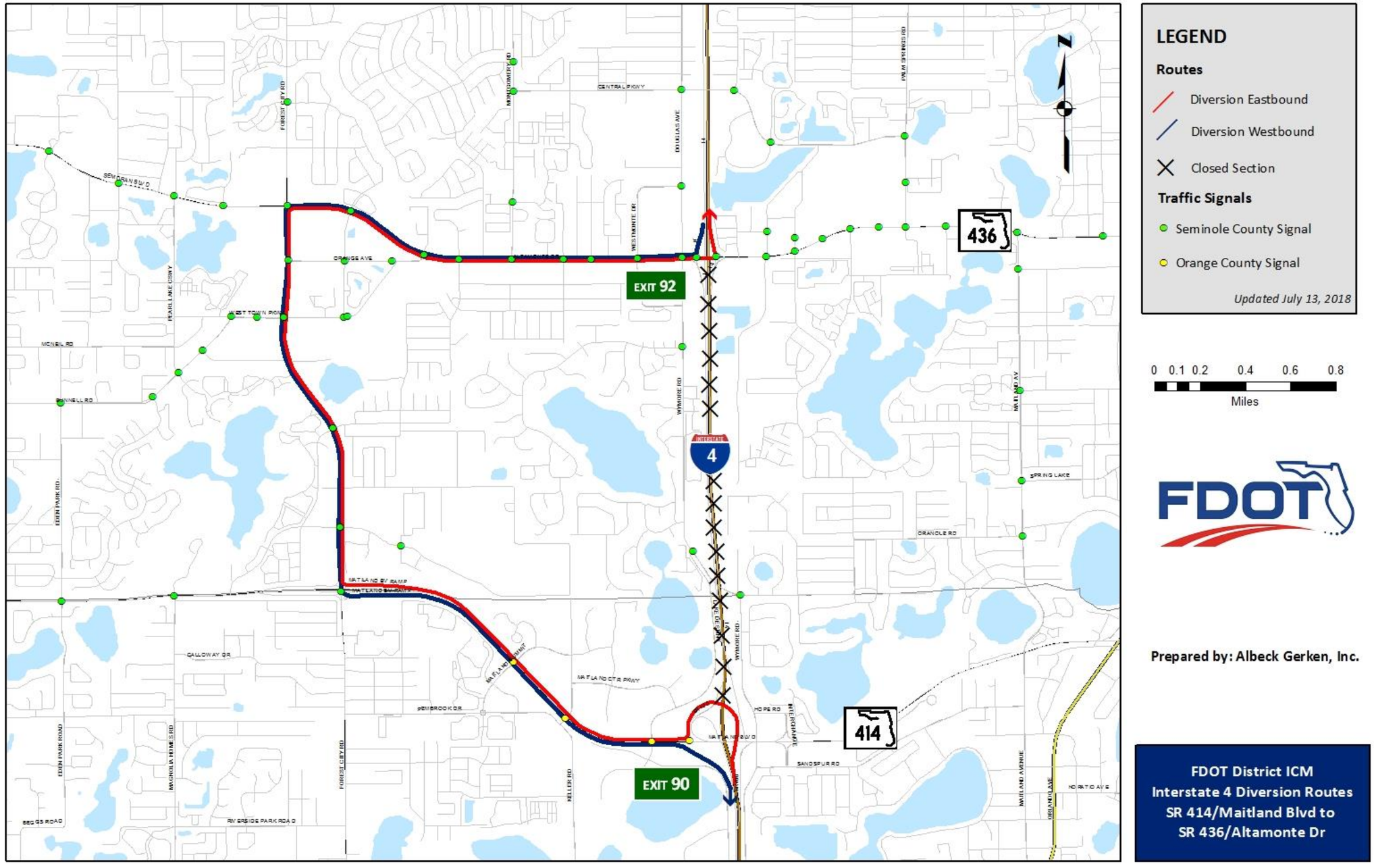
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 414 at I-4 EB	54	City of Maitland	Y	X	X	Eastbound through on SR 414 to prevent jamming
SR 434 (Forest City) at SR 414	1190	Seminole County	Y	27	200	Westbound left turn onto SR 434 southbound
SR 434 (Forest City) at Calumet Dr	40	Orange County	Y	107	180	Southbound through on SR 434
SR 434 (Forest City) at Pembrook Dr	380	Orange County	Y	107	180	Southbound through on SR 434
SR 434 (Forest City) at Riverside Pk Rd	116	Orange County	Y	107	180	Southbound through on SR 434
SR 434 at Kennedy/All American	115	Orange County	Y	107	180	Southbound through on SR 434
SR424(Edgewater) @ SR434(Forest City)	100	Orange County	Y	107	180	Southbound left turn onto SR 424 eastbound
SR 423 (Lee) at SR 424 (Edgewater)	101	Orange County	Y	107	180	Southbound left turn onto SR 423 eastbound
SR 423 (Lee Rd) at Kingswood Dr	160	Orange County	Y	107	180	Eastbound through on SR 423
SR 423 (Lee Rd) at Adanson Street	2	Orange County	Y	107	180	Eastbound through on SR 423
SR 423 (Lee Rd) at Diplomat Circle	92	Orange County	Y	4/3/1	180	Eastbound through on SR 423
SR 423 (Lee Rd) at I-4 WB Ramps	143	Orange County	Y	4/3/1	180	Eastbound right turn onto I-4 westbound
SR 423 (Lee Rd) at I-4 EB Ramps	141	Orange County	Y	4/3/1	180	Eastbound through on SR 423 to prevent jamming
SR 423 (Lee Rd) at Wymore Rd	173	Orange County	Y	4/3/1	180	Eastbound through on SR 423 to prevent jamming

Orange County MaxView Action Set: I-4 Div - LEE1/FCR1
City of Maitland TACTICS Zone: N/A

EXIT 88 TO EXIT 90 — **SR 423 / Lee Road** — **SR 414 / Maitland Blvd** — **I-4 BiD WEST** — DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 423 (Lee Rd) at Wymore Rd	173	Orange County	Y	4/4/1	180	Eastbound through on SR 423 to avoid jamming
SR 423 (Lee Rd) at I-4 EB Ramps	141	Orange County	Y	4/4/1	180	Northbound left turn onto SR 423 westbound
SR 423 (Lee Rd) at I-4 WB Ramps	143	Orange County	Y	4/4/1	180	Westbound through and eastbound right turn
SR 423 (Lee Rd) at Diplomat Circle	92	Orange County	Y	4/4/1	180	EB and WB through on SR 423
SR 423 (Lee Rd) at Adanson Street	2	Orange County	Y	108	180	EB and WB through on SR 423
SR 423 (Lee Rd) at Kingswood Dr	160	Orange County	Y	108	180	EB and WB through on SR 423
SR 423 (Lee) at SR 424 (Edgewater)	101	Orange County	Y	108	180	Southbound left and westbound right turn
SR424(Edgewater) @ SR434(Forest City)	100	Orange County	Y	108	180	Southbound left and westbound right turn
SR 434 at Kennedy/All American	115	Orange County	Y	108	180	NB and SB through on SR 434
SR 434 (Forest City) at Riverside Pk Rd	116	Orange County	Y	108	180	NB and SB through on SR 434
SR 434 (Forest City) at Pembrook Dr	380	Orange County	Y	108	180	NB and SB through on SR 434
SR 434 (Forest City) at Calumet Dr	40	Orange County	Y	108	180	NB and SB through on SR 434
SR 434 (Forest City) at SR 414	1190	Seminole County	Y	27	200	Northbound right turn and westbound left turn
SR 414 at I-4 EB	54	City of Maitland	Y	X	X	Eastbound left turn onto I-4 eastbound

Orange County MaxView Action Set: I-4 Div - LEE1/FCR1
City of Maitland TACTICS Zone: N/A


LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Orange County Signal
Updated July 13, 2018
0 0.1 0.2 0.4 0.6 0.8
Miles
EXIT 92
EXIT 90
436
414
4
Prepared by: Albeck Gerken, Inc.
FDOT District ICM
Interstate 4 Diversion Routes
SR 414/Maitland Blvd to
SR 436/Altamonte Dr

EXIT 90 TO EXIT 92 — SR 414 / Maitland Blvd — SR 436 / Altamonte Drive — I-4 EB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 414 / Maitland Bl at I-4 EB Ramps		City of Maitland				WB progression to prevent jamming
SR 414 / Maitland Bl at I-4 Ramps		City of Maitland				Southbound right turn onto WB SR 414 (Under Const)
SR 414 / Maitland Bl at Lake Destiny Dr		City of Maitland				Westbound through on SR 414
SR 414 / Maitland Bl at Keller Rd		City of Maitland				Westbound through on SR 414
SR 414 / Maitland at Maitland Summit		City of Maitland				Westbound through on SR 414
SR 414 / Maitland Bl at SR 434	1190	Seminole County	Y	27	200	Westbound right turn onto northbound SR 434
SR 434 at Gateway Dr	1195	Seminole County	Y	27	200	Northbound through on SR 434
SR 434 at Lotus Landing / Trailwood	1200	Seminole County	Y	27	200	Northbound through on SR 434
SR 434 at West Town Pkwy	1205	Seminole County	Y	27	200	Northbound through on SR 434
SR 434 at Orange Ave	1210	Seminole County	Y	27	200	Northbound through on SR 434
SR 434 at SR 436	1470	Seminole County	Y	27	200	Northbound right turn onto eastbound SR 436
SR 436 at Laurel / San Sabastian Prado	1475	Seminole County	Y	27	200	Eastbound through on SR 436
SR 436 at Riverbend / Orange Ave	1478	Seminole County	Y	27	190	Eastbound through on SR 436
SR 436 at Weathersfield Ave	1480	Seminole County	Y	27	190	Eastbound through on SR 436
SR 436 at Montgomery Rd	1485	Seminole County	Y	27	190	Eastbound through on SR 436
SR 436 at Fances / Lynchfield Ave	1490	Seminole County	Y	27	190	Eastbound through on SR 436
SR 436 at Grace Blvd	1495	Seminole County	Y	27	190	Eastbound through on SR 436
SR 436 at Westmonte Dr	1500	Seminole County	Y	27	190	Eastbound through on SR 436
SR 436 at Douglas Ave	1505	Seminole County	Y	27	190	Eastbound through on SR 436
SR 436 at I-4 WB Ramps	1510	Seminole County	Y	27	190	Eastbound through on SR 436
SR 436 at I-4 EB Ramps	1515	Seminole County	Y	27	190	Eastbound left turn onto northbound I-4

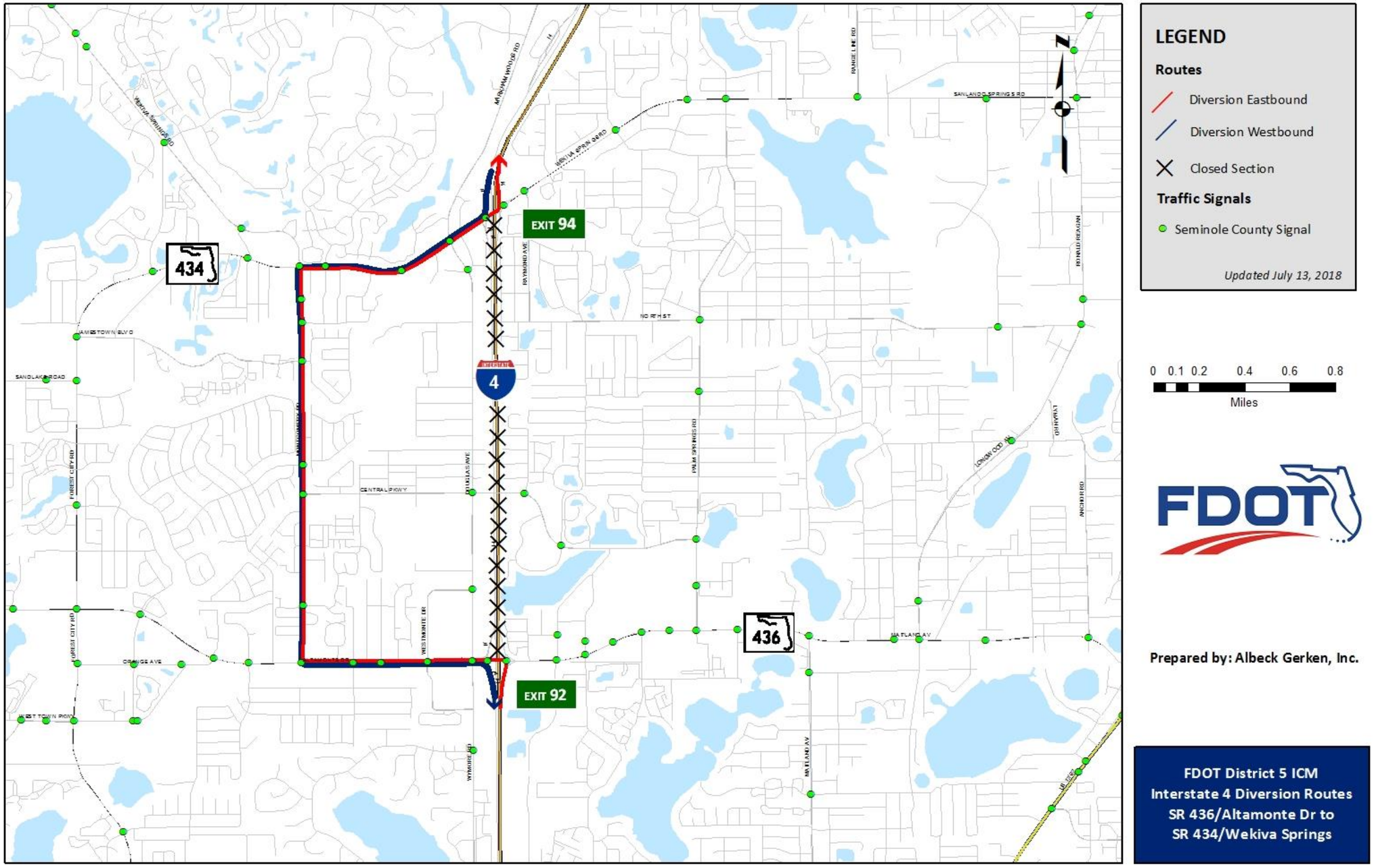
EXIT 92 TO EXIT 90 — SR 436 / Altamonte Drive — SR 414 / Maitland Blvd — I-4 WB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 436 & I-4 EB Ramps	1515	Seminole County	Y	28	190	WB progression to prevent jamming (Under Const)
SR 436 & I-4 WB Ramps	1510	Seminole County	Y	28	190	Southbound right turn onto WB SR 436
SR 436 & Douglas Ave	1505	Seminole County	Y	28	190	Westbound through on SR 436
SR 436 & Westmonte Dr	1500	Seminole County	Y	28	190	Westbound through on SR 436
SR 436 & Grace Blvd	1495	Seminole County	Y	28	190	Westbound through on SR 436
SR 436 & Frances Dr/Lynchfield Ave	1490	Seminole County	Y	28	190	Westbound through on SR 436
SR 436 & Montgomery Rd	1485	Seminole County	Y	28	190	Westbound through on SR 436
SR 436 & Weathersfield Ave	1480	Seminole County	Y	28	190	Westbound through on SR 436
SR 436 & Riverbend Dr/Orange Ave	1478	Seminole County	Y	28	190	Westbound through on SR 436
SR 436 & Laurel St/San Sabastian Prado	1475	Seminole County	Y	28	200	Westbound through on SR 436
SR 436 & SR 434	1470	Seminole County	Y	28	200	Westbound left turn onto SR 434 southbound
SR 434 & Orange Ave	1210	Seminole County	Y	28	200	Southbound through on SR 434
SR 434 & West Town Pkwy	1205	Seminole County	Y	28	200	Southbound through on SR 434
SR 434 & Lotus Landing Bl/Trailwood Dr	1200	Seminole County	Y	28	200	Southbound through on SR 434
SR 434 & Gateway Dr	1195	Seminole County	Y	28	200	Southbound through on SR 434
SR 434 & SR 414	1190	Seminole County	Y	28	200	Southbound left turn onto SR 414 eastbound
SR 414 & Maitland Summit Blvd		City of Maitland				Eastbound through on SR 414
SR 414 & Keller Rd		City of Maitland				Eastbound through on SR 414
SR 414 & Lake Destiny Dr		City of Maitland				Eastbound through on SR 414
SR 414 & I-4 Ramps		City of Maitland				Eastbound right turn onto SB I-4
SR 414 & I-4 EB Ramps		City of Maitland				EB progression to prevent jamming (Under Const)

EXIT 90 TO EXIT 92 — SR 414 / Maitland Blvd — SR 436 / Altamonte Drive — I-4 BiD

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 414 / Maitland Bl at I-4 EB Ramps		City of Maitland				WB progression to prevent jamming (Under Const)
SR 414 / Maitland Bl at I-4 Ramps		City of Maitland				Southbound right turn and eastbound right turn
SR 414 / Maitland Bl at Lake Destiny Dr		City of Maitland				EB and WB through on SR 414
SR 414 / Maitland Bl at Keller Rd		City of Maitland				EB and WB through on SR 414
SR 414 / Maitland at Maitland Summit		City of Maitland				EB and WB through on SR 414
SR 414 / Maitland Bl at SR 434	1190	Seminole County	Y	29	200	WB right turn and SB left turn
SR 434 at Gateway Dr	1195	Seminole County	Y	29	200	NB and SB through on SR 434
SR 434 at Lotus Landing / Trailwood	1200	Seminole County	Y	29	200	NB and SB through on SR 434
SR 434 at West Town Pkwy	1205	Seminole County	Y	29	200	NB and SB through on SR 434
SR 434 at Orange Ave	1210	Seminole County	Y	29	200	NB and SB through on SR 434
SR 434 at SR 436	1470	Seminole County	Y	29	200	NB right turn and WB left turn
SR 436 at Laurel / San Sabastian Prado	1475	Seminole County	Y	29	200	EB and WB through on SR 436
SR 436 at Riverbend / Orange Ave	1478	Seminole County	Y	29	190	EB and WB through on SR 436
SR 436 at Weathersfield Ave	1480	Seminole County	Y	29	190	EB and WB through on SR 436
SR 436 at Montgomery Rd	1485	Seminole County	Y	29	190	EB and WB through on SR 436
SR 436 at Fances / Lynchfield Ave	1490	Seminole County	Y	29	190	EB and WB through on SR 436
SR 436 at Grace Blvd	1495	Seminole County	Y	29	190	EB and WB through on SR 436
SR 436 at Westmonte Dr	1500	Seminole County	Y	29	190	EB and WB through on SR 436
SR 436 at Douglas Ave	1505	Seminole County	Y	29	190	EB and WB through on SR 436
SR 436 at I-4 WB Ramps	1510	Seminole County	Y	29	190	EB and WB through on SR 436
SR 436 at I-4 EB Ramps	1515	Seminole County	Y	29	190	Eastbound left turn onto northbound I-4

Seminole County ATMS Flex Group:	I-4 Sec 1 (DivRt) 434/414-SSeb
City of Maitland TACTICS Zone:	N/A


EXIT 94
EXIT 92
434
436
4
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Updated July 13, 2018
0 0.1 0.2 0.4 0.6 0.8
Miles
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 436/Altamonte Dr to
SR 434/Wekiva Springs

EXIT 92 TO EXIT 94 — SR 436 / Altamonte Drive — SR 434 / Wekiva Springs — I-4 EB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 436 & I-4 EB Ramps	1515	Seminole County	Y	30	190	Northbound left turn onto SR 436 Westbound
SR 436 & I-4 WB Ramps	1510	Seminole County	Y	30	190	Westbound through on SR 436
SR 436 & Douglas Ave	1505	Seminole County	Y	30	190	Westbound through on SR 436
SR 436 & Westmonte Dr	1500	Seminole County	Y	30	190	Westbound through on SR 436
SR 436 & Grace Blvd	1495	Seminole County	Y	30	190	Westbound through on SR 436
SR 436 & Frances Dr/Lynchfield Ave	1490	Seminole County	Y	30	190	Westbound through on SR 436
SR 436 & Montgomery Rd	1485	Seminole County	Y	30	190	Westbound right turn onto northbound Montgomery
Montgomery Rd & Oak Dr	2325*	Seminole County	N	30	100	Northbound through on Montgomery Rd
Montgomery Rd & Central Pkwy	2330	Seminole County	N	30	100	Northbound through on Montgomery Rd
Montgomery Rd & Green Briar Blvd	2335	Seminole County	N	30	100	Northbound through on Montgomery Rd
Montgomery & Jamestown/Clear Chan	2340	Seminole County	N	30	100	Northbound through on Montgomery Rd
Montgomery Rd & North St	2345	Seminole County	N	30	100	Northbound through on Montgomery Rd
Montgomery Rd & Plaza Ent	2350	Seminole County	N	30	100	Northbound through on Montgomery Rd
SR 434 & Wekiva Springs/Montgomery	1240	Seminole County	Y	30	150	Northbound right turn onto eastbound SR 434
SR 434 & Springs Blvd/Gum St	1245	Seminole County	Y	30	150	Eastbound through on SR 434
SR 434 & Sanlando Office Park	1250	Seminole County	Y	30	150	Eastbound through on SR 434
SR 434 & Markham Woods Rd	1255	Seminole County	Y	30	150	Eastbound through on SR 434
SR 434 & I-4 WB Ramps	1260	Seminole County	Y	30	150	Eastbound through on SR 434
SR 434 & I-4 EB Ramps	1265	Seminole County	Y	30	150	Eastbound left turn on I-4 Northbound
SR 434 & Raymond Ave	1270	Seminole County	Y	30	150	Eastbound through on SR 434 to prevent jamming

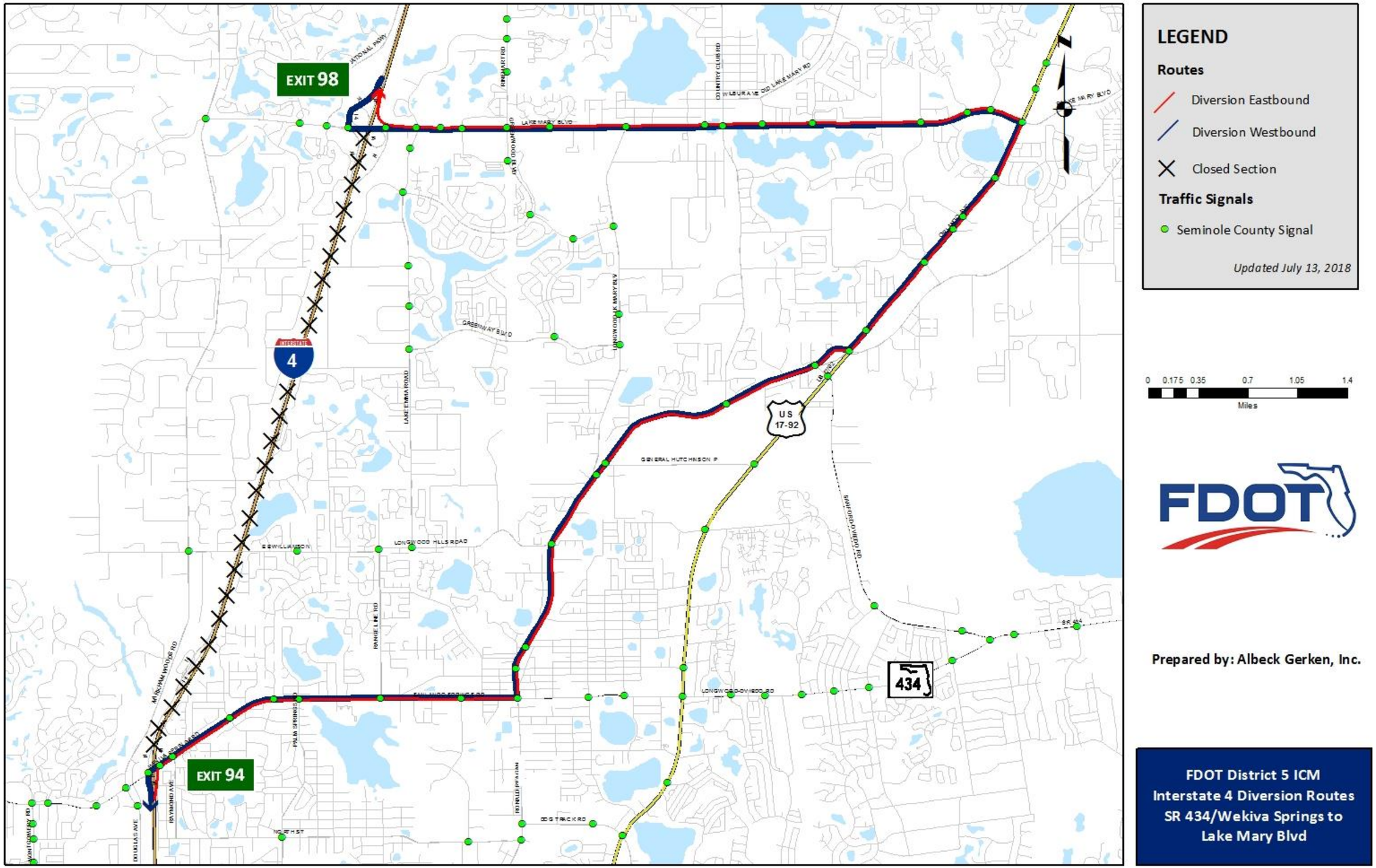
EXIT 94 TO EXIT 92 — SR 434 / Wekiva Springs — SR 436 / Altamonte Drive — I-4 WB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 434 & Raymond Ave	1270	Seminole County	Y	31	150	Eastbound through on SR 434 to prevent jamming
SR 434 & I-4 EB Ramps	1265	Seminole County	Y	31	150	Eastbound through on SR 434 to prevent jamming
SR 434 & I-4 WB Ramps	1260	Seminole County	Y	31	150	Southbound right turn onto SR 434 Westbound
SR 434 & Markham Woods Rd	1255	Seminole County	Y	31	150	Westbound through on SR 434
SR 434 & Sanlando Office Park	1250	Seminole County	Y	31	150	Westbound through on SR 434
SR 434 & Springs Blvd/Gum St	1245	Seminole County	Y	31	150	Westbound through on SR 434
SR 434 & Wekiva Springs/Montgomery	1240	Seminole County	Y	31	150	Westbound left turn onto Montgomery Rd Southbound
Montgomery Rd & Plaza Ent	2350	Seminole County	N	31	100	Southbound through on Montgomery Rd
Montgomery Rd & North St	2345	Seminole County	N	31	100	Southbound through on Montgomery Rd
Montgomery & Jamestown/Clear Chan	2340	Seminole County	N	31	100	Southbound through on Montgomery Rd
Montgomery Rd & Green Briar Blvd	2335	Seminole County	N	31	100	Southbound through on Montgomery Rd
Montgomery Rd & Central Pkwy	2330	Seminole County	N	31	100	Southbound through on Montgomery Rd
Montgomery Rd & Oak Dr	2325	Seminole County	N	31	100	Southbound through on Montgomery Rd
SR 436 & Montgomery Rd	1485	Seminole County	Y	31	190	Southbound left turn onto SR 436 Eastbound
SR 436 & Frances Dr/Lynchfield Ave	1490	Seminole County	Y	31	190	Eastbound through on SR 436
SR 436 & Grace Blvd	1495	Seminole County	Y	31	190	Eastbound through on SR 436
SR 436 & Westmonte Dr	1500	Seminole County	Y	31	190	Eastbound through on SR 436
SR 436 & Douglas Ave	1505	Seminole County	Y	31	190	Eastbound through on SR 436
SR 436 & I-4 WB Ramps	1510	Seminole County	Y	31	190	Eastbound right turn ono I-4 Westbound
SR 436 & I-4 EB Ramps	1515	Seminole County	Y	31	190	Eastbound through on SR 436 to prevent jamming

EXIT 92 TO EXIT 94 — SR 436 / Altamonte Drive — SR 434 / Wekiva Springs — I-4 BiD

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 436 & I-4 EB Ramps	1515	Seminole County	Y	32	190	Northbound left turn onto SR 436 Westbound
SR 436 & I-4 WB Ramps	1510	Seminole County	Y	32	190	Westbound through and Eastbound right turn
SR 436 & Douglas Ave	1505	Seminole County	Y	32	190	EB and WB through on SR 436
SR 436 & Westmonte Dr	1500	Seminole County	Y	32	190	EB and WB through on SR 436
SR 436 & Grace Blvd	1495	Seminole County	Y	32	190	EB and WB through on SR 436
SR 436 & Frances Dr/Lynchfield Ave	1490	Seminole County	Y	32	190	EB and WB through on SR 436
SR 436 & Montgomery Rd	1485	Seminole County	Y	32	190	Westbound right turn and Southbound left turn
Montgomery Rd & Oak Dr	2325	Seminole County	N	32	100	NB and SB through on Montgomery Rd
Montgomery Rd & Central Pkwy	2330	Seminole County	N	32	100	NB and SB through on Montgomery Rd
Montgomery Rd & Green Briar Blvd	2335	Seminole County	N	32	100	NB and SB through on Montgomery Rd
Montgomery & Jamestown/Clear Chan	2340	Seminole County	N	32	100	NB and SB through on Montgomery Rd
Montgomery Rd & North St	2345	Seminole County	N	32	100	NB and SB through on Montgomery Rd
Montgomery Rd & Plaza Ent	2350	Seminole County	N	32	100	NB and SB through on Montgomery Rd
SR 434 & Wekiva Springs/Montgomery	1240	Seminole County	Y	32	150	Northbound right turn and westbound left turn
SR 434 & Springs Blvd/Gum St	1245	Seminole County	Y	32	150	EB and WB through on SR 434
SR 434 & Sanlando Office Park	1250	Seminole County	Y	32	150	EB and WB through on SR 434
SR 434 & Markham Woods Rd	1255	Seminole County	Y	32	150	EB and WB through on SR 434
SR 434 & I-4 WB Ramps	1260	Seminole County	Y	32	150	EB through and SB right turn
SR 434 & I-4 EB Ramps	1265	Seminole County	Y	32	150	Eastbound left turn on I-4 Northbound
SR 434 at Raymond Ave	1270	Seminole County	Y	32	150	Eastbound through on SR 434 to prevent jamming

Seminole County ATMS Flex Group: I-4 Sec 2 (DivRt) 434/Montgm


EXIT 98
EXIT 94
4
434
US 17-92
LAKE MARY BLVD
GREENWAY BLVD
LONGWOOD HILLS ROAD
GENERAL HUTCHINSON P
LONGWOOD-OVIEDO RD
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Updated July 13, 2018
0 0.175 0.35 0.7 1.05 1.4
Miles
FDOT
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 434/Wekiva Springs to
Lake Mary Blvd

EXIT 94 TO EXIT 98 — SR 434 / Wekiva Springs — Lake Mary Boulevard — I-4 EB

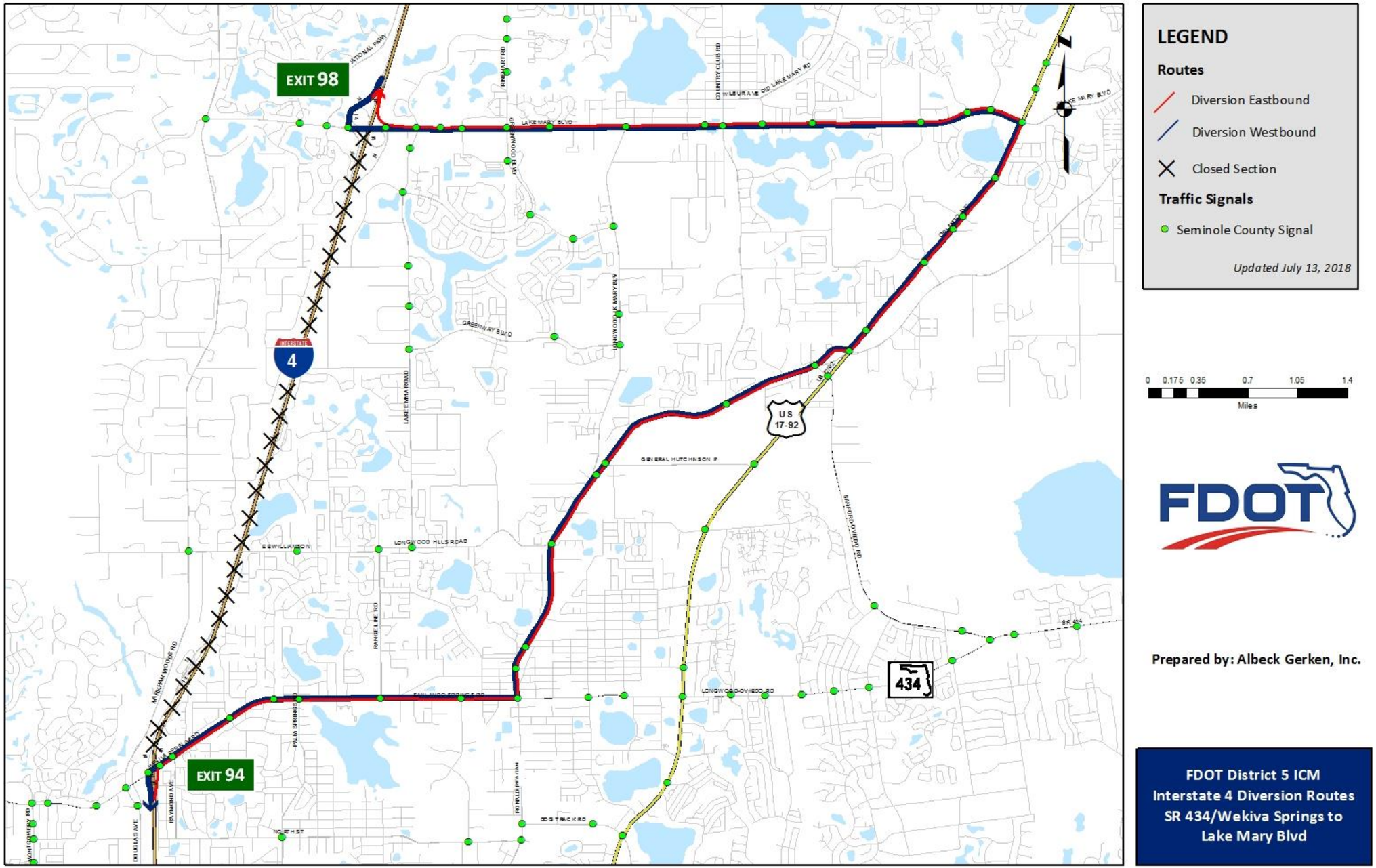
Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 434 & Sanlando Office Park	1250	Seminole County	Y	27	150	Westbound through to prevent jamming
SR 434 & Markham Woods Rd	1255	Seminole County	Y	27	150	Westbound through to prevent jamming
SR 434 & I-4 WB Ramps	1260	Seminole County	Y	27	150	Westbound through to prevent jamming
SR 434 & I-4 EB Ramps	1265	Seminole County	Y	27	150	Northbound right turn onto Eastbound SR 434
SR 434 & Raymond Ave	1270	Seminole County	Y	27	150	Eastbound through on SR 434
SR 434 & Tollgate Tr	1275	Seminole County	Y	27	150	Eastbound through on SR 434
SR 434 & Sheridan Ave/Palm Springs Dr	1280	Seminole County	Y	27	150	Eastbound through on SR 434
SR 434 & Rangeline Rd	1285	Seminole County	Y	27	150	Eastbound through on SR 434
SR 434 & FL Central Pkwy	1290	Seminole County	Y	27	150	Eastbound through on SR 434
SR 434 & CR 427	1295	Seminole County	Y	27	150	Eastbound left turn onto CR 427 Northbound
CR 427 & Church Ave	1925	Seminole County	N	27	150	Northbound through on CR 427
CR 427 & Longwood Hills/Shomate	1920	Seminole County	N	27	150	Northbound through on CR 427
CR 427 & Longwood-Lake Mary Rd	1915	Seminole County	N	27	150	Northbound through on CR 427
CR 427 & General Hutchinson Pkwy	1910	Seminole County	N	27	150	Northbound through on CR 427
CR 427 & Country Club Rd	1905	Seminole County	N	27	150	Northbound through on CR 427
CR 427 & Silkwood Ct	1900	Seminole County	N	27	150	Northbound through on CR 427
US 17-92 & Silkwood Ct/SR 419	1115	Seminole County	Y	27	180	Eastbound left turn onto US 17-92 Northbound
US 17-92 & CR 427	1110	Seminole County	Y	27	180	Northbound through on US 17-92
US 17-92 & Weldon Blvd	1105	Seminole County	Y	27	180	Northbound through on US 17-92
US 17-92 & Country Home Rd	1100	Seminole County	Y	27	180	Northbound through on US 17-92
US 17-92 & Bargain Blvd	1095	Seminole County	Y	27	180	Northbound through on US 17-92
US 17-92 & Bush BlvdU/Tropic Park Dr	1090	Seminole County	Y	27	180	Northbound through on US 17-92
US 17-92 & Lake Minnie Dr/Collins Dr	1085	Seminole County	Y	27	180	Northbound through on US 17-92
US 17-92 & Lake Mary Blvd	1080	Seminole County	Y	27	180	Northbound left turn onto Lake Mary Blvd westbound
Lake Mary Blvd & Live Oak Blvd	2035	Seminole County	N	27	130	Westbound through on Lake Mary Blvd
Lake Mary Blvd & Hidden Lake Dr	2040	Seminole County	N	27	130	Westbound through on Lake Mary Blvd
Lake Mary Blvd & Art Ln/College Dr	2045	Seminole County	N	27	130	Westbound through on Lake Mary Blvd
Lake Mary Blvd & Sir Lawrence Dr	2050	Seminole County	N	27	130	Westbound through on Lake Mary Blvd
Lake Mary Blvd & Palmetto St	2053	Seminole County	N	27	130	Westbound through on Lake Mary Blvd
Lake Mary Blvd & Country Club Rd	2055	Seminole County	N	27	220	Westbound through on Lake Mary Blvd
Lake Mary Blvd & 4th St/Lake Mary ES	2060	Seminole County	N	27	220	Westbound through on Lake Mary Blvd
Lake Mary & Longwood-Lake Mary	2065	Seminole County	N	27	220	Westbound through on Lake Mary Blvd
Lake Mary Blvd & Forest Blvd	2070	Seminole County	N	27	220	Westbound through on Lake Mary Blvd
Lake Mary Blvd & Rinehart Rd	2075	Seminole County	N	27	220	Westbound through on Lake Mary Blvd
Lake Mary Blvd & Sun Dr	2080	Seminole County	N	27	220	Westbound through on Lake Mary Blvd
Lake Mary Blvd & Lake Mary Centre	2085	Seminole County	N	27	220	Westbound through on Lake Mary Blvd
Lake Mary & Primera Blvd/Lake Emma	2090	Seminole County	N	27	220	Westbound through on Lake Mary Blvd
Lake Mary Blvd & I-4 EB Ramps	2095	Seminole County	Y	27	220	Westbound right turn onto I-4 Eastbound
Lake Mary Blvd & I-4 WB Ramps	2100	Seminole County	Y	27	220	Westbound through on Lake Mary to prevent jamming
Lake Mary Blvd & International Pkwy	2105	Seminole County	N	27	220	Westbound through on Lake Mary to prevent jamming

EXIT 98 TO EXIT 94 — Lake Mary Boulevard — SR 434 / Wekiva Springs — I-4 WB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
Lake Mary Blvd & International Pkwy	2105	Seminole County	N	28	220	Westbound through on Lake Mary to prevent jamming
Lake Mary Blvd & I-4 WB Ramps	2100	Seminole County	Y	28	220	Westbound through on Lake Mary to prevent jamming
Lake Mary Blvd & I-4 EB Ramps	2095	Seminole County	Y	28	220	Northbound right turn onto Lake Mary Blvd eastbound
Lake Mary & Primera Blvd/Lake Emma	2090	Seminole County	N	28	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Lake Mary Centre	2085	Seminole County	N	28	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Sun Dr	2080	Seminole County	N	28	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Rinehart Rd	2075	Seminole County	N	28	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Forest Blvd	2070	Seminole County	N	28	220	Eastbound through on Lake Mary Blvd
Lake Mary & Longwood-Lake Mary Rd	2065	Seminole County	N	28	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & 4th St/Lake Mary ES	2060	Seminole County	N	28	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Country Club Rd	2055	Seminole County	N	28	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Palmetto St	2053	Seminole County	N	28	130	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Sir Lawrence Dr	2050	Seminole County	N	28	130	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Art Ln/College Dr	2045	Seminole County	N	28	130	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Hidden Lake Dr	2040	Seminole County	N	28	130	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Live Oak Blvd	2035	Seminole County	N	28	130	Eastbound through on Lake Mary Blvd
US 17-92 & Lake Mary Blvd	1080	Seminole County	Y	28	180	Eastbound right turn onto US 17-92 Southbound
US 17-92 & Lake Minnie Dr/Collins Dr	1085	Seminole County	Y	28	180	Southbound through on US 17-92
US 17-92 & Bush BlvdU/Tropic Park Dr	1090	Seminole County	Y	28	180	Southbound through on US 17-92
US 17-92 & Bargain Blvd	1095	Seminole County	Y	28	180	Southbound through on US 17-92
US 17-92 & Country Home Rd	1100	Seminole County	Y	28	180	Southbound through on US 17-92
US 17-92 & Weldon Blvd	1105	Seminole County	Y	28	180	Southbound through on US 17-92
US 17-92 & CR 427	1110	Seminole County	Y	28	180	Southbound right turn onto CR 427 Southbound
US 17-92 & Silkwood Ct/SR 419	1115	Seminole County	Y	28	180	Southbound through on CR 427
CR 427 & Silkwood Ct	1900	Seminole County	N	28	150	Southbound through on CR 427
CR 427 & Country Club Rd	1905	Seminole County	N	28	150	Southbound through on CR 427
CR 427 & General Hutchinson Pkwy	1910	Seminole County	N	28	150	Southbound through on CR 427
CR 427 & Longwood-Lake Mary Rd	1915	Seminole County	N	28	150	Southbound through on CR 427
CR 427 & Longwood Hills Rd/Shomate	1920	Seminole County	N	28	150	Southbound through on CR 427
CR 427 & Church Ave	1925	Seminole County	N	28	150	Southbound through on CR 427
SR 434 & CR 427	1295	Seminole County	Y	28	150	Southbound right turn onto SR 434 Westbound
SR 434 & FL Central Pkwy	1290	Seminole County	Y	28	150	Westbound through on SR 434
SR 434 & Rangeline Rd	1285	Seminole County	Y	28	150	Westbound through on SR 434
SR 434 & Sheridan Ave/Palm Springs Dr	1280	Seminole County	Y	28	150	Westbound through on SR 434
SR 434 & Tollgate Tr	1275	Seminole County	Y	28	150	Westbound through on SR 434
SR 434 & Raymond Ave	1270	Seminole County	Y	28	150	Westbound through on SR 434
SR 434 & I-4 EB Ramps	1265	Seminole County	Y	28	150	Westbound through on SR 434
SR 434 & I-4 WB Ramps	1260	Seminole County	Y	28	150	Westbound left turn onto I-4 Westbound ramp
SR 434 & Markham Woods Rd	1255	Seminole County	Y	28	150	Westbound through on SR 434 to prevent jamming
SR 434 & Sanlando Office Park	1250	Seminole County	Y	28	150	Westbound through on SR 434 to prevent jamming

Seminole County ATMS Flex Group: I-4 Sec 3 (DivRt) LM/424/434

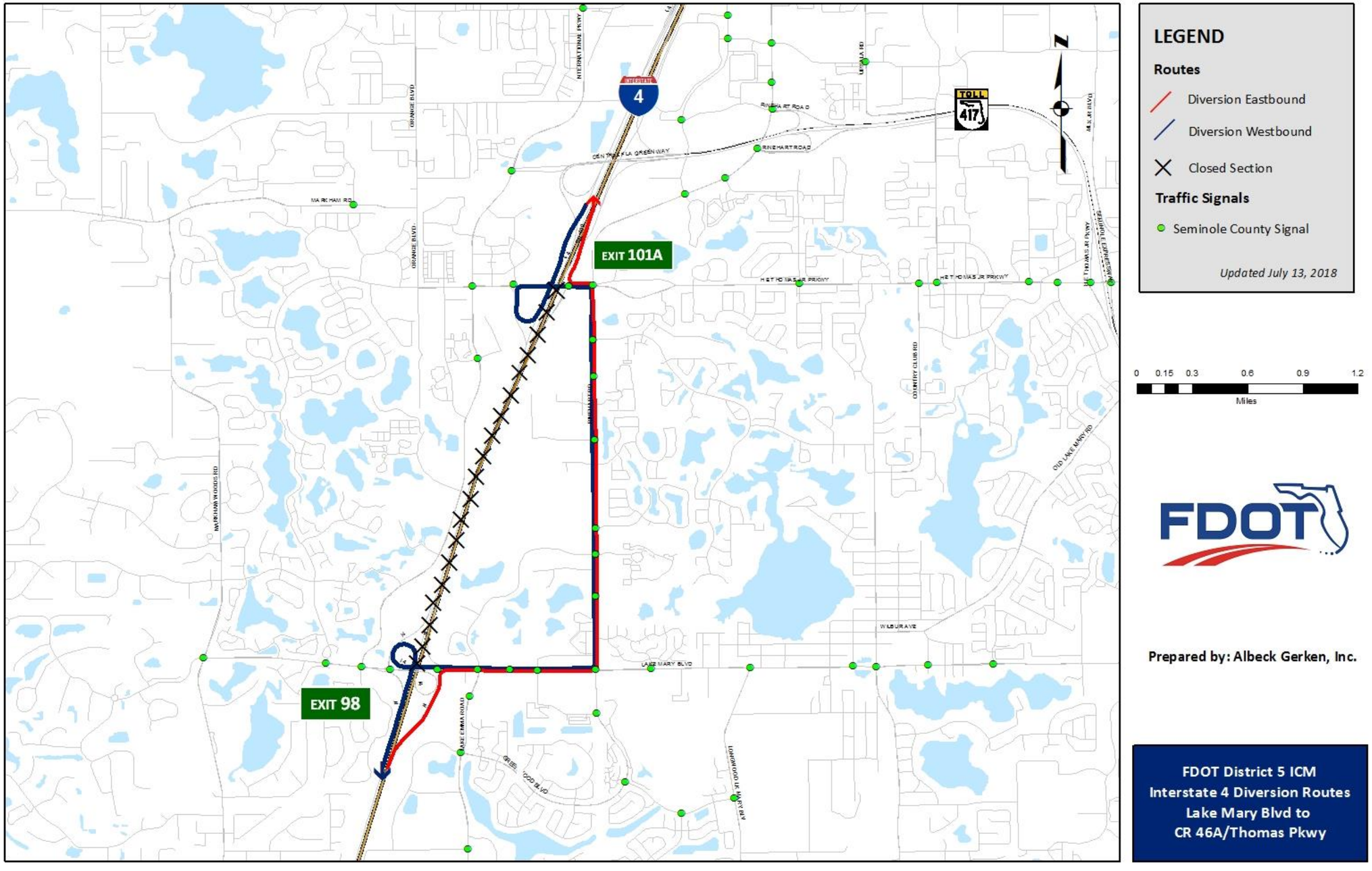
See Next Page for BiDirectional Diversion


EXIT 98
EXIT 94
4
US 17-92
434
LAKE MARY BLVD
GREENWAY BLVD
LONGWOOD HILLS ROAD
GENERAL HUTCHINSON P
LONGWOOD-OVIEDO RD
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Updated July 13, 2018
0 0.175 0.35 0.7 1.05 1.4
Miles
FDOT
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 434/Wekiva Springs to
Lake Mary Blvd

EXIT 94 TO EXIT 98 | **SR 434 / Wekiva Springs — Lake Mary Boulevard** | **I-4 BiD** | DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 434 & Sanlando Office Park	1250	Seminole County	Y	29	150	Westbound through to prevent jamming
SR 434 & Markham Woods Rd	1255	Seminole County	Y	29	150	Westbound through to prevent jamming
SR 434 & I-4 WB Ramps	1260	Seminole County	Y	29	150	Westbound left turn onto Westbound I-4
SR 434 & I-4 EB Ramps	1265	Seminole County	Y	29	150	Westbound through and Northbound right turn
SR 434 & Raymond Ave	1270	Seminole County	Y	29	150	EB and WB through on SR 434
SR 434 & Tollgate Tr	1275	Seminole County	Y	29	150	EB and WB through on SR 434
SR 434 & Sheridan Ave/Palm Springs Dr	1280	Seminole County	Y	29	150	EB and WB through on SR 434
SR 434 & Rangeline Rd	1285	Seminole County	Y	29	150	EB and WB through on SR 434
SR 434 & FL Central Pkwy	1290	Seminole County	Y	29	150	EB and WB through on SR 434
SR 434 & CR 427	1295	Seminole County	Y	29	150	Eastbound Left tturn and Southbound right turn
CR 427 & Church Ave	1925	Seminole County	N	29	150	NB and SB through on CR 427
CR 427 & Longwood Hills Rd/Shomate	1920	Seminole County	N	29	150	NB and SB through on CR 427
CR 427 & Longwood-Lake Mary Rd	1915	Seminole County	N	29	150	NB and SB through on CR 427
CR 427 & General Hutchinson Pkwy	1910	Seminole County	N	29	150	NB and SB through on CR 427
CR 427 & Country Club Rd	1905	Seminole County	N	29	150	NB and SB through on CR 427
CR 427 & Silkwood Ct	1900	Seminole County	N	29	150	NB and SB through on CR 427
US 17-92 & Silkwood Ct/SR 419	1115	Seminole County	Y	29	180	Eastbound left turn and southbound right turn
US 17-92 & CR 427	1110	Seminole County	Y	29	180	NB and SB through on US 17-92
US 17-92 & Weldon Blvd	1105	Seminole County	Y	29	180	NB and SB through on US 17-92
US 17-92 & Country Home Rd	1100	Seminole County	Y	29	180	NB and SB through on US 17-92
US 17-92 & Bargain Blvd	1095	Seminole County	Y	29	180	NB and SB through on US 17-92
US 17-92 & Bush BlvdU/Tropic Park Dr	1090	Seminole County	Y	29	180	NB and SB through on US 17-92
US 17-92 & Lake Minnie Dr/Collins Dr	1085	Seminole County	Y	29	180	NB and SB through on US 17-92
US 17-92 & Lake Mary Blvd	1080	Seminole County	Y	29	180	Northbound left turn and eastbound right turn
Lake Mary Blvd & Live Oak Blvd	2035	Seminole County	N	29	130	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & Hidden Lake Dr	2040	Seminole County	N	29	130	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & Art Ln/College Dr	2045	Seminole County	N	29	130	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & Sir Lawrence Dr	2050	Seminole County	N	29	130	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & Palmetto St	2053	Seminole County	N	29	130	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & Country Club Rd	2055	Seminole County	N	29	220	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & 4th St/Lake Mary ES	2060	Seminole County	N	29	220	EB and WB through on Lake Mary Blvd
Lake Mary & Longwood-Lake Mary Rd	2065	Seminole County	N	29	220	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & Forest Blvd	2070	Seminole County	N	29	220	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & Rinehart Rd	2075	Seminole County	N	29	220	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & Sun Dr	2080	Seminole County	N	29	220	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & Lake Mary Centre	2085	Seminole County	N	29	220	EB and WB through on Lake Mary Blvd
Lake Mary & Primera Blvd/Lake Emma	2090	Seminole County	N	29	220	EB and WB through on Lake Mary Blvd
Lake Mary Blvd & I-4 EB Ramps	2095	Seminole County	Y	29	220	EB Through and WB right turn
Lake Mary Blvd & I-4 WB Ramps	2100	Seminole County	Y	29	220	Westbound turn to I-4 Westbound
Lake Mary Blvd & International Pkwy	2105	Seminole County	N	29	220	Westbound through on Lake Mary to prevent jamming

Seminole County ATMS Flex Group: I-4 Sec 3 (DivRt) LM/424/434


LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Updated July 13, 2018
0 0.15 0.3 0.6 0.9 1.2
Miles
EXIT 101A
EXIT 98
4
TOLL
417
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
Lake Mary Blvd to
CR 46A/Thomas Pkwy

EXIT 98 TO EXIT 101A | **Lake Mary Boulevard – CR 46A - Thomas Parkway** | **I-4 EB** | DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
Lake Mary Blvd & International Pkwy	2105	Seminole County	N	30	220	Westbound through to prevent jamming
Lake Mary Blvd & I-4 WB Ramps	2100	Seminole County	Y	30	220	Westbound through to prevent jamming
Lake Mary Blvd & I-4 EB Ramps	2095	Seminole County	Y	30	220	Northbound right turn onto Lake Mary Eastbound
Lake Mary & Lake Emma/Primera	2090	Seminole County	N	30	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Lake Mary Center	2085	Seminole County	N	30	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Sun Dr	2080	Seminole County	N	30	220	Eastbound through on Lake Mary Blvd
Lake Mary & Greenwood /Rinehart	2075	Seminole County	N	30	220	Eastbound left turn onto Rinehart Rd
Rinehart Rd & Crystal Lake ES	2155	Seminole County	N	30	150	Northbound through on Rinehart Rd
Rinehart & Primera / Fountain Parke	2160	Seminole County	N	30	150	Northbound through on Rinehart Rd
Rinehart Rd & Manderley Run	2165	Seminole County	N	30	150	Northbound through on Rinehart Rd
Rinehart Rd & Woodbridge Lake	2168	Seminole County	N	30	150	Northbound through on Rinehart Rd
Rinehart Rd & Wallace Ct	2170	Seminole County	N	30	150	Northbound through on Rinehart Rd
Rinehart Rd & Postal Dist Ctr	2175	Seminole County	N	30	150	Northbound through on Rinehart Rd
Rinehart Rd & Timacuan Blvd	2180	Seminole County	N	30	150	Northbound through on Rinehart Rd
CR 46A & Rinehart Rd	1995	Seminole County	N	30	150	Northbound left turn onto CR 46A Westbound
CR 46A & I-4 EB Ramps	2000	Seminole County	Y	30	150	Westbound right turn onto I-4 Eastbound
CR 46A & I-4 WB Ramps/Colonial Ctr	2005	Seminole County	Y	30	150	Westbound through to prevent jamming
CR 46A & International Pkwy	2010	Seminole County	N	30	150	Westbound through to prevent jamming

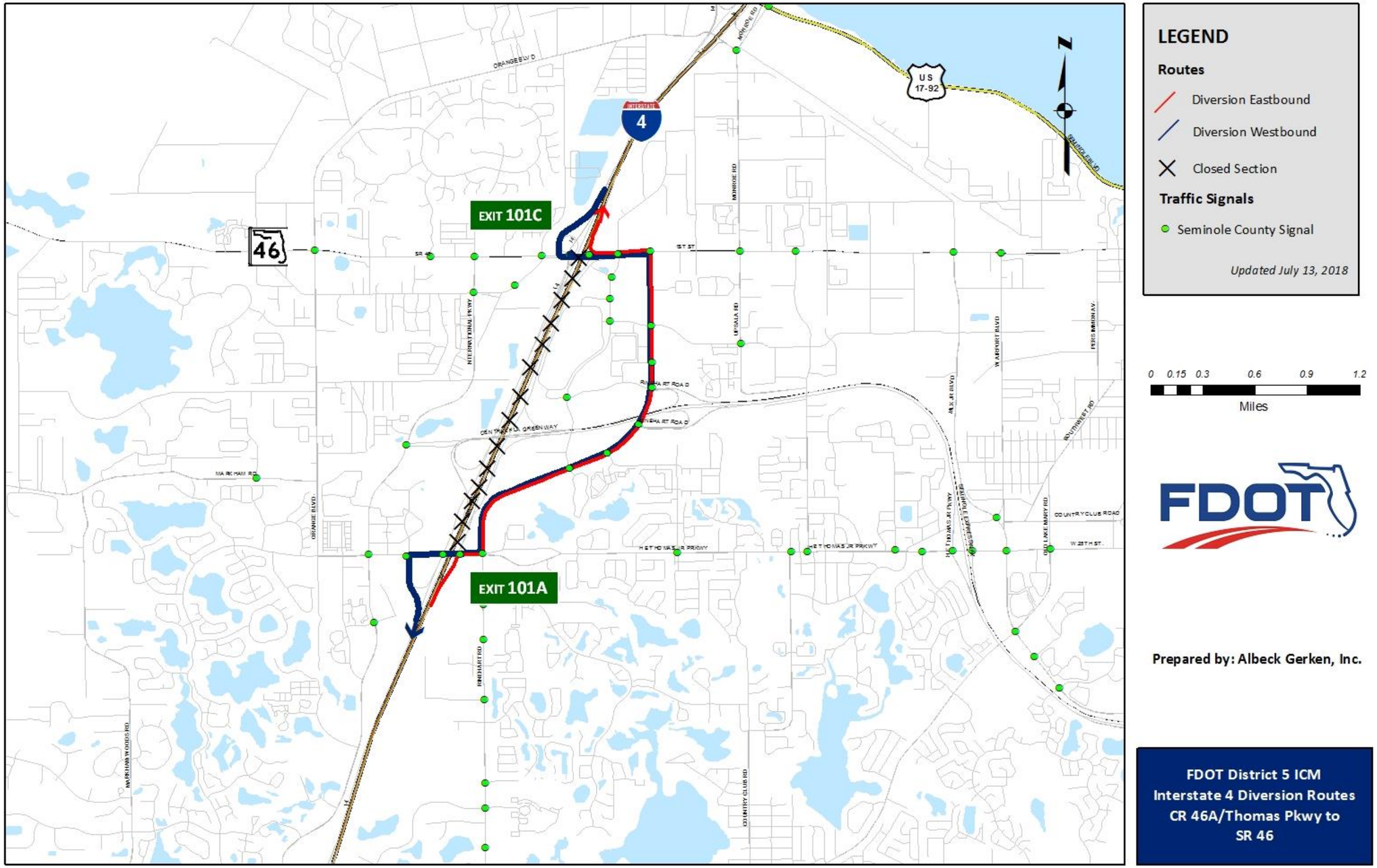
EXIT 101A TO EXIT 98 | **CR 46A - Thomas Parkway – Lake Mary Boulevard** | **I-4 WB** | DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
CR 46A & International Pkwy	2010	Seminole County	N	31	150	Westbound through to prevent jamming
CR 46A & I-4 WB Ramps/Colonial Ctr	2005	Seminole County	Y	31	150	Northbound right turn onto CR 46A Eastbound
CR 46A & I-4 EB Ramps	2000	Seminole County	Y	31	150	Eastbound through movement on CR 46A
CR 46A & Rinehart Rd	1995	Seminole County	N	31	150	Eastbound right turn movement onto Rinehart Rd
Rinehart Rd & Timacuan Blvd	2180	Seminole County	N	31	150	Southbound through on Rinehart Rd
Rinehart Rd & Postal Dist Ctr	2175	Seminole County	N	31	150	Southbound through on Rinehart Rd
Rinehart Rd & Wallace Ct	2170	Seminole County	N	31	150	Southbound through on Rinehart Rd
Rinehart Rd & Woodbridge Lake	2168	Seminole County	N	31	150	Southbound through on Rinehart Rd
Rinehart Rd & Manderley Run	2165	Seminole County	N	31	150	Southbound through on Rinehart Rd
Rinehart & Primera / Fountain Parke	2160	Seminole County	N	31	150	Southbound through on Rinehart Rd
Rinehart Rd & Crystal Lake ES	2155	Seminole County	N	31	150	Southbound through on Rinehart Rd
Lake Mary & Greenwood /Rinehart	2075	Seminole County	N	31	220	Southbound right turn onto Lake Mary Blvd Westbound
Lake Mary Blvd & Sun Dr	2080	Seminole County	N	31	220	Westbound through on Lake Mary Blvd
Lake Mary Blvd & Lake Mary Center	2085	Seminole County	N	31	220	Westbound through on Lake Mary Blvd
Lake Mary & Lake Emma / Primera Blvd	2090	Seminole County	N	31	220	Westbound through on Lake Mary Blvd
Lake Mary Blvd & I-4 EB Ramps	2095	Seminole County	Y	31	220	Westbound through on Lake Mary Blvd
Lake Mary Blvd & I-4 WB Ramps	2100	Seminole County	Y	31	220	Right turn onto I-4 Westbound loop ramp
Lake Mary Blvd & International Pkwy	2105	Seminole County	N	31	220	Westbound through to prevent jamming

EXIT 98 TO EXIT 101A | **Lake Mary Boulevard – CR 46A - Thomas Parkway** | **I-4 BiD** | DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
Lake Mary Blvd & International Pkwy	2105	Seminole County	N	32	220	Westbound through to prevent jamming
Lake Mary Blvd & I-4 WB Ramps	2100	Seminole County	Y	32	220	Westbound through to prevent jamming
Lake Mary Blvd & I-4 EB Ramps	2095	Seminole County	Y	32	220	Northbound right turn onto Lake Mary Eastbound
Lake Mary & Lake Emma/Primera Blvd	2090	Seminole County	N	32	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Lake Mary Center	2085	Seminole County	N	32	220	Eastbound through on Lake Mary Blvd
Lake Mary Blvd & Sun Dr	2080	Seminole County	N	32	220	Eastbound through on Lake Mary Blvd
Lake Mary & Greenwood /Rinehart	2075	Seminole County	N	32	220	Eastbound left turn onto Rinehart Rd
Rinehart Rd & Crystal Lake ES	2155	Seminole County	N	32	150	Northbound through on Rinehart Rd
Rinehart & Primera /Fountain Parke	2160	Seminole County	N	32	150	Northbound through on Rinehart Rd
Rinehart Rd & Manderley Run	2165	Seminole County	N	32	150	Northbound through on Rinehart Rd
Rinehart Rd & Woodbridge Lake	2068	Seminole County	N	32	150	Northbound through on Rinehart Rd
Rinehart Rd & Wallace Ct	2170	Seminole County	N	32	150	Northbound through on Rinehart Rd
Rinehart Rd & Postal Dist Ctr	2175	Seminole County	N	32	150	Northbound through on Rinehart Rd
Rinehart Rd & Timacuan Blvd	2180	Seminole County	N	32	150	Northbound through on Rinehart Rd
CR 46A & Rinehart Rd	1995	Seminole County	N	32	150	Northbound left turn onto CR 46A Westbound
CR 46A & I-4 EB Ramps	2000	Seminole County	Y	32	150	Westbound right turn onto I-4 Eastbound
CR 46A & I-4 WB Ramps/Colonial Ctr	2005	Seminole County	Y	32	150	Westbound through to prevent jamming
CR 46A & International Pkwy	2010	Seminole County	N	32	150	Westbound through to prevent jamming

Seminole County ATMS Flex Group: I-4 Sec 4 (DivRt) 46A/Rinehart


EXIT 101C
EXIT 101A
46
4
US 17-92
N
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Updated July 13, 2018
0 0.15 0.3 0.6 0.9 1.2
Miles
FDOT
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
CR 46A/Thomas Pkwy to
SR 46

EXIT 101A TO EXIT 101C — **CR 46A - Thomas Pkwy / SR 46** — **I-4 EB**

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
CR 46A & International Pkwy	2010	Seminole County	N	27	150	Westbound through on CR 46A to prevent jamming
CR 46A & I-4 WB Ramps/Colonial Ctr	2005	Seminole County	Y	27	150	Westbound through on CR 46A to prevent jamming
CR 46A & I-4 EB Ramps	2000	Seminole County	Y	27	150	Northbound right turn onto eastbound CR 46A
CR 46A & Rinehart Rd	1995	Seminole County	N	27	150	Eastbound left turn onto northbound Rinehart Rd
Rinehart Rd & Plantation Lakes Cir	2185	Seminole County	N	27	150	Northbound through on Rinehart Rd
Rinehart Rd & Oregon Ave	2190	Seminole County	N	27	150	Northbound through on Rinehart Rd
Rinehart Rd & SR 417 SB Ramps	2195	Seminole County	Y	27	150	Northbound through on Rinehart Rd
Rinehart Rd & Ball Blvd/SR 417 NB	2200	Seminole County	Y	27	150	Northbound through on Rinehart Rd
Rinehart Rd & Garnet Ln	2203	Seminole County	N	27	150	Northbound through on Rinehart Rd
Rinehart Rd & St Johns Pkwy	2205	Seminole County	N	27	150	Northbound through on Rinehart Rd
SR 46 & Rinehart Rd	1680	Seminole County	Y	27	150	Northbound left turn onto westbound SR 46
SR 46 & Towne Center Blvd/Hickman Dr	1675	Seminole County	Y	27	150	Westbound through on SR 46
SR 46 & I-4 EB Ramps	1670	Seminole County	Y	27	150	Westbound right turn onto I-4 Eastbound
SR 46 & I-4 WB Ramps	1665	Seminole County	Y	27	150	Westbound through on SR 46 to prevent jamming
SR 46 & Wayside Dr/Oregon St	1660	Seminole County	Y	27	150	Westbound through on SR 46 to prevent jamming

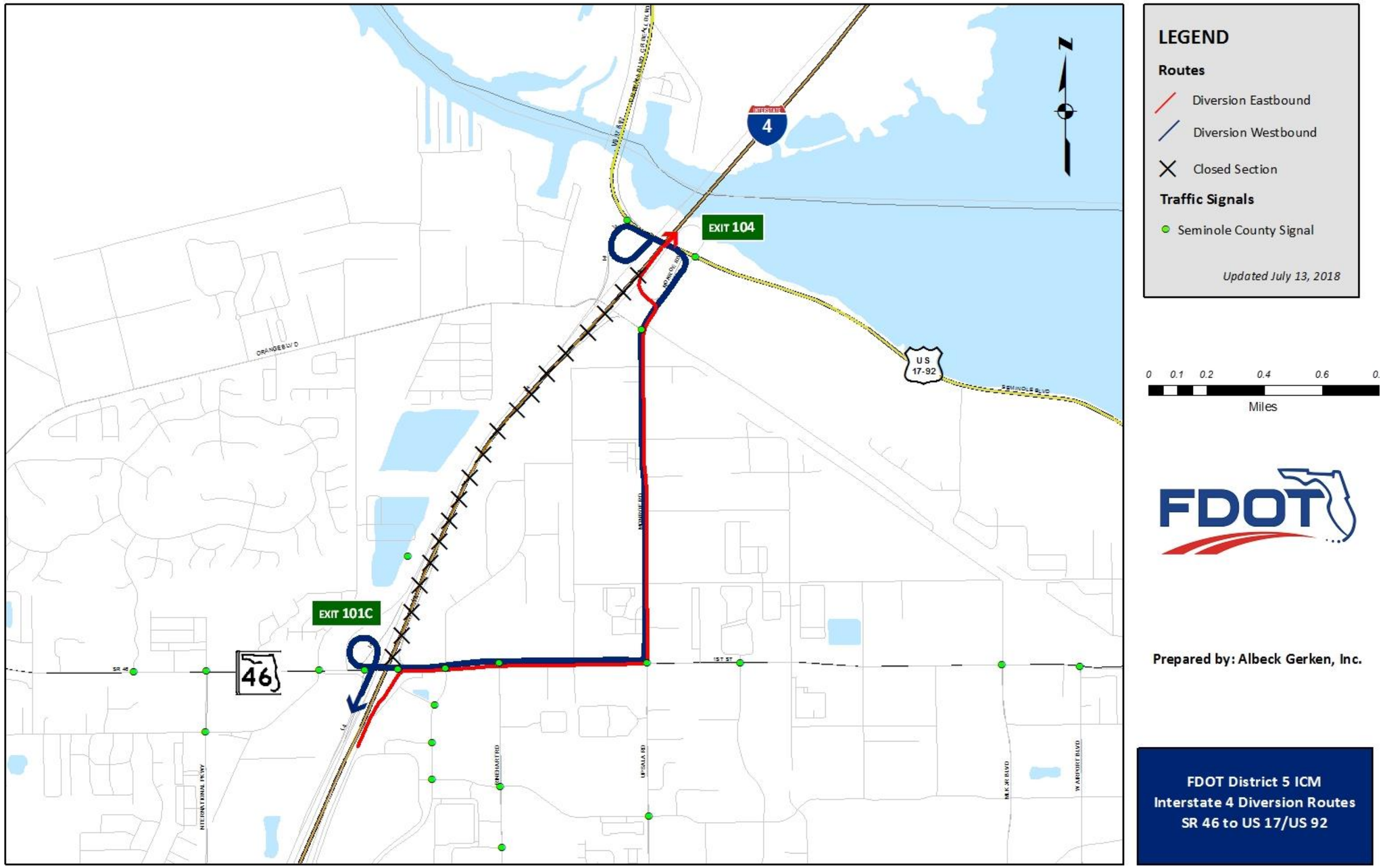
EXIT 101C TO EXIT 101A — **SR 46 / CR 46A - Thomas Pkwy** — **I-4 WB**

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 46 & Wayside Dr/Oregon St	1660	Seminole County	Y	28	150	Westbound through on SR 46 to prevent jamming
SR 46 & I-4 WB Ramps	1665	Seminole County	Y	28	150	Southbound left turn onto SR 46 eastbound
SR 46 & I-4 EB Ramps	1670	Seminole County	Y	28	150	Eastbound through on SR 46
SR 46 & Towne Center Blvd/Hickman Dr	1675	Seminole County	Y	28	150	Eastbound through on SR 46
SR 46 & Rinehart Rd	1680	Seminole County	Y	28	150	Eastbound right turn onto Rinehart Rd southbound
Rinehart Rd & St Johns Pkwy	2205	Seminole County	N	28	150	Southbound through on Rinehart Rd
Rinehart Rd & Garnet Ln	2203	Seminole County	N	28	150	Southbound through on Rinehart Rd
Rinehart Rd & Ball Blvd/SR 417 NB	2200	Seminole County	Y	28	150	Southbound through on Rinehart Rd
Rinehart Rd & SR 417 SB Ramps	2195	Seminole County	Y	28	150	Southbound through on Rinehart Rd
Rinehart Rd & Oregon Ave	2190	Seminole County	N	28	150	Southbound through on Rinehart Rd
Rinehart Rd & Plantation Lakes Cir	2185	Seminole County	N	28	150	Southbound through on Rinehart Rd
CR 46A & Rinehart Rd	1995	Seminole County	N	28	150	Southbound right turn onto CR 46A westbound
CR 46A & I-4 EB Ramps	2000	Seminole County	Y	28	150	Westbound through on CR 46A
CR 46A & I-4 WB Ramps/Colonial Ctr	2005	Seminole County	Y	28	150	Westbound left turn onto I-4 westbound
CR 46A & International Pkwy	2010	Seminole County	N	28	150	Westbound through on CR 46A to prevent jamming

EXIT 101A TO EXIT 101C — **CR 46A - Thomas Pkwy / SR 46** — **I-4 BiD**

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
CR 46A & International Pkwy	2010	Seminole County	N	29	150	Westbound through on CR 46A to prevent jamming
CR 46A & I-4 WB Ramps/Colonial Ctr	2005	Seminole County	Y	29	150	Westbound left onto I-4 westbound
CR 46A & I-4 EB Ramps	2000	Seminole County	Y	29	150	Northbound right turn and westbound through
CR 46A & Rinehart Rd	1995	Seminole County	N	29	150	Eastbound left turn and southbound right turn
Rinehart Rd & Plantation Lakes Cir	2185	Seminole County	N	29	150	NB and SB through on Rinehart Rd
Rinehart Rd & Oregon Ave	2190	Seminole County	N	29	150	NB and SB through on Rinehart Rd
Rinehart Rd & SR 417 SB Ramps	2195	Seminole County	Y	29	150	NB and SB through on Rinehart Rd
Rinehart Rd & Ball Blvd/SR 417 NB	2200	Seminole County	Y	29	150	NB and SB through on Rinehart Rd
Rinehart Rd & Garnet Ln	2203	Seminole County	N	29	150	NB and SB through on Rinehart Rd
Rinehart Rd & St Johns Pkwy	2205	Seminole County	N	29	150	NB and SB through on Rinehart Rd
SR 46 & Rinehart Rd	1680	Seminole County	Y	29	150	Northbound left turn and eastbound right turn
SR 46 & Towne Center Blvd/Hickman Dr	1675	Seminole County	Y	29	150	EB and WB through on SR 46
SR 46 & I-4 EB Ramps	1670	Seminole County	Y	29	150	Westbound right turn and eastbound through
SR 46 & I-4 WB Ramps	1665	Seminole County	Y	29	150	Southbound left turn onto SR 46 eastbound
SR 46 & Wayside Dr/Oregon St	1660	Seminole County	Y	29	150	Westbound through on SR 46 to prevent jamming

Seminole County ATMS Flex Group: I-4 Sec 5 (DivRt) CR46A West


LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Updated July 13, 2018
0 0.1 0.2 0.4 0.6 0.
Miles
EXIT 104
EXIT 101C
4
46
US 17-92
FDOT
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
SR 46 to US 17/US 92

EXIT 101C TO EXIT 104 — SR 46 / US 17 / 92 — I-4 EB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 46 & Wayside Dr/Oregon St	1660	Seminole County	Y	30	150	Westbound through on SR 46 to prevent jamming
SR 46 & I-4 WB Ramps	1665	Seminole County	Y	30	150	Westbound through on SR 46 to prevent jamming
SR 46 & I-4 EB Ramps	1670	Seminole County	Y	30	150	Northbound right turn onto SR 46 eastbound
SR 46 & Towne Center Blvd/Hickman Dr	1675	Seminole County	Y	30	150	Eastbound through on SR 46
SR 46 & Rinehart Rd	1680	Seminole County	Y	30	150	Eastbound through on SR 46
SR 46 & Upsala Rd/CR 15 (Monroe Rd)	1685	Seminole County	Y	30	150	Eastbound left turn onto CR 15 / Monroe Road northbound
CR 15 (Monroe Rd) & Orange Blvd	2700	Seminole County	N	30	Free	Northbound through on Monroe Road
CR 15 (Monroe Rd) at I-4 EB	NA	NA	NA	NA	NA	Northbound left turn onto I-4
US 17-92 & CR 15 (Monroe)/I-4 EB	1010	Seminole County	Y	30	Free	Northbound left turn to prevent jamming
US 17-92 & I-4 WB Ramps	1005	Seminole County	Y	30	Free	Westbound through on US 17 - 92 to prevent jamming

EXIT 104 TO EXIT 101C — US 17 / 92 / SR 46 — I-4 WB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
US 17-92 & I-4 WB Ramps	1005	Seminole County	Y	31	Free	Northbound right turn onto US 17 - 92 eastbound
US 17-92 & CR 15 (Monroe Rd)/I-4 EB	1010	Seminole County	Y	31	Free	Eastbound right turn onto Monroe Rd southbound
CR 15 (Monroe Rd) & Orange Blvd	2700	Seminole County	N	31	Free	Southbound through on Monroe Road
SR 46 & Upsala Rd/CR 15 (Monroe Rd)	1685	Seminole County	Y	31	150	Southbound right turn onto SR 45 westbound
SR 46 & Rinehart Rd	1680	Seminole County	Y	31	150	Westbound through on SR 46
SR 46 & Towne Center Blvd/Hickman Dr	1675	Seminole County	Y	31	150	Westbound through on SR 46
SR 46 & I-4 EB Ramps	1670	Seminole County	Y	31	150	Westbound through on SR 46
SR 46 & I-4 WB Ramps	1665	Seminole County	Y	31	150	Westbound right turn onto I-4 westbound
SR 46 & Wayside Dr/Oregon St	1660	Seminole County	Y	31	150	Westbound through on SR 46 to prevent jamming

EXIT 101C TO EXIT 104 — SR 46 / US 17 / 92 — I-4 BiD

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
SR 46 & Wayside Dr/Oregon St	1660	Seminole County	Y	32	150	Westbound through on SR 46 to prevent jamming
SR 46 & I-4 WB Ramps	1665	Seminole County	Y	32	150	Westbound through and right turn
SR 46 & I-4 EB Ramps	1670	Seminole County	Y	32	150	Northbound right turn and westbound through
SR 46 & Towne Center Blvd/Hickman Dr	1675	Seminole County	Y	32	150	EB and WB through on SR 46
SR 46 & Rinehart Rd	1680	Seminole County	Y	32	150	EB and WB through on SR 46
SR 46 & Upsala Rd/CR 15 (Monroe Rd)	1685	Seminole County	Y	32	150	Eastbound left turn and southbound right turn
CR 15 (Monroe Rd) & Orange Blvd	2700	Seminole County	N	32	Free	NB and SB through on Monroe Road
CR 15 (Monroe Rd) at I-4 EB	NA	NA	NA	NA	NA	Northbound left turn onto I-4
US 17-92 & CR 15 (Monroe Rd)/I-4 EB	1010	Seminole County	Y	32	Free	Eastbound right turn onto Monroe Road
US 17-92 & I-4 WB Ramps	1005	Seminole County	Y	32	Free	Northbound right turn onto US 17 - 92 eastbound

Seminole County ATMS Flex Group: I-4 Sec 6 (DivRt) 17-92/CR15

EXIT 108
EXIT 104
US 17-92
4
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Volusia County Signal
Updated July 13, 2018
0 0.1 0.2 0.4 0.6 0.8
Miles
FDOT
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
Interstate 4 Diversion Routes
US 17/US 92 to Dirksen Dr

EXIT 104 TO EXIT 108 — US 17 / 92 — Dirksen Drive — I-4 EB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
CR 15 (Monroe Rd) & Orange Blvd	2700	Seminole County	N	Free	Free	Southbound through on Monroe Road to prevent jamming
US 17-92 & CR 15 (Monroe Rd)/I-4 EB	1010	Seminole County	Y	Free	Free	Favor free flow ramp to US 17 - 92 westbound
US 17-92 & I-4 WB Ramps	1005	Seminole County	Y	Free	Free	Westbound through movement on US 17-92
Dirksen Dr & US 17-92	Not in ICM	Volusia County	Y	Free	Free	Northbound right turn onto Dirksen Drive
Dirksen Dr & I-4 WB Ramps	Not in ICM	Volusia County	Y	Free	Free	Eastbound through on Dirksen Drive
Dirksen Dr & I-4 EB Ramps	Not in ICM	Volusia County	Y	Free	Free	Eastbound left turn onto I-4 eastbound

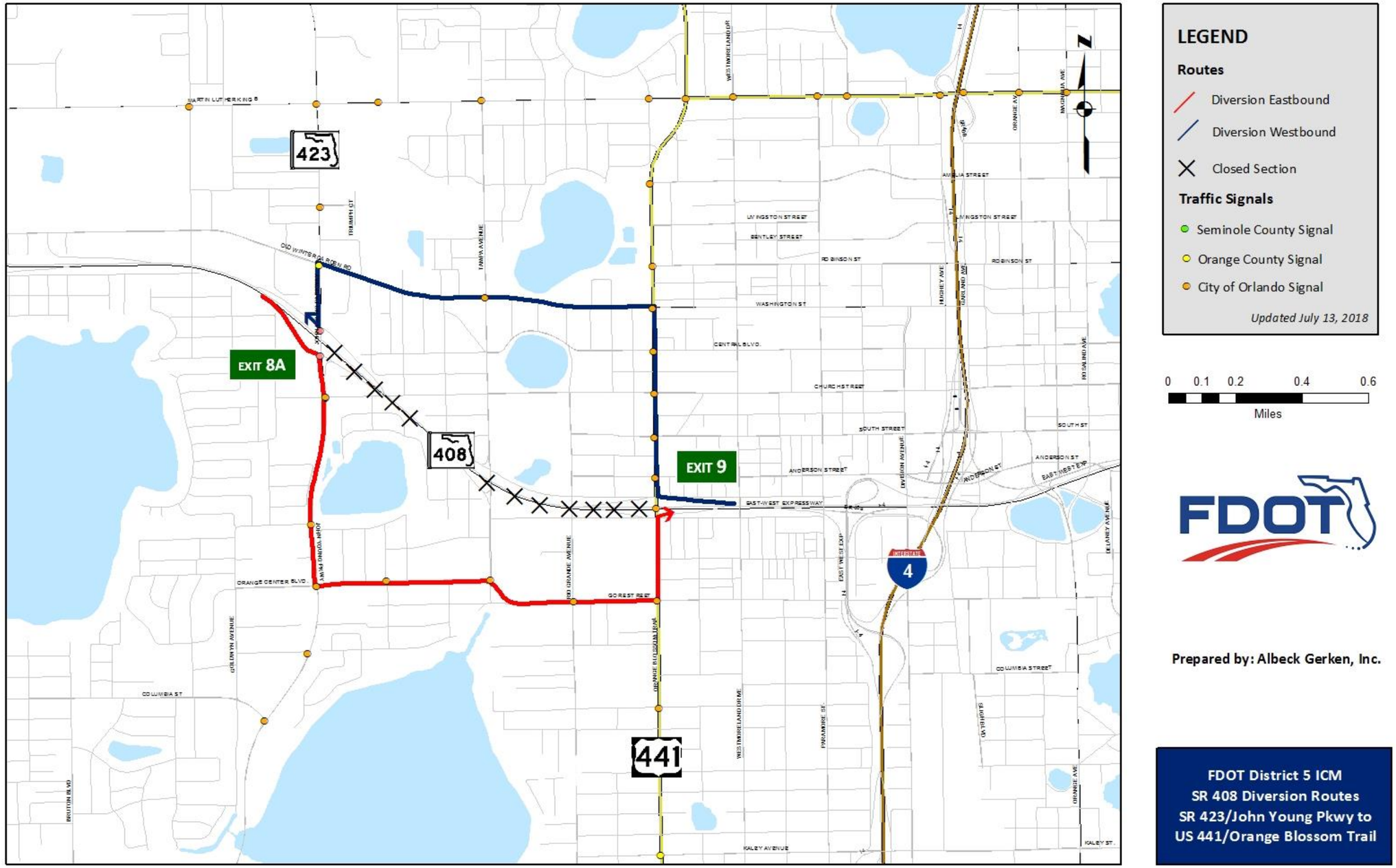
EXIT 108 TO EXIT 104 — Dirksen Drive — US 17 / 92 — I-4 WB

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
Dirksen Dr & I-4 EB Ramps	Not in ICM	Volusia County	Y	Free	Free	Eastbound through on Dirksen to prevent jamming
Dirksen Dr & I-4 WB Ramps	Not in ICM	Volusia County	Y	Free	Free	Southbound right turn onto Dirksen westbound
Dirksen Dr & US 17-92	Not in ICM	Volusia County	Y	Free	Free	Westbound left turn onto US 17-92 southbound
US 17-92 & I-4 WB Ramps	1005	Seminole County	Y	Free	Free	Eastbound right turn onto I-4 westbound
US 17-92 & CR 15 (Monroe Rd)/I-4 EB	1010	Seminole County	Y	Free	Free	Eastbound through on US 17-92 to prevent jamming
CR 15 (Monroe Rd) & Orange Blvd	2700	Seminole County	N	Free	Free	No action needed

EXIT 104 TO EXIT 108 — US 17 / 92 — Dirksen Drive — I-4 BiD

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
CR 15 (Monroe Rd) & Orange Blvd	2700	Seminole County	N	Free	Free	Southbound through on Monroe Road to prevent jamming
17-92 & CR 15 (Monroe Rd)/I-4 EB Off-ra	1010	Seminole County	Y	Free	Free	Favor free flow ramp to US 17 - 92 westbound
US 17-92 & I-4 WB Ramps	1005	Seminole County	Y	Free	Free	Westbound through and eastbound right turn
Dirksen Dr & US 17-92	Not in ICM	Volusia County	Y	Free	Free	Northbound right turn and westbound left turn
Dirksen Dr & I-4 WB Ramps	Not in ICM	Volusia County	Y	Free	Free	Eastbound through and southbound right turn
Dirksen Dr & I-4 EB Ramps	Not in ICM	Volusia County	Y	Free	Free	Eastbound left turn onto I-4 eastbound

Seminole County ATMS Flex Group: I-4 Sec 7 (DivRt) 17-92/CR15


423
408
441
4
EXIT 8A
EXIT 9
LEGEND
Routes
Diversion Eastbound
Diversion Westbound
Closed Section
Traffic Signals
Seminole County Signal
Orange County Signal
City of Orlando Signal
Updated July 13, 2018
0 0.1 0.2 0.4 0.6
Miles
FDOT
Prepared by: Albeck Gerken, Inc.
FDOT District 5 ICM
SR 408 Diversion Routes
SR 423/John Young Pkwy to
US 441/Orange Blossom Trail

EXIT 8A TO EXIT 9 | **SR 423 / John Young Pkwy – US 441 / Orange Blossom** | **SR 408 EB** | DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
J Young Pkwy & SR 408 EB Ramp	338	Orange County	Y	109	210	Eastbound right turn onto southbound J Young Pkwy
J Young Pkwy & Church St	460	Orange County	Y	109	210	Southbound through on J Young Pkwy
J Young Pkwy & C R Smith St	626	City of Orlando	Y	15	210	Southbound through on J Young Pkwy
J Young Pkwy & Orange Ctr Blvd	149	City of Orlando	Y	15	210	Southbound left turn onto Orange Center Blvd eastbound
Orange Ctr Blvd & Ohio Ave	630	City of Orlando	N	15	210	Eastbound through on Orange Center Blvd
Orange Ctr Blvd & Tampa Ave	141	City of Orlando	N	15	210	Eastbound through on Orange Center Blvd
Orange Ctr Blvd & Rio Grande Ave	136	City of Orlando	N	15	210	Eastbound through on Orange Center Blvd
Orange Ctr Blvd & US 441	254	City of Orlando	Y	15	210	Eastbound left turn onto US 441 northbound
US 441 & Carter St / Long St	248	City of Orlando	Y	30	210	Northbound right turn onto SR 408 eastbound

City of Orlando ATMS Flex Group: 408 Diversion Section 6
Orange County TACTICS Zone:

EXIT 9 TO EXIT 8A | **US 441 / Orange Blossom – SR 423 / John Young Pkwy** | **SR 408 WB** | DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
US 441 & Carter St / Long St	248	City of Orlando	Y	15	200	Westbound right turn onto US 441 northbound
US 441 & Anderson St	247	City of Orlando	Y	15	200	Northbound through on US 441
US 441 & South St	265	City of Orlando	Y	15	200	Northbound through on US 441
US 441 & Church St	250	City of Orlando	Y	15	200	Northbound through on US 441
US 441 & Central Blvd	243	City of Orlando	Y	15	200	Northbound through on US 441
US 441 & Washington St	266	City of Orlando	Y	15	200	Northbound left turn onto Washington St westbound
Old Winter Garden Rd & Tampa Ave	143	City of Orlando	N	15	200	Westbound through on Old Winter Garden Rd
Old Winter Garden Rd & J Young Pkwy	175	Orange County	Y	110	200	Westbound left turn onto J Young Pkwy southbound
J Young Pkwy & SR 408 WB Ramp	339	Orange County	Y	110	200	Southbound right turn onto SR 408 westbound

City of Orlando ATMS Flex Group: 408 Diversion Section 6
Orange County TACTICS Zone:

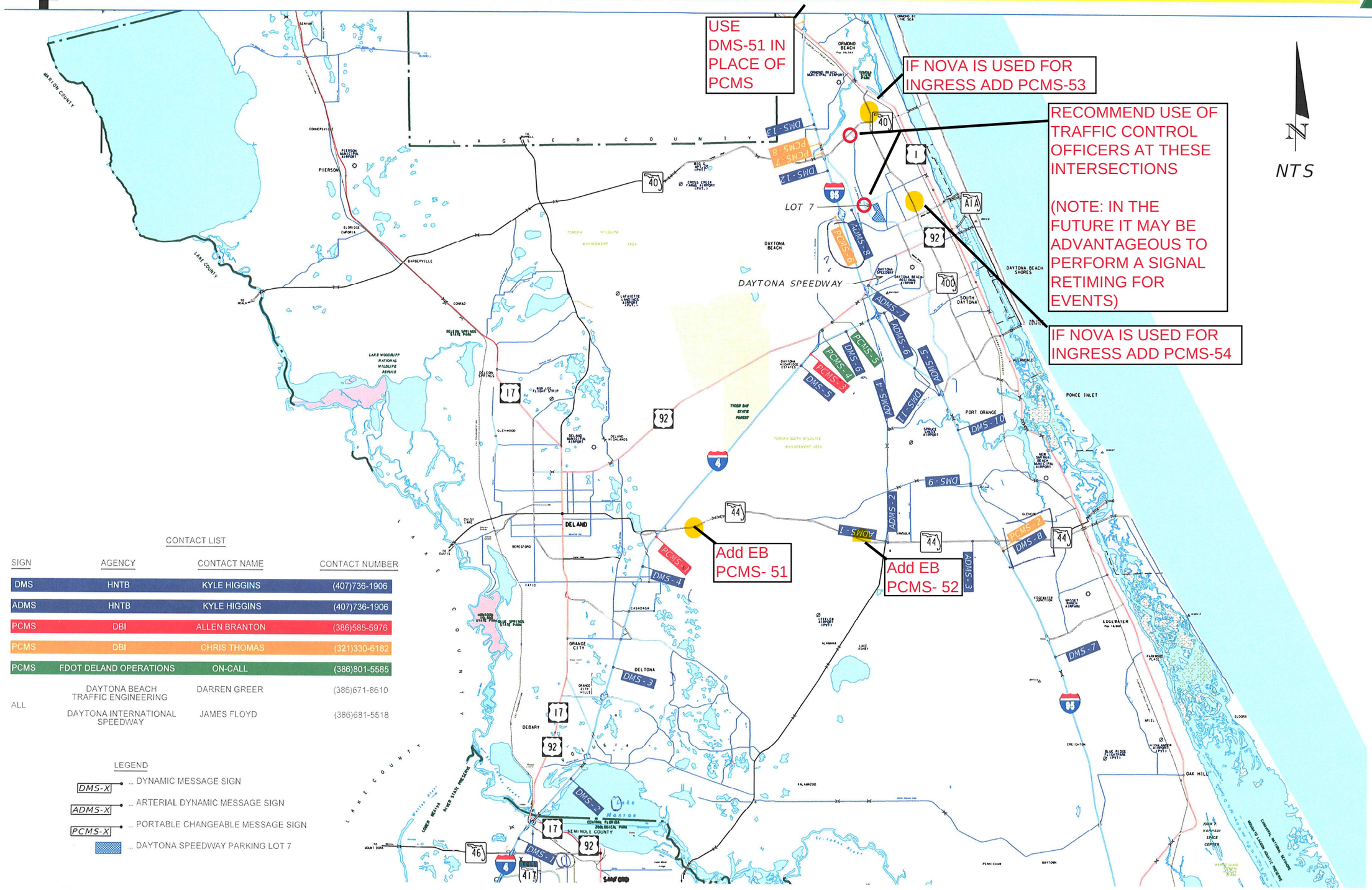
EXIT 8A TO EXIT 9 | **SR 423 / John Young Pkwy – US 441 / Orange Blossom** | **SR 408 BiD** | DISTRICT FIVE ICM

Intersection	Intersection ID	Maintaining Agency	State Signal Y/N	Signal Control to be Implemented		Intersection Strategy
				Pattern	Cycle	
US 441 & Carter St / Long St	248	City of Orlando	Y	15	200	Westbound right turn onto US 441 northbound
US 441 & Anderson St	247	City of Orlando	Y	15	200	Northbound through on US 441
US 441 & South St	265	City of Orlando	Y	15	200	Northbound through on US 441
US 441 & Church St	250	City of Orlando	Y	15	200	Northbound through on US 441
US 441 & Central Blvd	243	City of Orlando	Y	15	200	Northbound through on US 441
US 441 & Washington St	266	City of Orlando	Y	15	200	Northbound left turn onto Washington St westbound
Old Winter Garden Rd & Tampa Ave	143	City of Orlando	N	15	200	Westbound through on Old Winter Garden Rd
Old Winter Garden Rd & J Young Pkwy	175	Orange County	Y	110	200	Westbound left turn onto J Young Pkwy southbound
J Young Pkwy & SR 408 WB Ramp	339	Orange County	Y	110	200	Southbound right turn onto SR 408 westbound
J Young Pkwy & SR 408 EB Ramp	338	Orange County	Y	109	210	Eastbound right turn onto southbound J Young Pkwy
J Young Pkwy & Church St	460	Orange County	Y	109	210	Southbound through on J Young Pkwy
J Young Pkwy & C R Smith St	626	City of Orlando	Y	15	210	Southbound through on J Young Pkwy
J Young Pkwy & Orange Ctr Blvd	149	City of Orlando	Y	15	210	Southbound left turn onto Orange Center Blvd eastbound
Orange Ctr Blvd & Ohio Ave	630	City of Orlando	N	15	210	Eastbound through on Orange Center Blvd
Orange Ctr Blvd & Tampa Ave	141	City of Orlando	N	15	210	Eastbound through on Orange Center Blvd
Orange Ctr Blvd & Rio Grande Ave	136	City of Orlando	N	15	210	Eastbound through on Orange Center Blvd
Orange Ctr Blvd & US 441	254	City of Orlando	Y	15	210	Eastbound left turn onto US 441 northbound
US 441 & Carter St / Long St	248	City of Orlando	Y	15	200	Northbound right turn onto SR 408 eastbound

City of Orlando ATMS Flex Group: 408 Diversion Section 6
Orange County TACTICS Zone:

Appendix S

Daytona Event Plan
With FDOT recommended Changes
(Has Not Been Approved By Daytona Team)



CONTACT LIST

SIGN	AGENCY	CONTACT NAME	CONTACT NUMBER
DMS	HNTB	KYLE HIGGINS	(407)736-1906
ADMS	HNTB	KYLE HIGGINS	(407)736-1906
PCMS	DBI	ALLEN BRANTON	(386)585-5976
PCMS	DBI	CHRIS THOMAS	(321)330-6182
PCMS	FDOT DELAND OPERATIONS	ON-CALL	(386)801-5585
ALL	DAYTONA BEACH TRAFFIC ENGINEERING	DARREN GREER	(386)671-8610
	DAYTONA INTERNATIONAL SPEEDWAY	JAMES FLOYD	(386)681-5518

LEGEND

- DMS-X ... DYNAMIC MESSAGE SIGN
- ADMS-X ... ARTERIAL DYNAMIC MESSAGE SIGN
- PCMS-X ... PORTABLE CHANGEABLE MESSAGE SIGN
- ... DAYTONA SPEEDWAY PARKING LOT 7

ADMS MESSAGES					
DEVICE NAME	DEVICE LOCATION	MILE POINT	DIRECTION	MESSAGE 1	MESSAGE 2
ADMS-1	DMS SR-415 SB N OF SR-44	N/A	OUTBOUND	I-4 WB DETOUR >>>>	TURN RIGHT ON SR-44
ADMS-2	DMS SR-44 WB E OF SR-415	N/A	OUTBOUND	I-4 WB DETOUR ^^^^	CONTINUE SR-44 WB TO I-4
ADMS-3	DMS SR-44 EB W OF I-95	N/A	INBOUND	RACE TRAFFIC ALT ROUTE	TAKE I-95 NB RAMP
ADMS-4	DMS SR-421 WB E OF SR-415	N/A	OUTBOUND	I-4 WB DETOUR <<<<	TURN LEFT ON SR-415
ADMS-5	DMS SR-421 WB W OF I-95	N/A	OUTBOUND	I-4 WB DETOUR ^^^^	SR-415 SB TO SR-44 WB
ADMS-6	DMS SR-400 EB @ ANDROS ISLES BLVD	N/A	INBOUND	TO LOT 7 & ADA PARKING	STRAIGHT AHEAD TO CLYDE MORRIS
ADMS-7	DMS US-92 EB @ PROFESSIONAL BLVD	N/A	INBOUND	LOT 7 & LOT 3 USE LEFT LANES	
ADMS-8	DMS LPGA BLVD EB @ I-95	N/A	INBOUND	LOT 7 CONTINUE STRAIGHT AHEAD	TURN AT CLYDE MORRIS

PCMS MESSAGES					
DEVICE NAME	DEVICE LOCATION	MILE POINT	DIRECTION	MESSAGE 1	MESSAGE 2
PCMS-1	I-4 EB W OF SR-44	118.1	INBOUND	ALT ROUTE TO I-95	SR 44 EAST TO I-95
PCMS-2	I-95 NB S OF SR-44	248.4	INBOUND	RACE TRAFFIC XX MILES	EXPECT HEAVY TRAFFIC
PCMS-3	I-4 EB JUST WEST OF THE DEMOYA FLYOVER TO 92 EB	131.3	INBOUND	RACE PARKING ==> ==>	SPEEDWAY LOT 7 & 3 ==>==>
PCMS-4	US-92 AFTER TAKING THE FLYOVER	N/A	INBOUND	TURN LEFT AT SIGNAL	PARKING LOT 7 LPGA
PCMS-5	US-92 EB JUST WEST OF LPGA	N/A	INBOUND	PARKING LOT 7 <==<==	LEFT HERE <==<==
PCMS - 6	LPGA EB JUST WEST OF I-95	N/A	INBOUND	LOT 7 PARK & RIDE	PARKING CONTINUE STRAIGHT
PCMS - 7	I-95 SB AT THE OFF RAMP FOR SR-40/GRANADA	268.1	INBOUND	ALT TO LOT 7 <==TO	<==TO CLYDE MORRIS
PCMS - 8	I-95 SB BEFORE SR-40/GRANADA	268.3	INBOUND	SPEEDWAY SR 40 ==>==>	ALT TO LOT 7 ==>==>
PCMS - 51	SR-44 EB JUST PAST I-4 OFF RAMP		INBOUND	I-95 DETOUR STRAIGHT	I-95 XX MILES STRAIGHT
PCMS - 52	SR-44 EB JUST BEFORE TURN FOR 415		INBOUND	I-95 DETOUR STRAIGHT	STAY ON SR 44 XX MILES
PCMS - 53	NOVA RD. SB JUST BEFORE GRANADA INTERSECTION		INBOUND	LOT 7 PARKING CONTINUE	STRAIGHT DOWN NOVA RD.
PCMS - 54	NOVA RD. SB JUST BEFORE MASON RD INTERSECTION		INBOUND	PARKING LOT 7 ==> ==>	LEFT HERE ==> ==>

IF NOVA IS USED FOR INGRESS BLANK OUT SIGN 40-5 SHOULD NOT BE ACTIVATED

SWITCH BETWEEN MESSAGE EXIT DETAILS BASED ON DESIRED INGRESS ROUTE.
"USE EXIT 265" "USE LPGA BLVD"

I-4 DMS MESSAGES					
DEVICE NAME	DEVICE LOCATION	MILE POINT	DIRECTION	MESSAGE 1	MESSAGE 2
DMS-1	DMS I-4 EB @ MM 103.1	103.1	INBOUND	RACE TRAFFIC ALT ROUTE EXIT 118A SR-44 EB TO I-95 NB	
DMS-2	DMS I-4 EB @ MM 106.6	106.6	INBOUND	RACE TRAFFIC ALT ROUTE EXIT 118A SR-44 EB TO I-95 NB	
DMS-3	DMS I-4 EB @ MM 112.0	112.0	INBOUND	RACE TRAFFIC ALT ROUTE EXIT 118A SR-44 EB TO I-95 NB	
DMS-4	DMS I-4 EB @ MM 116.6	116.6	INBOUND	RACE TRAFFIC ALT ROUTE EXIT 118A SR-44 EB TO I-95 NB	
DMS-5	DMS I-4 EB @ MM 127.9	127.9	INBOUND	RACE TRAFFIC ALT ROUTE EXIT 129 US-92 TO LPGA BLVD. OR	RACE TRAFFIC USE SR400 - EB TO LOT 7 & ADA PARKING
DMS-6	DMS I-4 EB @ MM 130.5	130.5	INBOUND	RACE TRAFFIC USE SR-400 EB TO LOT 7 & ADA PARKING	

I-95 DMS MESSAGES					
DEVICE NAME	DEVICE LOCATION	MILE POINT	DIRECTION	MESSAGE 1	MESSAGE 2
DMS-7	DMS I-95 NB @ MM 243.0	243.0	INBOUND	RACE TRAFFIC USE EXIT 260A	RACE TRAFFIC USE SR-400 EB
DMS-8	DMS I-95 NB @ MM 248.2	248.2	INBOUND	RACE TRAFFIC USE EXIT 260A	RACE TRAFFIC USE SR-400 EB
DMS-9	DMS I-95 SB @ MM 251.3	251.3	OUTBOUND	I-4 WB DETOUR TO ORLANDO USE EXIT 249B	TAKE SR-44 WB TO I-4 WB AS ALTERNATE
DMS-10	DMS I 95 NB @ MM 253.8	253.8	INBOUND	RACE TRAFFIC USE EXIT 260A	RACE TRAFFIC USE SR-400 EB
DMS-11	DMS I-95 SB @ MM 257.3	257.3	OUTBOUND	I-4 WB DETOUR TO ORLANDO USE EXIT 249B	
DMS-12	DMS I-95 SB @ MM 267.0	267.0	INBOUND	RACE TRAFFIC USE EXIT 265	RACE TRAFFIC USE LPGA BLVD
DMS-12	DMS I-95 SB @ MM 267.0	267.0	OUTBOUND	I-4 WB DETOUR USE EXIT 249B TO SR-44 WB	ALTERNATE TO ORLANDO TAKE SR-44 WB
DMS-13	DMS I-95 SB @ MM 269.1	269.1	INBOUND	RACE TRAFFIC USE EXIT 268	RACE TRAFFIC USE GRANADA BLVD

GRANADA BLVD MAY BE TOO LONG
USE "GRANADA" OR "SR40" AS ALTERNATE MESSAGES

ADJUST SIGNS 51 & 13 FOR US-1 WHEN ALT INGRESS ROUTE IS DESIRED:
"USE EXIT 273" "TAKE US-1 EB"

DMS-13	DMS I-95 SB @ MM 269.10	OUTBOUND	I-4 WB DETOUR USE EXIT 249B TO SR-44 WB	ALTERNATE TO ORLANDO TAKE SR-44 WB
DMS-51	DMS I-95 SB @ MM 274	INBOUND	RACE TRAFFIC USE EXIT 268	RACE TRAFFIC USE GRANADA BLVD

Appendix T

District 5
I-4 Emergency Shoulder Use Plans

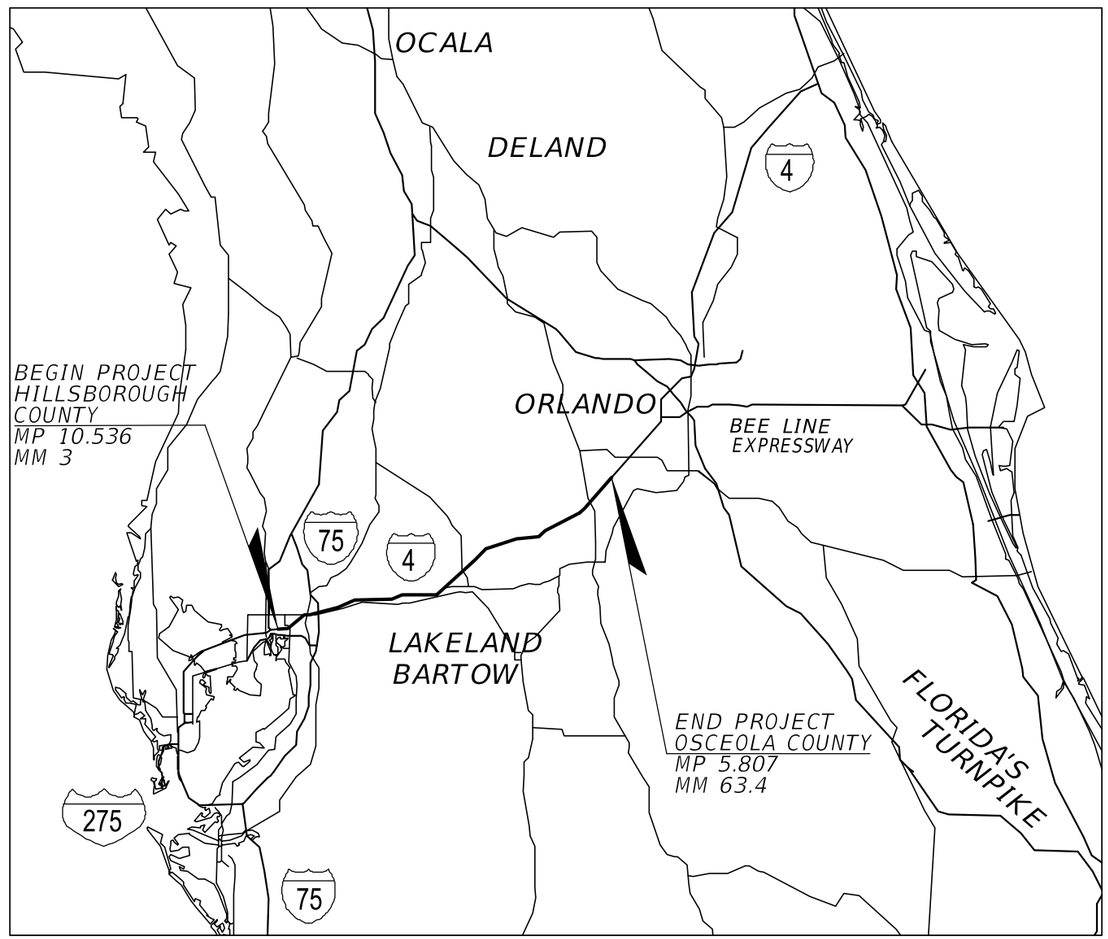
STATE OF FLORIDA

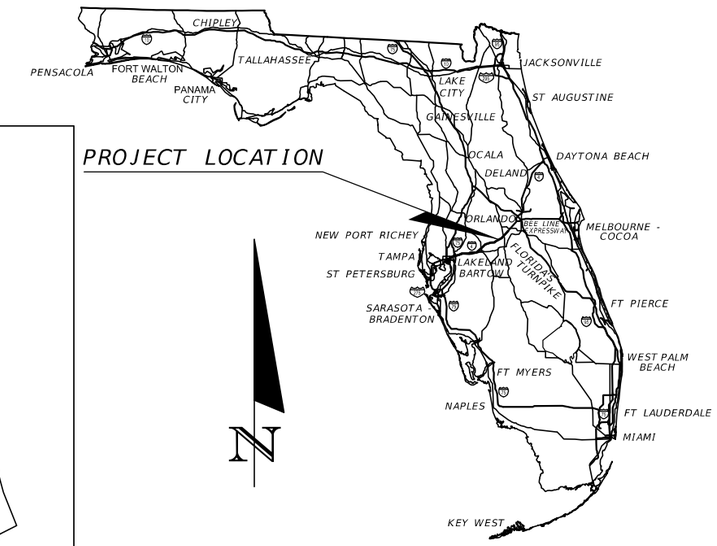
DEPARTMENT OF TRANSPORTATION

STATE ROAD NO. 400

I-4 EASTBOUND - TAMPA TO ORLANDO
EMERGENCY SHOULDER USE (ESU) CONCEPT PLANS
2018 (LEFT SHOULDER USE ONLY)

HILLSBOROUGH COUNTY (10190000), POLK COUNTY (16320000)
OSCEOLA COUNTY (92130000)





INDEX OF SHOULDER USE CONCEPT PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	SUMMARY OF QUANTITIES AND GENERAL NOTES
3-4	PROJECT LAYOUT
5	SUMMARY OF CROSSOVERS, NARROW SHOULDER AND LEO LOCATIONS
6-9	PLAN SHEETS
10-15	GUIDESIGN DETAILS

KEY SHEET REVISIONS	
DATE	DESCRIPTION

04/6/2018

FISCAL YEAR	SHEET NO.
17	1

TABULATION OF QUANTITIES					
LOCATIONS	NUMBER OF	LAW ENFORCEMENT OFFICER (LEO)	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)	STATIC SIGN	TRAFFIC CONE/PLASTIC DRUM/ DELINEATOR
BEGIN	1	1	2	1	0
END	1	1	1	6	0
INTERCHANGE	24	0	0	44	0
REST AREA	1	0	0	2	0
NARROW SHOULDER	10	0	0	30	0
TOTAL		2	3	83	0

NOTE: LAW ENFORCEMENT OFFICER LOCATIONS SHOWN ON THE PLANS ARE FIXED LOCATIONS AND DO NOT ACCOUNT FOR SUPPORT ACTIVITIES OR PATROLLING ACTIVITIES.

LEGEND

EAV — EMERGENCY ASSISTANCE VEHICLE (SHOWN FOR INFORMATION ONLY)

L E O — LAW ENFORCEMENT OFFICER (FIXED POSITIONS)

PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

TEMPORARY STATIC SIGN

TRAFFIC CONES, PLASTIC DRUMS OR DELINEATORS

ACRONYMS

DMS DYNAMIC MESSAGE SIGN
PCMS PORTABLE CHANGEABLE MESSAGE SIGNS

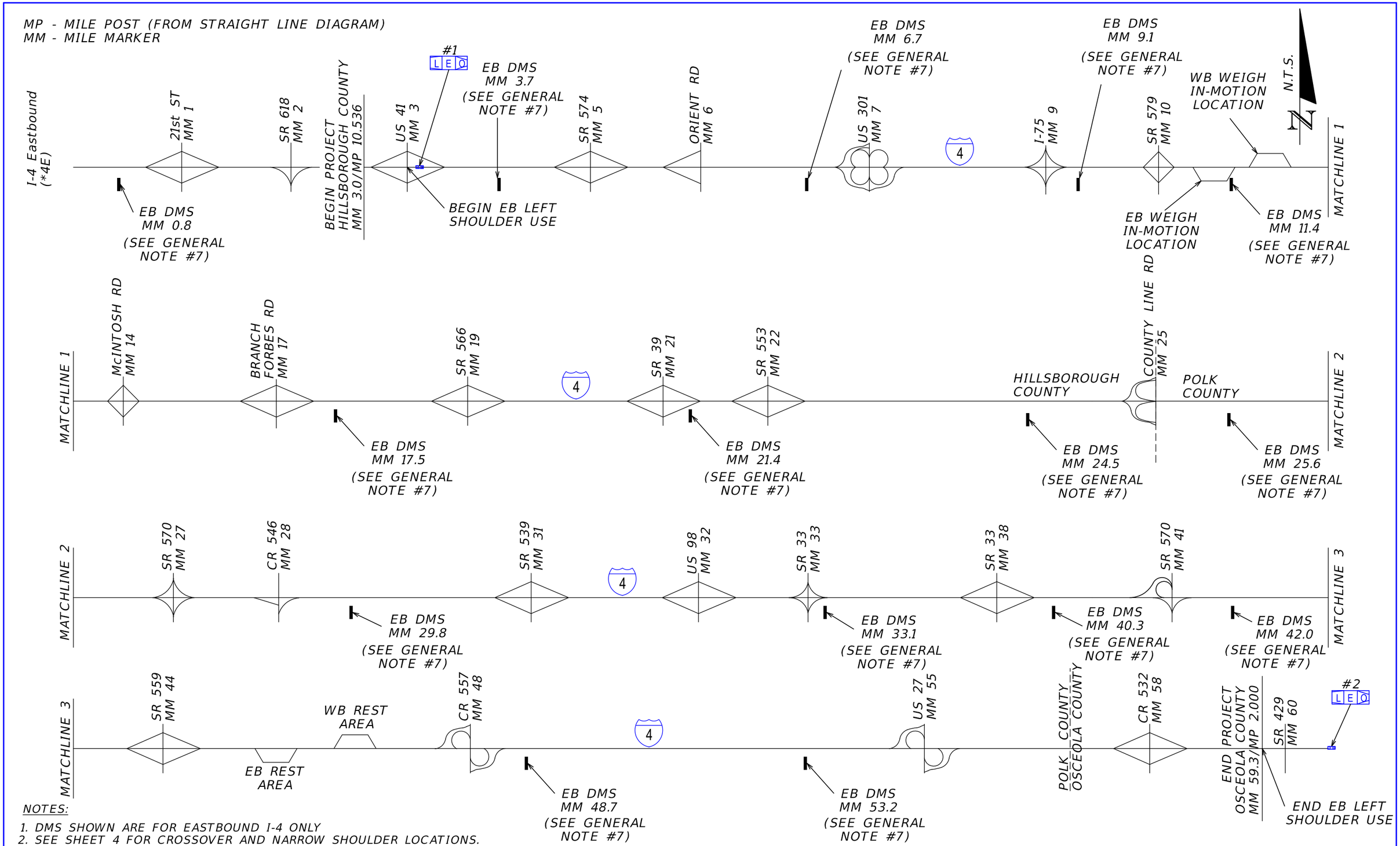
GENERAL NOTES

1. THE PAVED SHOULDER WIDTH ALONG THIS CORRIDOR HAS BEEN FIELD VERIFIED TO BE AT LEAST 10'-0" MEASURED FROM THE EDGE OF THE PAVED SHOULDER OR FACE OF GUARDRAIL OR CONCRETE BARRIER WALL TO THE EDGE OF THE STRIPE. HOWEVER, IF CONSTRUCTION WORK OR OTHER CONDITION RESULTS IN A PAVED SHOULDER WIDTH, AT THE TIME OF IMPLEMENTATION, LESS THAN 10'-0" BUT AT LEAST 9'-0". SEE NARROW SHOULDER LAYOUT SHEET.
2. IMPLEMENTATION OF SHOULDER USE MAY BE ALONG THE ENTIRE CORRIDOR OR ALONG SPECIFIC SECTIONS OF THE CORRIDOR.
3. DEBRIS, ENCROACHING VEGETATION AND HAZARDS ON BOTH SHOULDERS SHALL BE REMOVED PRIOR TO IMPLEMENTATION OF SHOULDER USE.
4. SIGNS MAY BE PERMANENT, TEMPORARY, OR PORTABLE INSTALLATIONS. IF PERMANENT INSTALLATIONS ARE USED, THE MESSAGES SHALL ONLY BE DISPLAYED UPON IMPLEMENTATION.
5. DISTRICT SPECIFIC STANDARD OPERATING PROCEDURE (SOP) WILL BE DEVELOPED AND PROVIDED BY EACH FDOT DISTRICT. THESE WILL ADDRESS REQUIREMENTS AND STANDARD PROCEDURES FOR TEMPORARY AND PERMANENT SIGN INSTALLATIONS, EMERGENCY ASSISTANCE VEHICLE, LAW ENFORCEMENT OFFICER AND OTHER PERTINENT INFORMATION REGARDING THE IMPLEMENTATION OF SHOULDER USE FOR EMERGENCY EVACUATION PURPOSES.
6. UNLESS OTHER TRAFFIC INCIDENT MANAGEMENT MESSAGES TAKE PRECEDENCE, THE DEFAULT MESSAGE ON THE PERMANENT DMS SHALL BE SINGLE- PHASE, THREE -LINE MESSAGE:

LEFT SHOULDER OPEN
FOR USE - NO TRUCKS
BUSES OR TRAILERS

7. DMS - DYNAMIC MESSAGE SIGN
   PCMS - PORTABLE CHANGEABLE MESSAGE SIGN
   EAV -EMERGENCY ASSISTANCE VEHICLE
8. CHANNELIZING DEVICES MAY BE TRAFFIC CONES, PLASTIC DRUMS OR DELINEATORS.
9. SIGNS AND TEMPORARY MOUNTS SHALL BE ON THE APPROVED PRODUCTS LIST (APL).
10. ESU SHOULD ONLY BE IMPLEMENTED IN DRY CONDITIONS. IF RAIN OR FOG EXISTS, ESU SHOULD BE TERMINATED UNTIL FURTHER GUIDANCE IS PROVIDED BY THE STATE TRAFFIC ENGINEERING AND OPERATIONS OFFICE.

MP - MILE POST (FROM STRAIGHT LINE DIAGRAM)
MM - MILE MARKER



NOTES:

1. DMS SHOWN ARE FOR EASTBOUND I-4 ONLY
2. SEE SHEET 4 FOR CROSSOVER AND NARROW SHOULDER LOCATIONS.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

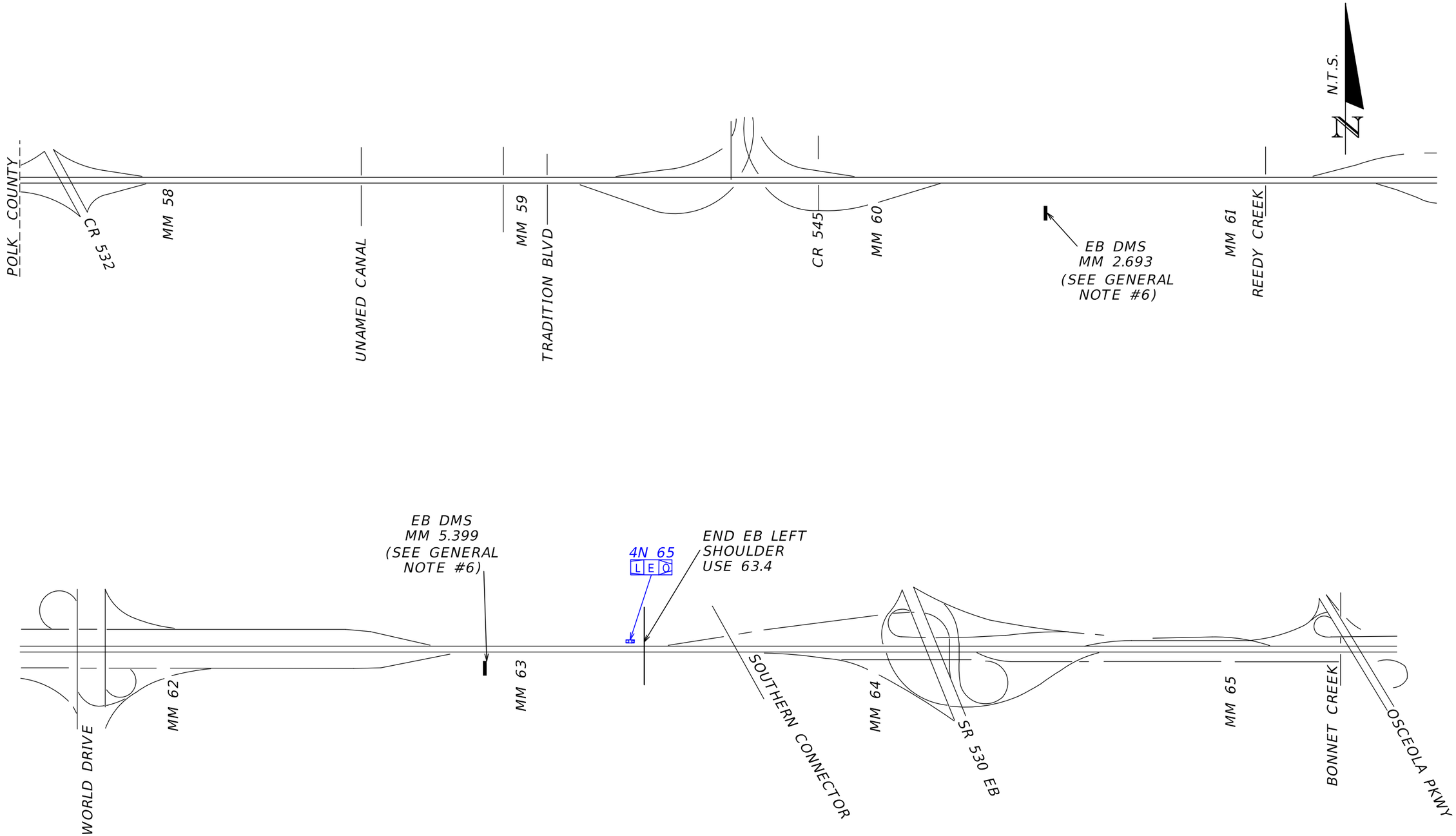
04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

PROJECT LAYOUT

SHEET NO. 3



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

PROJECT LAYOUT (02)

SHEET NO. 4

SUMMARY OF CROSSOVERS				
COUNTY	DISTRICT	MILE POST	MILE MARKER	LENGTH
Hillsborough	District 7	19.828	12	57
Hillsborough	District 7	23.374	16	56
Hillsborough	District 7	31.204	24	59
Polk	District 1	9.925	35	50
Polk	District 1	13.575	39	26
Polk	District 1	24.743	50	32
Osceola	District 5	1.586	59	42
Osceola	District 5	3.980	62	121

NARROW SHOULDER LOCATIONS						
COUNTY	DISTRICT	MILE POST	MILE MARKER	WIDTH	LENGTH	RECOMMENDATION
Hillsborough	District 7	11.978	4.9	9'0"	680'	Narrow Shoulder Treatment
Hillsborough	District 7	12.237	5.0	9'7"	50'	Narrow Shoulder Treatment
Hillsborough	District 7	12.849	6.1	9'6"	660'	Narrow Shoulder Treatment
Hillsborough	District 7	12.869	6.2	9'7"	300'	Narrow Shoulder Treatment
Hillsborough	District 7	13.43	6.7	9'0"	80'	Narrow Shoulder Treatment
Hillsborough	District 7	13.741	7.2	9'0"	125'	Narrow Shoulder Treatment
Hillsborough	District 7	19.163	11.4	9'6"	150'	Narrow Shoulder Treatment
Hillsborough	District 7	21.15	13.8	9'6"	570'	Narrow Shoulder Treatment
Hillsborough	District 7	24.717	16.9	9'6"	540'	Narrow Shoulder Treatment
Polk	District 1	7.876	33.4	9'0"	450'	Narrow Shoulder Treatment

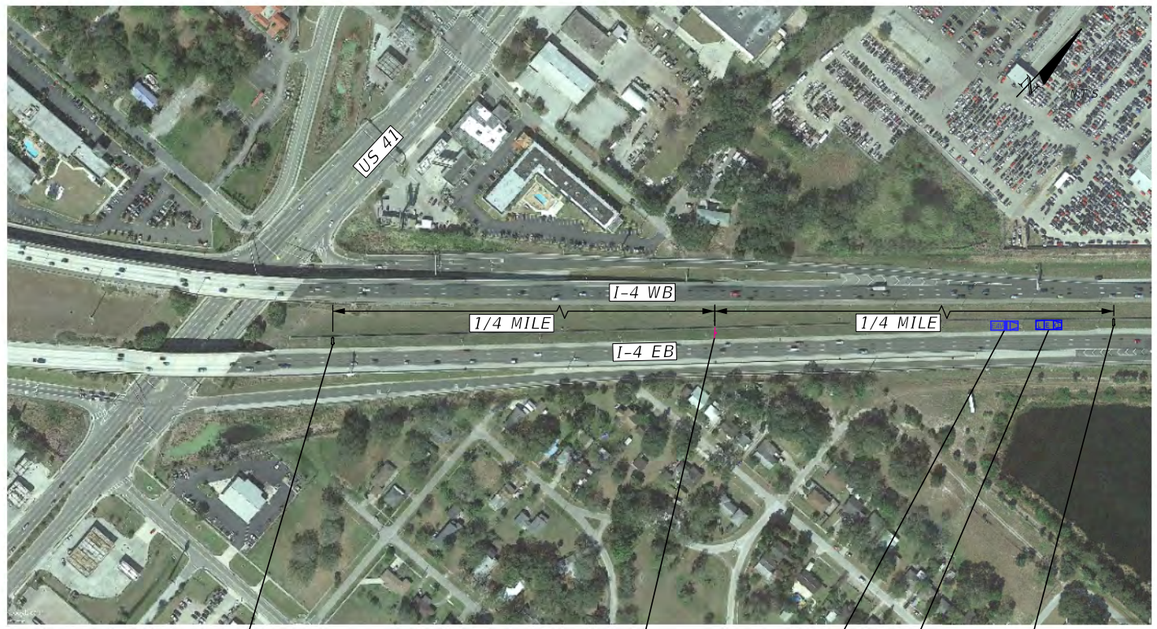
LEO LOCATION ASSIGNMENT TABLE (FHP TROOPS C & D)				
NO.	LEO NUMBER	MILE MARKER	LOCATION	TYPE
1.	4N-3	3.0	US 41	BEGIN SHOULDER USE
2.	4N-65	65.4	SR 417	END SHOULDER USE

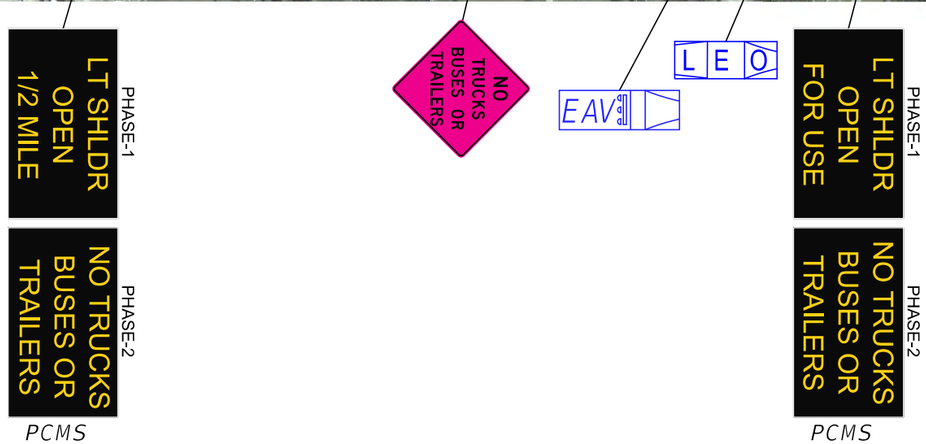
NOTE:
IF NARROW SHOULDER LOCATIONS ARE LOCATED WITHIN TWO MILES OF EACH OTHER, THE TREATMENTS SHOWN ON THE TYPICAL NARROW SHOULDER CONCEPT PLAN CAN BE COMBINED TO REDUCE THE NUMBER OF SIGNS NEEDED.

PLAN SHEET NOTES:

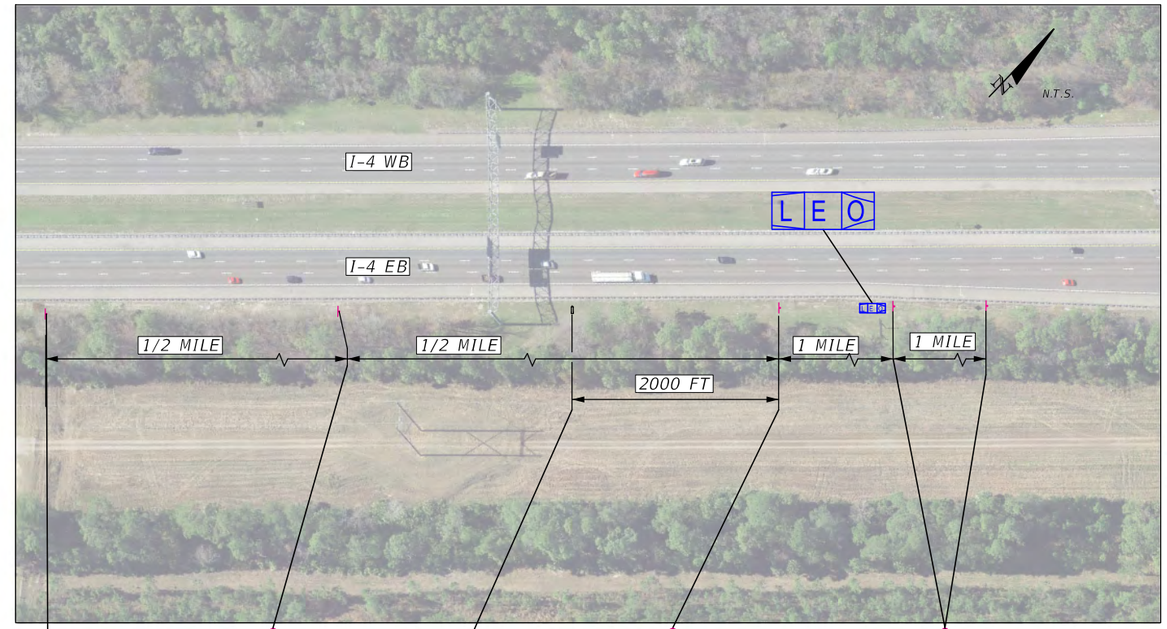
1. SIGNS SHOULD BE PLACED ONLY ON THE SIDE OF THE SHOULDER BEING USED.
2. BEGIN AND END SHOULDER USE LOCATION MAY BE ADJUSTED DURING FINAL IMPLEMENTATION PLAN FOR THE EVENT.
3. PLACE "SHOULDER CLOSED TO TRAFFIC" SIGN AFTER THE NEXT INTERCHANGE, IF THIS LAYOUT DOES NOT COVER THE LOCATION.

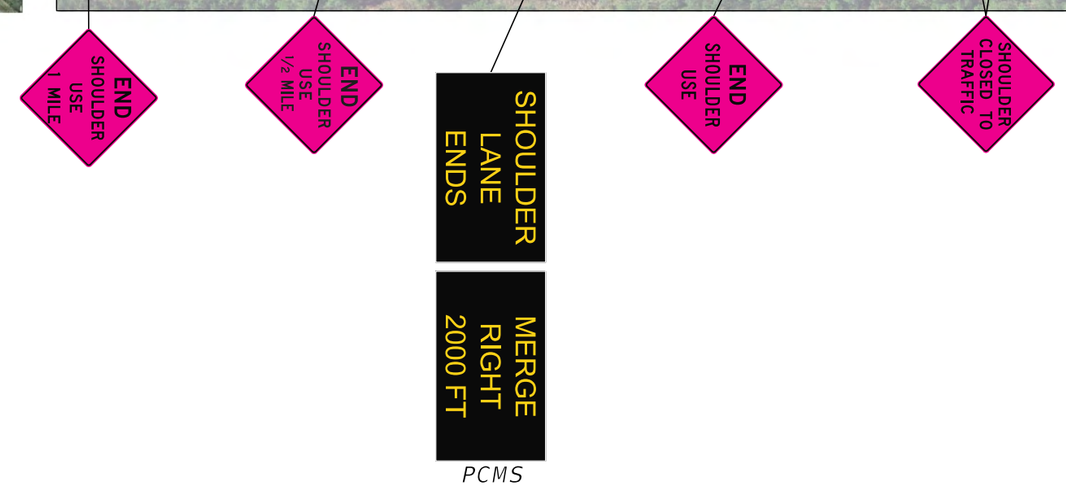
BEGIN SHOULDER USE (MM 3)





END SHOULDER USE (MM 63.4)





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

TYPICAL LAYOUT FOR BEGIN AND END SHOULDER USE

SHEET NO. 6

PLAN SHEET NOTE:

1. SIGNS SHOULD BE PLACED ONLY ON THE SIDE OF THE SHOULDER BEING USED.

N

NTS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

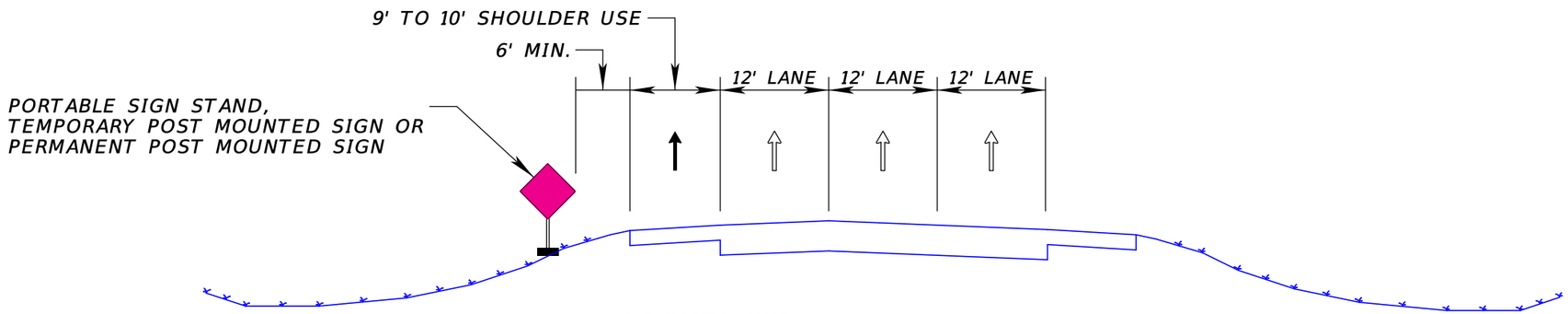
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

TYPICAL LAYOUT AT INTERCHANGES

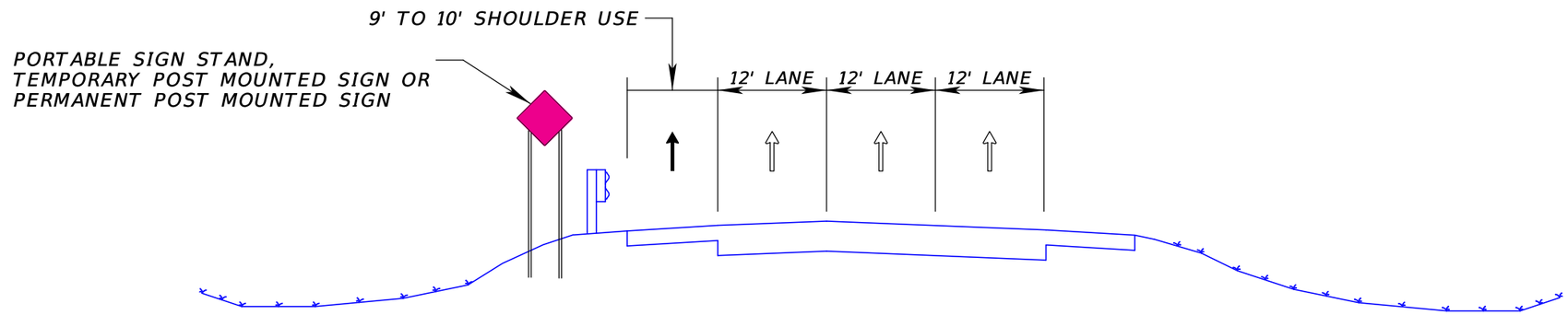
SHEET NO. 7

4/6/2018 4:02:23 PM V:\JOBS\63045_Shoulder_Study\02 I-4 EB\Plan06.dgn

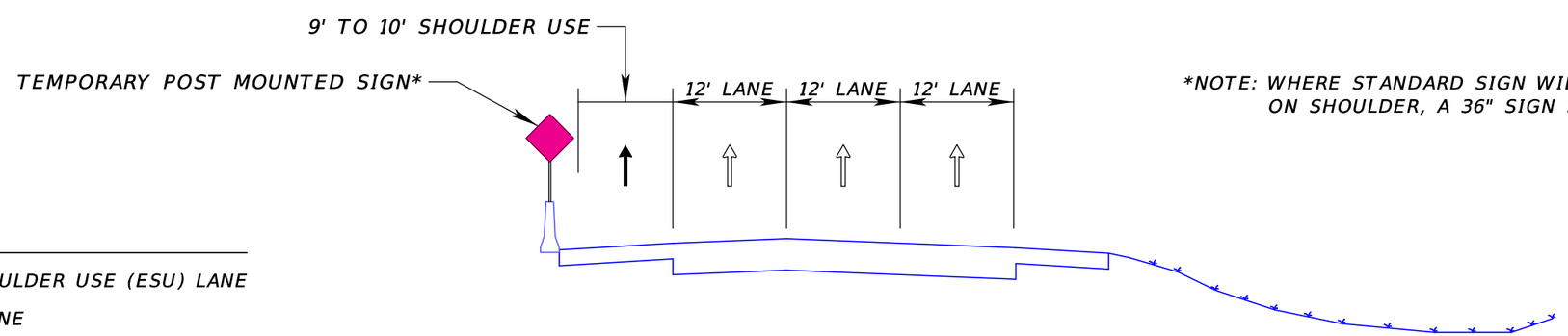
NTS



I-4 EASTBOUND
GRASSED INSIDE SHOULDER



I-4 EASTBOUND
GUARDRAIL AT INSIDE SHOULDER



*NOTE: WHERE STANDARD SIGN WILL ENCROACH ON SHOULDER, A 36" SIGN SHOULD BE USED.

LEGEND

→ EMERGENCY SHOULDER USE (ESU) LANE

⇨ GENERAL USE LANE

I-4 EASTBOUND
CONCRETE BARRIER WALL AT INSIDE SHOULDER

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

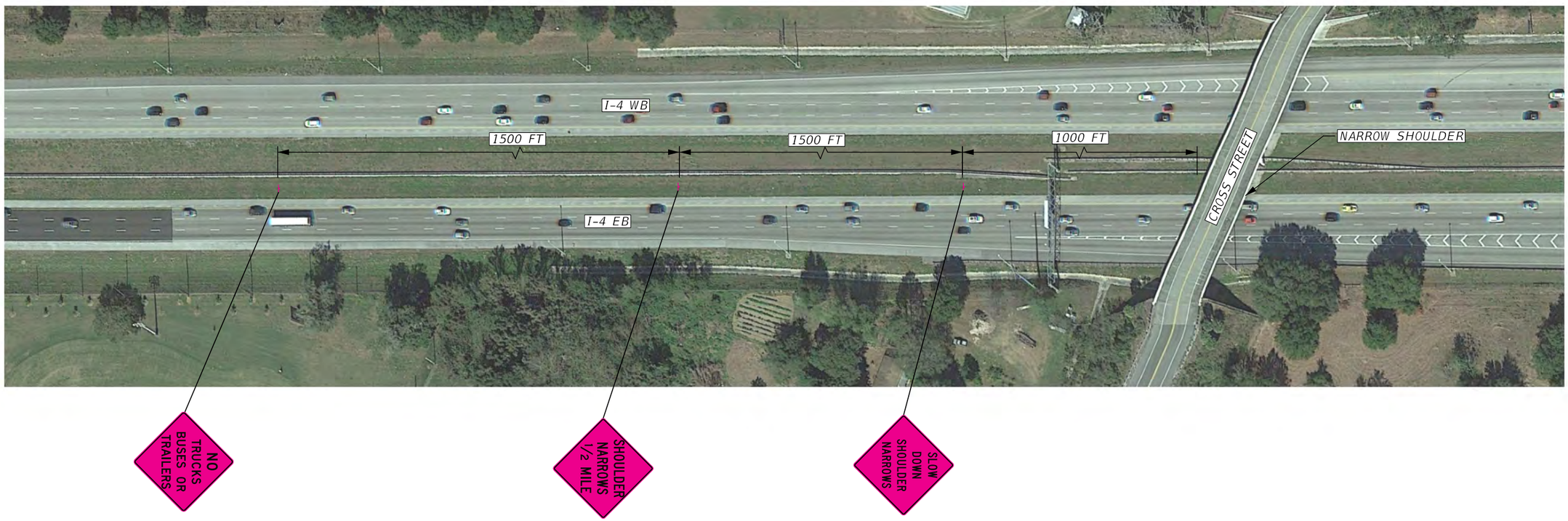
TYPICAL
MEDIAN SIGN PLACEMENT

SHEET NO.
8

PLAN SHEET NOTE:

1. SIGNS SHALL BE PLACED ONLY ON THE SIDE OF THE SHOULDER ON WHICH A NARROW SHOULDER IS PRESENT.
2. THIS LAYOUT APPLIES TO ALL NARROW SHOULDER LOCATIONS.

NTS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

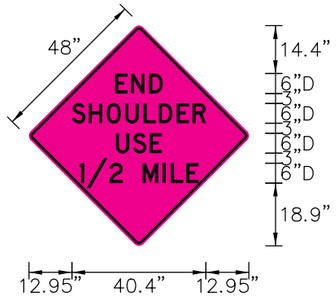
TYPICAL NARROW SHOULDER CONCEPT PLAN

SHEET NO. 9

SIGN NAME	SIGN 101	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0"		
HEIGHT	5'-6"	RADII	0"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



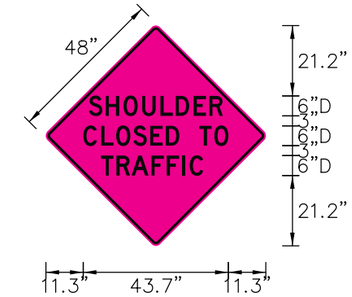
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	E	N	D		L																		
SPACE	26	30.7	36.3		14.3																		
COPY	S	H	O	U	L	D	E	R		L													
SPACE	12.9	18	23.4	29	34.5	39.2	44.6	49.3		40.4													
COPY	U	S	E		L																		
SPACE	26.2	31.3	36.4		13.9																		
COPY	1	/	2		M	I	L	E		L													
SPACE	15.2	17.4	24.2	28.3	34.3	40.4	42.8	47.4		35.9													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 102	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0"		
HEIGHT	5'-6"	RADII	0"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

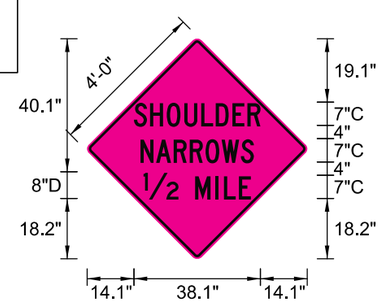
COPY	S	H	O	U	L	D	E	R		L													
SPACE	12.9	18	23.4	29	34.5	39.2	44.6	49.3		40.4													
COPY	C	L	O	S	E	D		T	O		L												
SPACE	11.3	16.7	21.2	26.4	31.5	36.2	40.3	46.3	50.8		43.7												
COPY	T	R	A	F	F	I	C		L														
SPACE	16.7	21.3	25.8	31.8	36.5	41.1	43.4		30.8														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 104	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-75 NB
-I-4 EB
-I-10 WB
-AA NB
-AA SB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

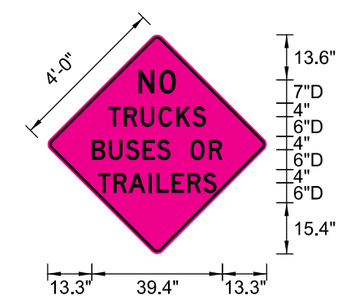
COPY		S	H	O	U	L	D	E	R		L												
SPACE	14.1	4.9	5	5.3	5.2	4.4	5	4.5	3.9	14.1	38.2												
COPY		N	A	R	R	O	W	S		L													
SPACE	16.1	4.7	5.3	4.9	4.8	4.8	5.8	3.9	16.1	34.1													
COPY		12		M	I	L	E		L														
SPACE	17	10.6	5	6.2	2.5	4.5	3.6	17	32.4														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 109	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		N	O		L																		
SPACE	27.4	6.3	5	27.4	11.3																		
COPY		T	R	U	C	K	S		L														
SPACE	18.3	4.6	5.1	5.4	5.4	4.8	4.1	18.3	29.4														
COPY		B	U	S	E	S		O	R		L												
SPACE	13.3	5.1	5.1	5.1	4.3	4.1	6	5.6	4.1	13.3	39.4												
COPY		T	R	A	I	L	E	R	S		L												
SPACE	15.2	4.6	4.6	6	2.4	4.6	4.7	4.7	4.1	15.1	35.7												
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

GUIDESIGN DETAIL FOR SHOULDER USE PLANS (FLUORESCENT PINK SIGNS)

SHEET NO.
10

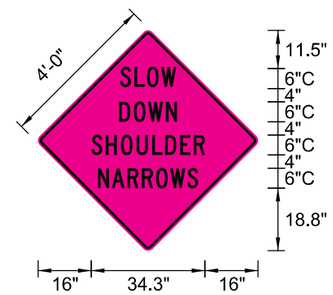
rbabb 4/6/2018 4:02:31 PM V:\JOBS\63045_Shoulder_Study\02 I-4 EB\gswksp01.dgn

SIGN NAME	SIGN 110	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

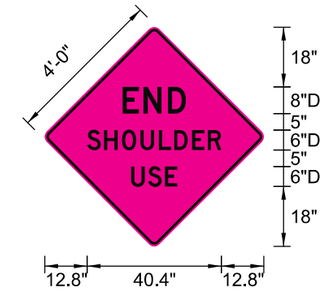
COPY		S	L	O	W		L																
SPACE	24.7	4.4	3.8	4.3	4.6	24.7	17																
COPY		D	O	W	N		L																
SPACE	24.4	4.4	4.3	5.4	3.4	24.4	17.5																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	16	4.4	4.6	4.7	4.7	3.9	4.6	4.1	3.4	16	34.3												
COPY		N	A	R	R	O	W	S		L													
SPACE	18	4.2	4.7	4.4	4.3	4.3	5.1	3.4	18	30.2													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 114	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

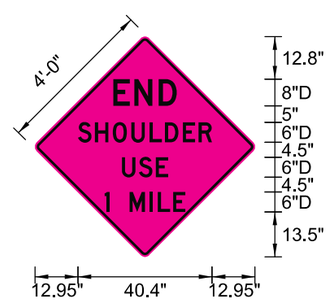
COPY		E	N	D		L																	
SPACE	23.4	6.3	7.4	5.4	23.4	19.1																	
COPY		S	H	O	U	L	D	E	R		L												
SPACE	12.8	5.1	5.4	5.6	5.5	4.6	5.4	4.7	4.1	12.8	40.4												
COPY		U	S	E		L																	
SPACE	26	5.1	5.1	3.7	26	13.9																	
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 115	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

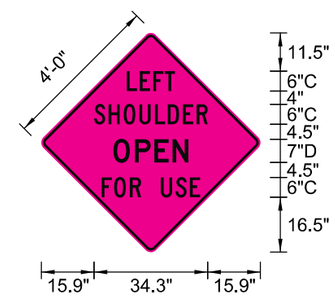
COPY		E	N	D		L																	
SPACE	23.6	6.3	7.4	5.4	23.6	19.1																	
COPY		S	H	O	U	L	D	E	R		L												
SPACE	12.9	5.1	5.4	5.6	5.5	4.6	5.4	4.7	4.1	12.9	40.4												
COPY		U	S	E		L																	
SPACE	26.2	5.1	5.1	3.7	26.2	13.9																	
COPY		1		M	I	L	E		L														
SPACE	21	1.5	6	6.1	2.4	4.6	3.7	21	24.4														
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 118	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		L	E	F	T		L																
SPACE	25.8	3.9	4.1	3.4	3.1	25.8	14.5																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	15.9	4.4	4.6	4.7	4.7	3.9	4.6	4.1	3.4	15.9	34.3												
COPY		O	P	E	N		L																
SPACE	21.7	6.5	5.8	5.5	4.8	21.7	22.6																
COPY		F	O	R		U	S	E		L													
SPACE	18.2	3.8	4.7	3.4	6	4.4	4.4	3.1	18.2	29.7													
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

GUIDESIGN DETAIL FOR SHOULDER USE PLANS (FLUORESCENT PINK SIGNS)

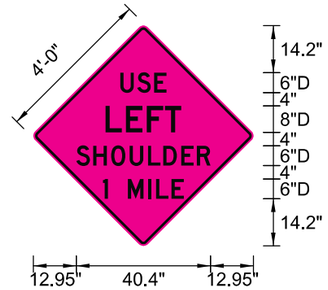
SHEET NO.
11

SIGN NAME	SIGN 123	QTY	1	SIGN NUMBER	STATION(S)
PANEL	BORDER				none
WIDTH 5'-6"	WIDTH	0.75"			
HEIGHT 5'-6"	RADII	1.38"			
LEGEND Black	COLOR	Black			
COLOR Coral					

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
- OPTIONAL SIGNS TO BE USED AS NEEDED FOR ADVANCE NOTIFICATION FOR I-4 SHOULDER USE.



NO. OF LIGHT FIXTURES		FIXTURE SPACING		PHOTOMETRIC CURVE		WATT		VOLTAGE	

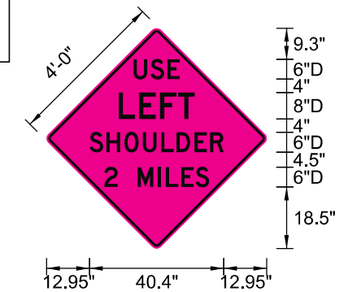
COPY		U	S	E		L																	
SPACE	26.2	5.1	5.1	3.7	26.2	13.9																	
COPY		L	E	F	T		L																
SPACE	21.7	6.2	6.3	5.4	5	21.7	22.9																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	12.9	5.1	5.4	5.6	5.5	4.6	5.4	4.7	4.1	12.9	40.4												
COPY		1		M	I	L	E		L														
SPACE	21	1.5	6	6.1	2.4	4.6	3.7	21	24.4														
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 124	QTY	1	SIGN NUMBER	STATION(S)
PANEL	BORDER				none
WIDTH 5'-6"	WIDTH	0.75"			
HEIGHT 5'-6"	RADII	1.38"			
LEGEND Black	COLOR	Black			
COLOR Coral					

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
- OPTIONAL SIGNS TO BE USED AS NEEDED FOR ADVANCE NOTIFICATION FOR I-4 SHOULDER USE.



NO. OF LIGHT FIXTURES		FIXTURE SPACING		PHOTOMETRIC CURVE		WATT		VOLTAGE	

COPY		U	S	E		L																	
SPACE	26.2	5.1	5.1	3.7	26.2	13.9																	
COPY		L	E	F	T		L																
SPACE	21.7	6.2	6.3	5.4	5	21.7	22.9																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	12.9	5.1	5.4	5.6	5.5	4.6	5.4	4.7	4.1	12.9	40.4												
COPY		2		M	I	L	E	S		L													
SPACE	17.4	4.1	6	6.1	2.4	4.6	4.3	4.1	17.4	31.6													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME		QTY		SIGN NUMBER	STATION(S)
PANEL	BORDER				
WIDTH	WIDTH				
HEIGHT	RADII				
LEGEND	COLOR				
COLOR					

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SPACE
INTENTIONALLY
LEFT BLANK

NO. OF LIGHT FIXTURES		FIXTURE SPACING		PHOTOMETRIC CURVE		WATT		VOLTAGE	

COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME		QTY		SIGN NUMBER	STATION(S)
PANEL	BORDER				
WIDTH	WIDTH				
HEIGHT	RADII				
LEGEND	COLOR				
COLOR					

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SPACE
INTENTIONALLY
LEFT BLANK

NO. OF LIGHT FIXTURES		FIXTURE SPACING		PHOTOMETRIC CURVE		WATT		VOLTAGE	

COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

GUIDESIGN DETAIL FOR SHOULDER USE PLANS (FLUORESCENT PINK SIGNS)

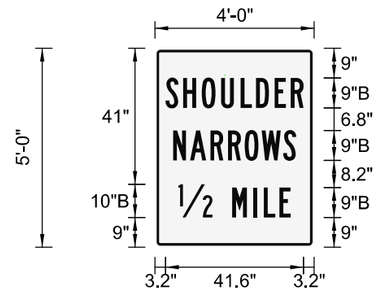
SHEET NO.
12

SIGN NAME	SIGN 204	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

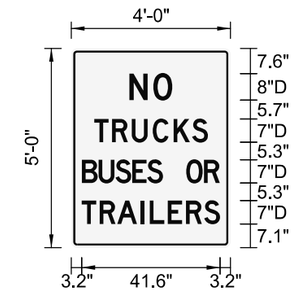
COPY		S	H	O	U	L	D	E	R		L												
SPACE	3.2	5.3	5.6	5.8	5.8	4.7	5.6	4.9	3.9	3.2	41.6												
COPY		N	A	R	R	O	W	S		L													
SPACE	5.5	5.1	6.1	5.3	5	5.1	6.5	3.9	5.5	37.1													
COPY		12		M	I	L	E		L														
SPACE	7.1	10.2	6	6.4	3.2	4.7	3.4	7.1	33.9														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 209	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

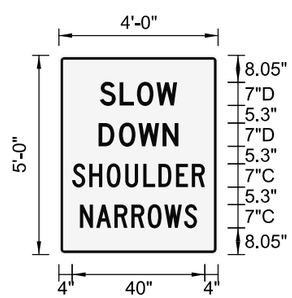
COPY		N	O		L																		
SPACE	17.6	7.2	5.7	17.6	12.9																		
COPY		T	R	U	C	K	S		L														
SPACE	6.9	5.4	6	6.3	6.3	5.6	4.8	6.8	34.3														
COPY		B	U	S	E	S		O	R		L												
SPACE	3.2	5.1	5.1	5.1	4.5	4.8	7	5.4	4.8	3.2	41.6												
COPY		T	R	A	I	L	E	R	S		L												
SPACE	3.2	5.4	5.3	7	2.8	5.4	5.5	5.5	4.8	3.2	41.6												
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 210	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

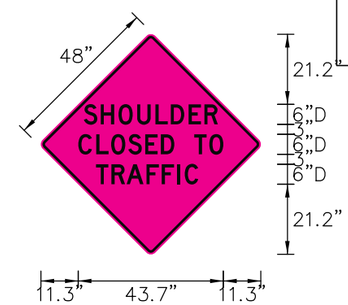
COPY		S	L	O	W		L																
SPACE	12.3	6	5.3	5.9	6.2	12.3	23.3																
COPY		D	O	W	N		L																
SPACE	12	6.2	5.9	7.3	4.8	12	24.1																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	4	5.1	5.3	5.5	5.5	4.5	5.3	4.8	3.9	4	40												
COPY		N	A	R	R	O	W	S		L													
SPACE	6.4	4.9	5.5	5.1	5	5	6	3.9	6.4	35.3													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	name	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0"		
HEIGHT	5'-6"	RADII	0"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	S	H	O	U	L	D	E	R		L													
SPACE	12.9	18	23.4	29	34.5	39.2	44.6	49.3		40.4													
COPY	C	L	O	S	E	D		T	O		L												
SPACE	11.3	16.7	21.2	26.4	31.5	36.2	40.3	46.3	50.8		43.7												
COPY	T	R	A	F	F	I	C		L														
SPACE	16.7	21.3	25.8	31.8	36.5	41.1	43.4		30.8														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

GUIDESIGN DETAIL FOR SHOULDER USE PLANS (OPTIONAL COLOR SIGNS)

SHEET NO. 13

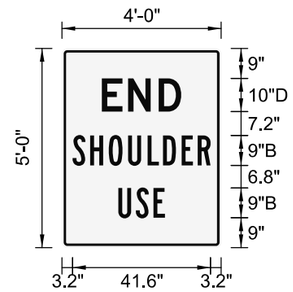
rbabb 4/6/2018 4:02:34 PM V:\JOBS\63045_Shoulder_Study\02 I-4 EB\gswksp01.dgn

SIGN NAME	SIGN 214	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

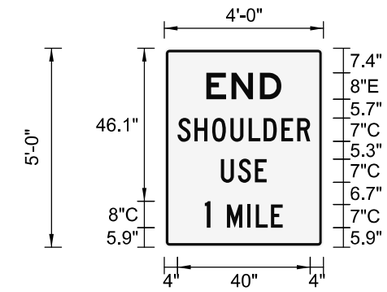
COPY		E	N	D		L																			
SPACE	12.1	7.9	9.2	6.8	12.1	23.9																			
COPY		S	H	O	U	L	D	E	R		L														
SPACE	3.2	5.3	5.6	5.8	5.8	4.7	5.6	4.9	3.9	3.2	41.6														
COPY		U	S	E		L																			
SPACE	17	5.3	5.3	3.4	17	14																			
COPY																									
SPACE																									
COPY																									
SPACE																									
COPY																									
SPACE																									

SIGN NAME	SIGN 215	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

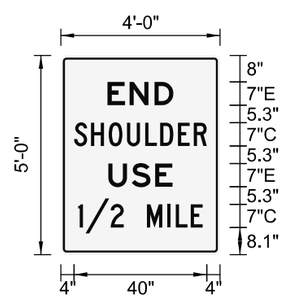
COPY		E	N	D		L																			
SPACE	12.7	7.6	8.6	6.5	12.7	22.6																			
COPY		S	H	O	U	L	D	E	R		L														
SPACE	4	5.1	5.3	5.5	5.5	4.5	5.3	4.8	3.9	4	40														
COPY		U	S	E		L																			
SPACE	17.1	5.1	5.1	3.6	17.1	13.8																			
COPY		1		M	I	L	E		L																
SPACE	12.3	1.7	5	6.2	2.5	4.6	3.6	12.3	23.5																
COPY																									
SPACE																									
COPY																									
SPACE																									

SIGN NAME	SIGN 225	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

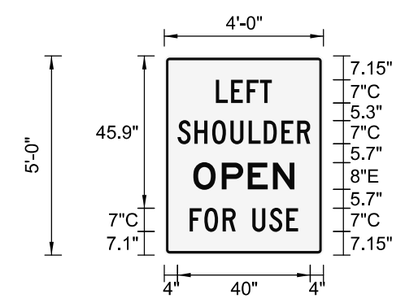
COPY		E	N	D		L																			
SPACE	14.1	6.6	7.5	5.7	14.1	19.8																			
COPY		S	H	O	U	L	D	E	R		L														
SPACE	4	5.1	5.3	5.5	5.5	4.6	5.3	4.8	3.9	4	40														
COPY		U	S	E		L																			
SPACE	14.3	7.1	7.1	5.2	14.3	19.4																			
COPY		1	/	2		M	I	L	E		L														
SPACE	5.2	2.2	7.6	3.9	7	6.2	2.5	4.5	3.6	5.2	37.5														
COPY																									
SPACE																									
COPY																									
SPACE																									

SIGN NAME	SIGN 218	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
-I-4 EB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		L	E	F	T		L																		
SPACE	15.6	4.6	4.8	4	3.6	15.6	16.9																		
COPY		S	H	O	U	L	D	E	R		L														
SPACE	4	5.1	5.3	5.5	5.5	4.6	5.3	4.8	3.9	4	40														
COPY		O	P	E	N		L																		
SPACE	8.8	8.6	7.8	7.6	6.5	8.8	30.5																		
COPY		F	O	R		U	S	E		L															
SPACE	7.7	4.4	5.5	3.9	5	5.1	5.1	3.6	7.7	32.7															
COPY																									
SPACE																									
COPY																									
SPACE																									

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

GUIDESIGN DETAIL FOR SHOULDER USE PLANS (OPTIONAL COLOR SIGNS)

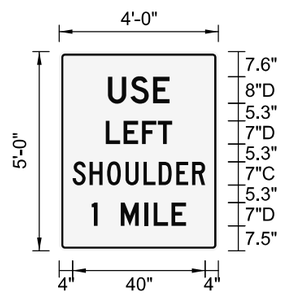
SHEET NO.
14

SIGN NAME	SIGN 223	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
- OPTIONAL SIGNS TO BE USED AS NEEDED FOR ADVANCE NOTIFICATION FOR I-4 SHOULDER USE.



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

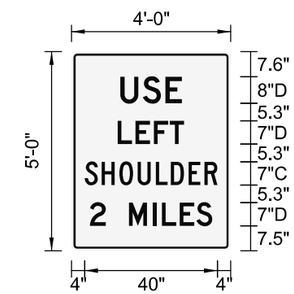
COPY		U	S	E		L																	
SPACE	14.7	6.8	6.8	5	14.7	18.6																	
COPY		L	E	F	T		L																
SPACE	14	5.4	5.5	4.8	4.3	13.9	20																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	4	5.1	5.3	5.5	5.5	4.5	5.3	4.8	3.9	4	40												
COPY		1		M	I	L	E		L														
SPACE	9.8	1.8	7	7.1	2.8	5.4	4.3	9.8	28.4														
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 224	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
- OPTIONAL SIGNS TO BE USED AS NEEDED FOR ADVANCE NOTIFICATION FOR I-4 SHOULDER USE.



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		U	S	E		L																	
SPACE	14.7	6.8	6.8	5	14.7	18.6																	
COPY		L	E	F	T		L																
SPACE	13.9	5.4	5.5	4.8	4.3	14	20																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	4	5.1	5.3	5.5	5.5	4.6	5.3	4.8	3.9	4	40												
COPY		2		M	I	L	E	S		L													
SPACE	5.6	4.8	7	7.1	2.8	5.4	5	4.8	5.6	36.9													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME		QTY		SIGN NUMBER	STATION(S)
PANEL		BORDER			
WIDTH		WIDTH			
HEIGHT		RADII			
LEGEND		COLOR			
COLOR					

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SPACE
INTENTIONALLY
LEFT BLANK

NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME		QTY		SIGN NUMBER	STATION(S)
PANEL		BORDER			
WIDTH		WIDTH			
HEIGHT		RADII			
LEGEND		COLOR			
COLOR					

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SPACE
INTENTIONALLY
LEFT BLANK

NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400 EB	HILLSBOROUGH, POLK, OSCEOLA	

GUIDESIGN DETAIL FOR SHOULDER USE PLANS (OPTIONAL COLOR SIGNS)

SHEET NO. 15

Appendix U

District 5
I-75 Emergency Shoulder Use Plans

LEGEND

- CLOSURE SEQUENCE
- CONE OR FUSEE
- ADVANCED WARNING ARROW PANEL
- DIRECTION OF TRAVEL
- A-FRAME SIGN
- FLIP DOWN SIGN
- X - X - X LAW ENFORCEMENT STATION NUMBERS
- LAW ENFORCEMENT VEHICLE
- FDOT PERSONNEL WITH VEHICLE
- CCTV CAMERA
- PORTABLE CHANGEABLE MESSAGE BOARD

MATERIALS NEEDED:

59	CONES
1	CHANGEABLE MESSAGE BOARDS
1	LAW ENFORCEMENT

CMS # 1 MESSAGE:

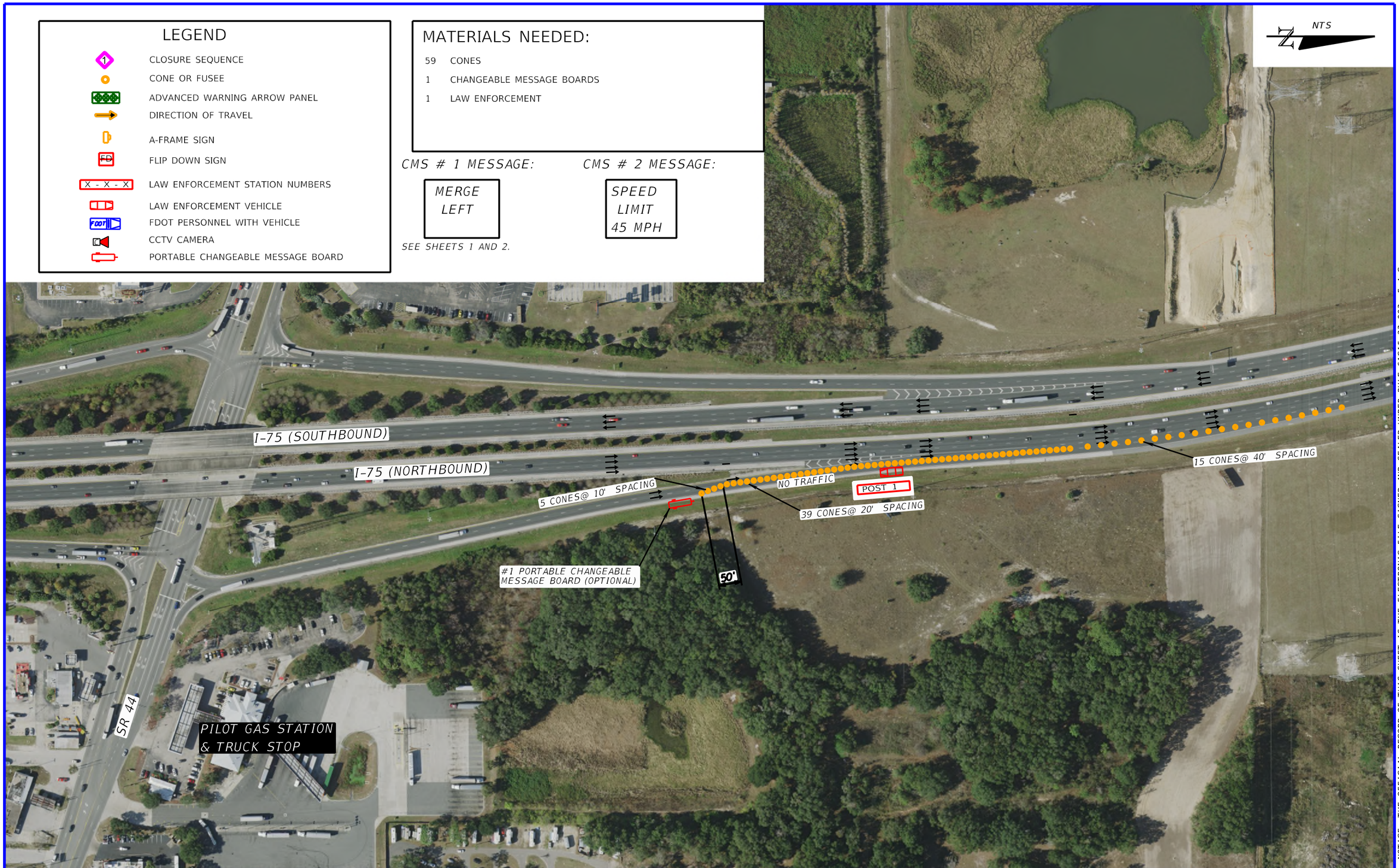
MERGE LEFT

CMS # 2 MESSAGE:

SPEED LIMIT 45 MPH

SEE SHEETS 1 AND 2.

NTS



NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	SECTION NO.
I-75	SUMTER	18130

I-75 & STATE ROAD 44

SHEET NO. 1

$USERS $DATES $TIMES $FILES

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

I-75 NORTHBOUND - NAPLES TO STATE LINE EMERGENCY SHOULDER USE (ESU) CONCEPT PLANS 2020 (LEFT SHOULDER USE ONLY)

INDEX OF SHOULDER USE CONCEPT PLANS

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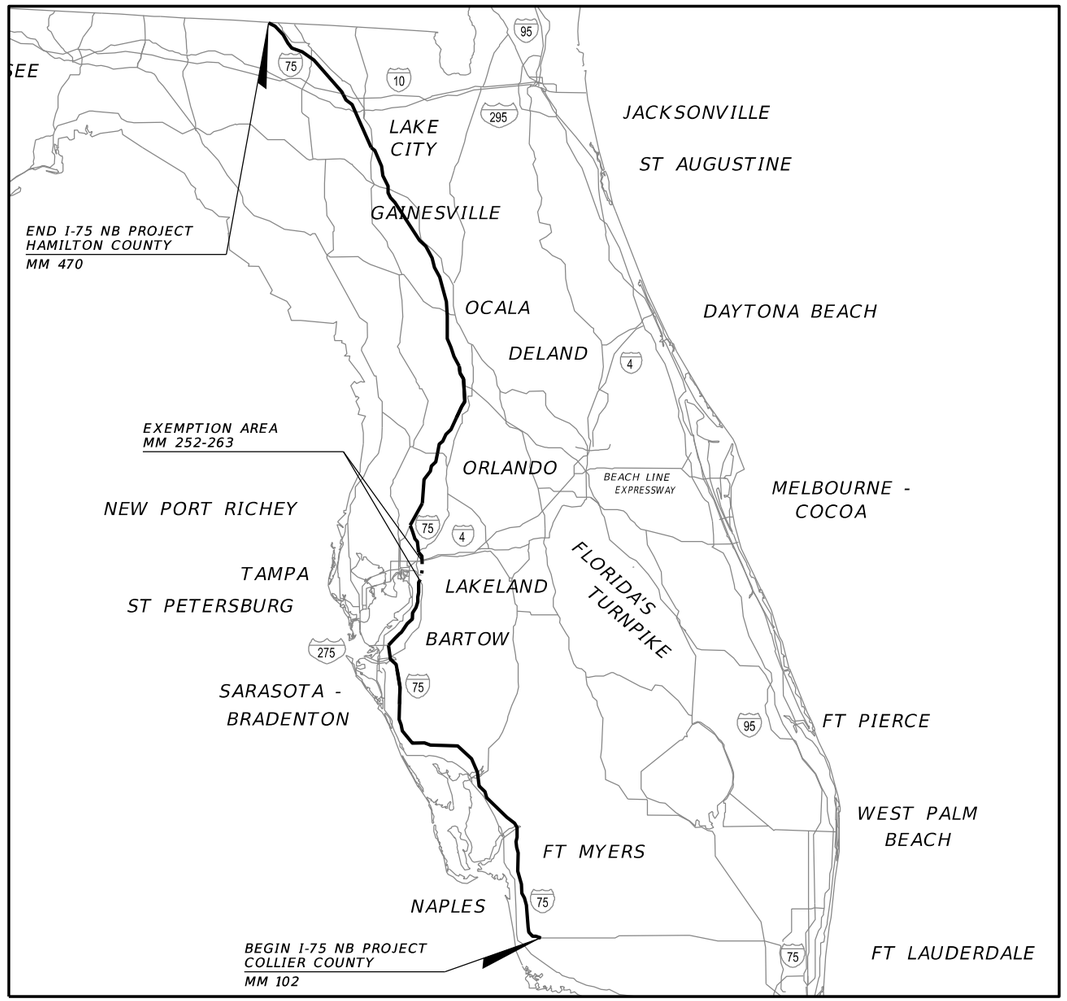
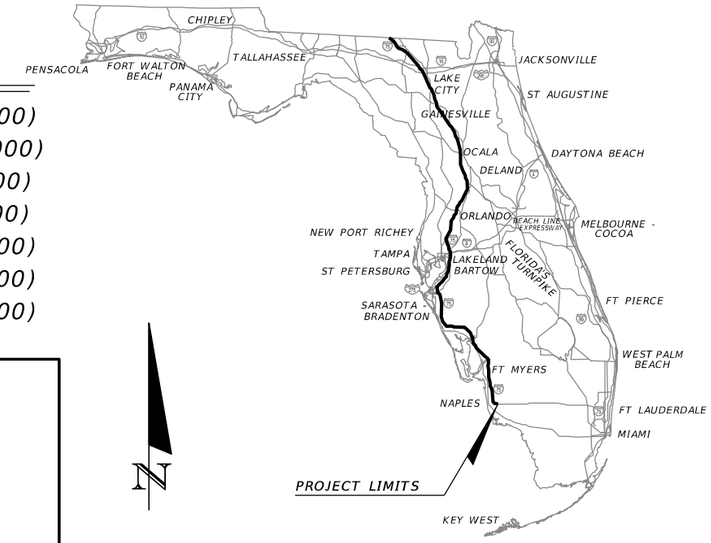
STATE ROAD NO. 93 (I-75)

HAMILTON COUNTY	(32100000)	SUWANNEE COUNTY	(37130000)
COLUMBIA COUNTY	(29180000)	ALACHUA COUNTY	(26260000)
MARION COUNTY	(36210000)	SUMTER COUNTY	(18130000)
HERNANDO COUNTY	(08150000)	PASCO COUNTY	(14140000)
HILLSBOROUGH COUNTY	(10075000)	MANATEE COUNTY	(13075000)
SARASOTA COUNTY	(17075000)	CHARLOTTE COUNTY	(01075000)
LEE COUNTY	(12075000)	COLLIER COUNTY	(03175000)





04/24/2020

FISCAL YEAR	SHEET NO.
20	1

GENERAL NOTES

1. THE PAVED SHOULDER WIDTH ALONG THIS CORRIDOR HAS BEEN FIELD VERIFIED TO BE AT LEAST 10'-0" MEASURED FROM THE EDGE OF THE PAVED SHOULDER OR FACE OF GUARDRAIL OR CONCRETE BARRIER WALL TO THE EDGE OF THE STRIPE. HOWEVER, IF CONSTRUCTION WORK OR OTHER CONDITION RESULTS IN A PAVED SHOULDER WIDTH, AT THE TIME OF IMPLEMENTATION, LESS THAN 10'-0" BUT AT LEAST 9'-0". SEE NARROW SHOULDER LAYOUT SHEET.

2. IMPLEMENTATION OF SHOULDER USE MAY BE ALONG THE ENTIRE CORRIDOR OR ALONG SPECIFIC SECTIONS OF THE CORRIDOR.

3. DEBRIS, ENCROACHING VEGETATION AND HAZARDS ON BOTH SHOULDERS SHALL BE REMOVED PRIOR TO IMPLEMENTATION OF SHOULDER USE.

4. SIGNS MAY BE PERMANENT, TEMPORARY, OR PORTABLE INSTALLATIONS. IF PERMANENT OR TEMPORARY INSTALLATIONS ARE USED, THE SIGNS SHALL BE BLACK LEGEND ON WHITE BACKGROUND FOR REGULATORY SIGNS AND BLACK LEGEND ON YELLOW BACKGROUND FOR WARNING SIGNS. IF PORTABLE INSTALLATIONS ARE USED, THE SIGNS SHALL BE BLACK LEGEND ON FLUORESCENT PINK BACKGROUND. THE SIGN MESSAGES SHALL ONLY BE DISPLAYED UPON IMPLEMENTATION.

5. DISTRICT SPECIFIC STANDARD OPERATING PROCEDURE (SOP) WILL BE DEVELOPED AND PROVIDED BY EACH FDOT DISTRICT. THESE WILL ADDRESS REQUIREMENTS AND STANDARD PROCEDURES FOR TEMPORARY AND PERMANENT SIGN INSTALLATIONS, EMERGENCY ASSISTANCE VEHICLE, LAW ENFORCEMENT OFFICER AND OTHER PERTINENT INFORMATION REGARDING THE IMPLEMENTATION OF SHOULDER USE FOR EMERGENCY EVACUATION PURPOSES.

6. UNLESS OTHER TRAFFIC INCIDENT MANAGEMENT MESSAGES TAKE PRECEDENCE, THE DEFAULT MESSAGE ON THE PERMANENT DMS SHALL BE SINGLE- PHASE, THREE -LINE MESSAGE:

LEFT SHOULDER OPEN
FOR USE - NO TRUCKS
BUSES OR TRAILERS

IF REQUIRED, USE OF ABBREVIATED TEXT IS ALLOWED PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SECTION 1A.

7. DMS - DYNAMIC MESSAGE SIGN
PCMS - PORTABLE CHANGEABLE MESSAGE SIGN
EAV - EMERGENCY ASSISTANCE VEHICLE
LEO - LAW ENFORCEMENT OFFICER

8. CHANNELIZING DEVICES MAY BE TRAFFIC CONES, PLASTIC DRUMS OR DELINEATORS.

9. SIGNS AND TEMPORARY MOUNTS SHALL BE ON THE APPROVED PRODUCTS LIST (APL).

10. ESU SHOULD ONLY BE IMPLEMENTED IN DRY CONDITIONS. IF RAIN OR FOG EXISTS, ESU SHOULD BE TERMINATED UNTIL FURTHER GUIDANCE IS PROVIDED BY THE STATE TRAFFIC ENGINEERING AND OPERATIONS OFFICE.

LEGEND

EAV — EMERGENCY ASSISTANCE VEHICLE (SHOWN FOR INFORMATION ONLY)

L E O — LAW ENFORCEMENT OFFICER (LEO) (FIXED POSITIONS)

PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

TEMPORARY STATIC SIGN

CHANNELIZING DEVICE

ACRONYMS

DMS DYNAMIC MESSAGE SIGN
PCMS PORTABLE CHANGEABLE MESSAGE SIGNS

TABULATION OF QUANTITIES

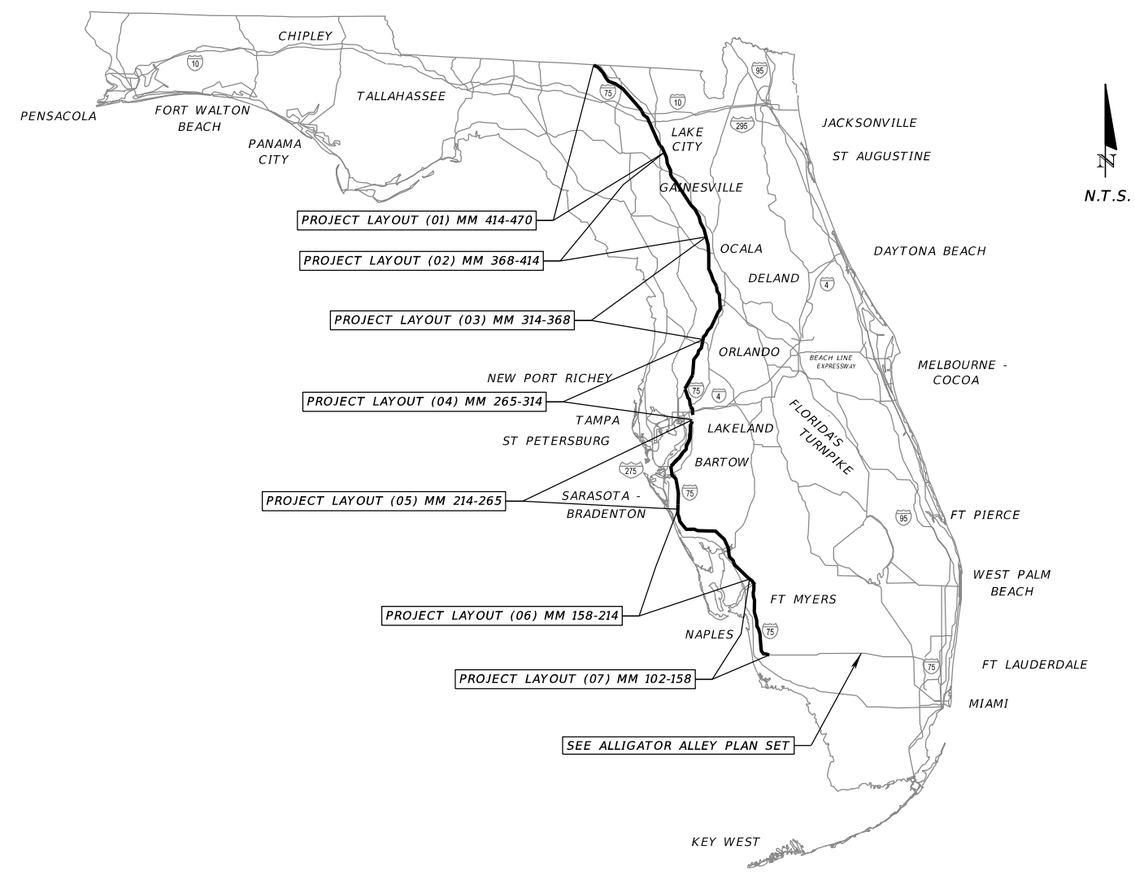
LOCATIONS	NUMBER	LAW ENFORCEMENT OFFICER (LEO)	EMERGENCY ASSISTANCE VEHICLE (EAV)	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)	TEMP. STATIC SIGN	CHANNELIZING DEVICES
BEGIN	1	1	1	2	1	0
END	1	1	1	1	5	0
EXEMPTION AREA	1	2	2	3	6	0
INTERCHANGE	67	0	0	0	134	0
REST AREA/ WEIGH STATION	9	0	0	0	0	0
NARROW SHOULDER	21	0	0	0	63	0
TOTAL		4	4	6	209	0

NOTES:

1. LAW ENFORCEMENT OFFICER (LEO) LOCATIONS SHOWN ON THE PLANS ARE FIXED LOCATIONS AND DO NOT ACCOUNT FOR ADDITIONAL SUPPORT ACTIVITIES OR PATROLLING ACTIVITIES.

2. EMERGENCY ASSISTANCE VEHICLE (EAV) LOCATIONS SHOWN ON THE PLANS ARE MINIMUM LOCATIONS AND DO NOT ACCOUNT FOR ADDITIONAL SUPPORT ACTIVITIES.

SHEET LAYOUT



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

GENERAL NOTES AND SUMMARY OF QUANTITIES

SHEET NO. 2

CONSTRUCTION PROJECTS

FPID	DISTRICT	COUNTY	DESCRIPTION	MM BEGIN	MM END	START DATE	END DATE	ESU IMPACT Y/N	ESU IMPACT (OUTSIDE 2020 HURRICANE SEASON)	ESU IMPACT (DURING 2020 HURRICANE SEASON)
406225-6	1	LEE	I-75 AT CORKSCREW INTERCHANGE	123	123	OCT-19	SEP-20	NO		
413065-1	1	LEE	I-75 (SR 93) AT SR 884 (COLONIAL BLVD) INTERCHANGE	136	138	OCT-20	OCT-23	YES	X	
201032-2	1	MANATEE	I-75 at SR 70 Interchange	213.5	220	MAY-18	MAY-21	NO		
201032-5	1	MANATEE	I-75 (SR 93) AT US 301 INTERCHANGE	220.5	225	OCT-20	OCT-24	YES		
437312-1	7	HILLSBOROUGH	I-75/SR 93A FROM MANATEE COUNTY LINE TO N OF CR 672	229.7	246	JAN-20	FEB-21	NO		
441083-2	7	HILLSBOROUGH	I-75/SR 93A SB REST AREA FROM BEG OF SB RAMP TO END OF SB RAMP	237.5	238.7	JUL-20	JAN-22	NO		
441403-1	7	HILLSBOROUGH	I-75/SR 93A FROM N OF CR 672 TO S OF PROGRESS BLVD	246	253.7	MAR-21	TBD	NO		
428953-1	7	HILLSBOROUGH	I-75 (SR 93A) FM WB SR60 ENTRANCE RAMP TO S OF CSX RR/CR 574	257	258.7	SEP-18	NOV-21	YES	X	X
430573-1	7	PASCO	I75/SR 56 INTERCHANGE FM E OF CR 54 TO W OF CYPRESS RIDGE BL(PHASE I)	275	275	JAN-19	SEP-21	NO		
411014-5	7	PASCO	I-75 FROM N OF ST JOE RD OVERPASS TO S OF LAKE LOLA RD OVERPASS	289.5	289.8	JUN-20	DEC-20	NO		
440311-1	5	MARION	I-75 (SR 93) WEIGH IN MOTION STATION - PAVEMENT REHABILITATION	337.5	338.6	JUN-19	DEC-20	NO		
438562-1	5	SUMTER	I-75 (SR 93) SUMTER COUNTY SOUTHBOUND REST AREA	345.8	346.3	DEC-20	JUL-22	YES	X	
443489-1	2	ALACHUA	I-75(SR93) THROUGH PAYNES PRAIRIE	378.7	381	JAN-20	JUN-20	NO		
423071-4	2	ALACHUA	I-75(SR93)@ SR24(ARCHER RD)	384	384.4	JAN-20	JUL-20	NO		
442581-1	2	COLUMBIA	SR93(I-75) FROM: SR47 TO: US90	423.3	427	JAN-21	TBD	TBD		

LEO LOCATION ASSIGNMENT TABLE (FHP TROOPS)

NO.	LEO NUMBER	MILE MARKER	LOCATION
1	75NB-102	102	CR 951 INTERCHANGE
2	75NB-252	252	N. OF GIBSONTON DRIVE
3	75NB-263	263	N. OF I-4
4	75NB-466	466	FL / GA STATE LINE

EAV LOCATION ASSIGNMENT TABLE

NO.	LEO NUMBER	MILE MARKER	LOCATION
1	75NB-102	102	CR 951 INTERCHANGE
2	75NB-252	252	N. OF GIBSONTON DRIVE
3	75NB-263	263	N. OF I-4
4	75NB-466	466	FL / GA STATE LINE

TELEMETER TRAFFIC MONITORING SITE (TTMS)

NO.	DISTRICT	COUNTY	LOCATION	MILE MARKER	LIVE POLL	SHOULDER LOOP
1	1	COLLIER	0.5 MI N OF CR-896	102	NO	NO
2	1	COLLIER	N OF CR-846/IMMOKALEE RD	111	YES	NO
3	1	LEE	N OF STRIKE LN - PTMS 4525	120	YES	NO
4	1	LEE	1.7 MI S OF DANIELS PKWY U/P	131	YES	NO
5	1	CHARLOTTE	SR-93/I-75,@AIRPORT RD OP	162	YES	NO
6	1	SARASOTA	0.7 MI N SR72@PROCTOR RD OP	205	NO	NO
7	1	SARASOTA	SR-93/I-75, @PONCE DE LEON BLVD O/P	183	YES	NO
8	1	MANATEE	650' W OF MARKET ST	213	YES	NO
9	1	MANATEE	500' W OF BUFFALO RD	228	YES	NO
10	7	HILLSBOROUGH	I-75 S OF SR-43/US-301 INTERCHANGE	263	DAILY	NO
11	7	PASCO	1.0 MI N OF SR-56	275	YES	NO
12	5	SUMTER	0.5 M N OF SR-48 O/P	314	YES	YES
13	5	SUMTER	3.5 MI S OF FL TPK	327	NO	NO
14	5	MARION	0.23 MI N OF WILLIAMS RD/SW 66TH S	348	NO	YES
15	2	ALACHUA	2 MI N OF WACAHOOTA ROAD OP	377	DAILY	YES
16	2	COLUMBIA	BETWEEN I-10 AND US-90	429	NO	YES
17	2	HAMILTON	I-75 NORTH OF SR-6	460	DAILY	YES
18	2	HAMILTON	SR93 @STATE LINE, 0.5 MI N OF SR143	467	YES	YES

NARROW SHOULDER LOCATIONS

COUNTY	DISTRICT	MILE POST	MILE MARKER	WIDTHS	RECOMMENDATIONS
Manatee	District 1	9.007	223	9'-6"	SEE NARROW SHOULDER LAYOUT SHEET
Hillsborough	District 7	6.340	240	9'-4"	SEE NARROW SHOULDER LAYOUT SHEET
Hillsborough	District 7	15.340	249	9'-4"	SEE NARROW SHOULDER LAYOUT SHEET
Pasco	District 7	19.088	292.7	9'-8"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	1.009	373.8	9'-6"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	9.739	382.5	9'-1"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	11.001	383.8	9'-3"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	12.204	385	9'-4"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	13.002	385.8	9'-10"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	14.512	387.3	9'-6"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	24.247	397	9'-3"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	24.595	397.4	9'-7"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	26.050	398.8	9'-4"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	26.183	399	9'-5"	SEE NARROW SHOULDER LAYOUT SHEET
Alachua	District 2	27.055	399.8	9'-11"	SEE NARROW SHOULDER LAYOUT SHEET
Columbia	District 2	15.001	423	9'-2"	SEE NARROW SHOULDER LAYOUT SHEET
Suwannee	District 2	0.028	438.4	9'-9"	SEE NARROW SHOULDER LAYOUT SHEET
Suwannee	District 2	3.157	441.6	9'-6"	SEE NARROW SHOULDER LAYOUT SHEET
Hamilton	District 2	16.455	457.7	9'-1"	SEE NARROW SHOULDER LAYOUT SHEET

SUMMARY OF EMERGENCY CROSSOVERS

COUNTY	DISTRICT	MILE POST	MILE MARKER
Collier	District 1	57.793	109.0
Collier	District 1	63.603	115.0
Lee	District 1	5.460	121.0
Lee	District 1	10.368	125.0
Lee	District 1	14.367	129.0
Lee	District 1	19.099	134.0
Lee	District 1	29.717	145.0
Lee	District 1	32.359	147.0
Charlotte	District 1	3.796	153.0
Charlotte	District 1	4.793	154.0
Charlotte	District 1	9.793	159.0
Sarasota	District 1	3.545	175.0
Sarasota	District 1	14.799	186.0
Sarasota	District 1	27.299	198.5
Sarasota	District 1	32.300	203.5
Sarasota	District 1	34.800	206.0
Manatee	District 7	13.125	227.0
Hillsborough	District 7	0.055	234.0
Hillsborough	District 7	17.700	251.0
Hillsborough	District 7	23.986	258.0
Pasco	District 7	4.088	278.0
Pasco	District 7	20.289	293.5
Hernando	District 7	4.806	299.0
Hernando	District 7	5.925	300.0
Hernando	District 7	10.258	304.0
Sumter	District 5	4.881	312.0
Sumter	District 5	7.029	318.0
Sumter	District 5	7.092	325.0
Marion	District 5	25.313	360.8
Marion	District 5	28.495	364.0
Marion	District 5	34.712	370.2
Alachua	District 2	0.004	372.8
Alachua	District 2	7.376	380.1

SUMMARY OF EMERGENCY CROSSOVERS

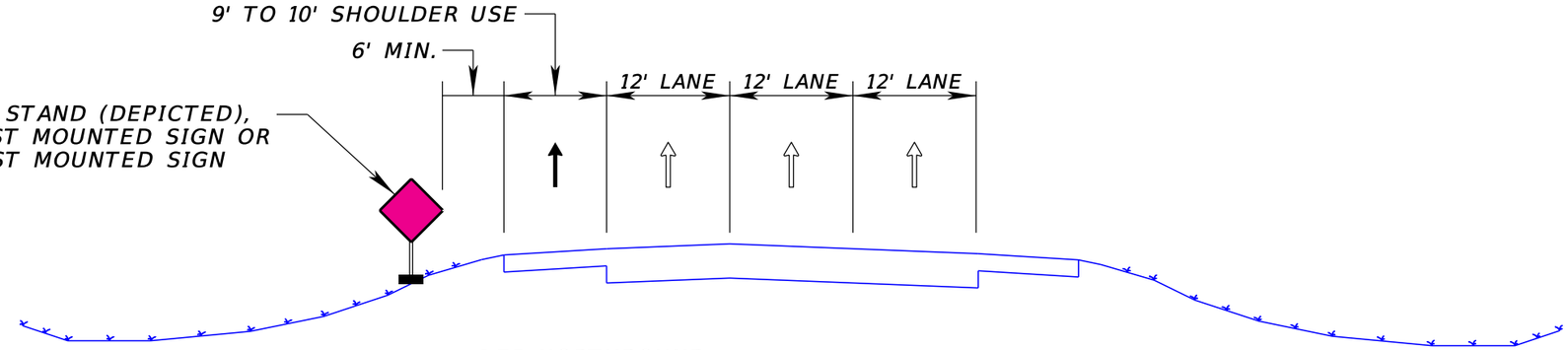
COUNTY	DISTRICT	MILE POST	MILE MARKER
Alachua	District 2	11.578	384.3
Alachua	District 2	13.080	385.8
Alachua	District 2	14.162	386.9
Alachua	District 2	23.642	396.4
Alachua	District 2	29.667	402.4
Columbia	District 2	1.006	409.0
Columbia	District 2	3.460	411.4
Columbia	District 2	4.678	412.7
Columbia	District 2	7.341	415.3
Columbia	District 2	9.808	417.8
Columbia	District 2	12.465	420.4
Columbia	District 2	13.491	421.5
Columbia	District 2	15.227	423.2
Columbia	District 2	17.492	425.5
Columbia	District 2	21.902	429.9
Columbia	District 2	24.491	432.5
Columbia	District 2	25.011	433.0
Columbia	District 2	27.614	435.6
Columbia	District 2	28.549	436.5
Columbia	District 2	29.164	437.1
Hamilton	District 2	0.659	441.9
Hamilton	District 2	3.427	444.7
Hamilton	District 2	6.492	447.8
Hamilton	District 2	7.776	449.1
Hamilton	District 2	10.936	452.0
Hamilton	District 2	14.814	456.2
Hamilton	District 2	17.288	458.6
Hamilton	District 2	20.164	461.4
Hamilton	District 2	20.710	462.0
Hamilton	District 2	21.710	463.0
Hamilton	District 2	23.708	466.0
Hamilton	District 2	26.508	468.8
Hamilton	District 2	28.637	469.9

DYNAMIC MESSAGE SIGN (DMS)

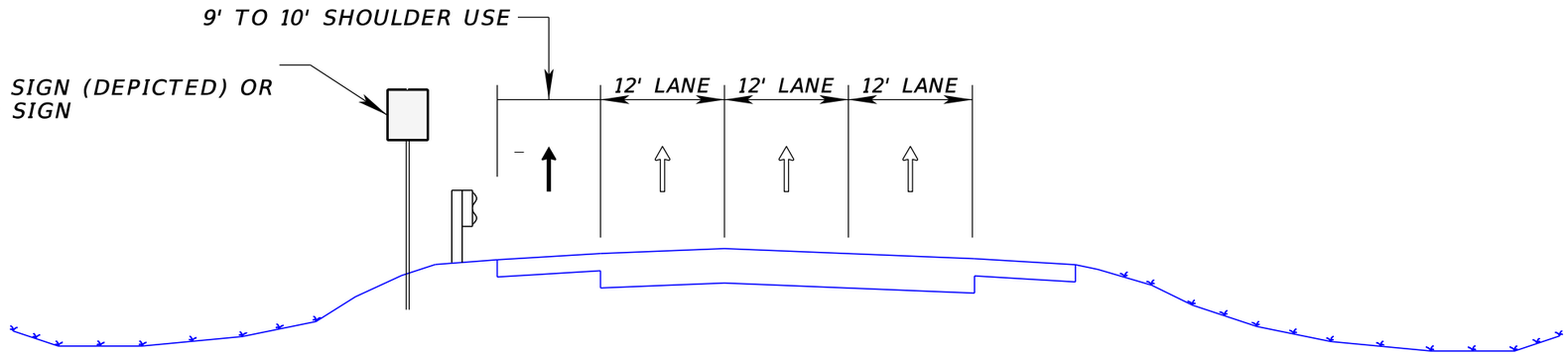
NO.	DISTRICT	COUNTY	LOCATION	MILE MARKER
1	1	COLLIER	1060N_75_N/O_Collier_M106	106
2	1	COLLIER	1100N_75_N/O_PineRidge_M110	110
3	1	COLLIER	1144N_75_N/O_Immokalee_M114	114
4	1	LEE	1218N_75_N/O_BonitaBeach_M122	122
5	1	LEE	TPAS 1246NB	124
6	1	LEE	1260N_75_N/O_Corkscrew_M126	126
7	1	LEE	1303N_75_S/O_DANIELS_M130	130
8	1	LEE	1345N_75_N/O_Daniels_M134	134
9	1	LEE	1366N_75_N/O_Colonial_M136	136
10	1	LEE	1397N_75_N/O_Luckett_M140	140
11	1	LEE	1426N_75_N/O_PalmBeach_M142	142
12	1	CHARLOTTE	1561N_75_S/O_TuckerGrade_M156	156
13	1	CHARLOTTE	TPAS 1566NB	156.6
14	1	CHARLOTTE	1585N_75_N/O_TuckerGrade_M158	158
15	1	CHARLOTTE	1623N_75_S/O_AirportRd_M162	162
16	1	CHARLOTTE	1666N_75_S/O_Harborview_M166	166
17	1	CHARLOTTE	1686N_75_S/O_Rampart_Blvd_M168	168
18	1	SARASOTA	1775N_75_S/O_TOLEDO_M177	177
19	1	SARASOTA	1806N_75_N/O_TOLEDO_M181	181
20	1	SARASOTA	1892N_75_S/O_SOUTH_MOON_M189	189
21	1	SARASOTA	1922N_75_RIVER_RD_M192	192
22	1	SARASOTA	1940N_75_S/O_BORDER_RD_M194	194
23	1	SARASOTA	2040N_75_S/O_CLARK_RD_M204	204
24	1	SARASOTA	2086N_75_N/O_BEE_RIDGE_RD_M209	209
25	1	SARASOTA	2121N_75_N/O_SR_780_M212	212
26	1	MANATEE	2155N_75_S/O_LINGER_LODGE_M215	215
27	1	MANATEE	2194N_75_N/O_SR_70_M219	219
28	1	MANATEE	2227N_75_N/O_KAY_RD_M223	223
29	7	MANATEE	DMS I-75 226.4 NB	226
30	7	HILLSBOROUGH	DMS I-75 238.5 NB	238

DYNAMIC MESSAGE SIGN (DMS)

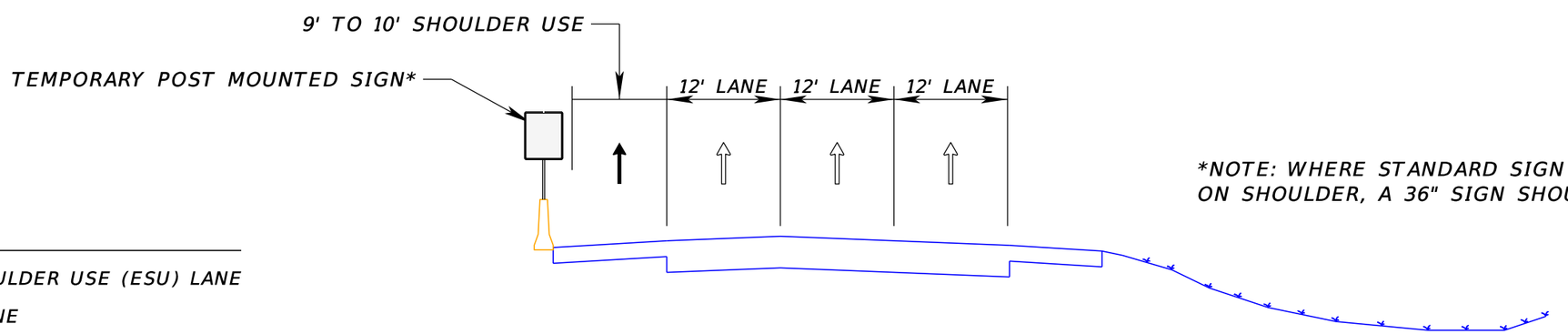
NO.	DISTRICT	COUNTY	LOCATION	MILE MARKER
31	7	HILLSBOROUGH	DMS I-75 241.8 NB	242
32	7	HILLSBOROUGH	DMS I-75 253.2 NB	253
33	7	HILLSBOROUGH	DMS I-75 255.4 NB	255
34	7	HILLSBOROUGH	DMS I-75 258.6 NB	259
35	7	HILLSBOROUGH	DMS I-75 260.9 NB	261
36	7	HILLSBOROUGH	DMS I-75 264.0 NB	264
37	7	HILLSBOROUGH	DMS I-75 268.7 NB	269
38	7	HILLSBOROUGH	DMS I-75 272.2 NB	272
39	7	PASCO	EDMS I-75 275.4 NB A	275
40	7	PASCO	DMS I-75 277.6 NB	278
41	7	PASCO	DMS I-75 280.0 NB	280
42	7	PASCO	DMS I-75 299.3 NB	299
43	5	HERNANDO	I-75 NB @ MM 326.9	327
44	5	SUMTER	I-75 NB @ MM 333.9 WTPS	334
45	5	SUMTER	I-75 NB @ MM 342.6 TPAS	343
46	5	MARION	I-75 NB @ MM 356.2	356
47	5	MARION	I-75 NB @ MM 366	366
48	2	MARION	DMS-I75-373.4_S CR-234-NB	373
49	2	ALACHUA	DMS-I75-374.6_S Wacahoota-NB	375
50	2	ALACHUA	DMS-I75-385.0_N SR-24-NB	386
51	2	ALACHUA	DMS-I75-388.6_N SR-26-NB	389
52	2	ALACHUA	DMS-I75-390.7_N SR-222-NB	391
53	2	ALACHUA	DMS-I75-405.3_N CR-236-NB	405
54	2	COLUMBIA	DMS-I75-414.9_N US-41/441-NB	415
55	2	COLUMBIA	DMS-I75-424.0_N SR-47-NB	424
56	2	COLUMBIA	DMS-I75-428.5_N US-90-NB	429
57	2	COLUMBIA	DMS-I75-436.1_N I-10-NB	436
58	2	SUWANNEE	DMS-I75-440.7_N SR-136-NB	441
59	2	HAMILTON	DMS-I75-452.4_N US-129-NB	452
60	2	HAMILTON	DMS-I75-461.6_N SR-6-NB	462



I-75 NORTHBOUND
GRASSED INSIDE SHOULDER



I-75 NORTHBOUND
GUARDRAIL AT INSIDE SHOULDER



*NOTE: WHERE STANDARD SIGN WILL ENCROACH ON SHOULDER, A 36" SIGN SHOULD BE USED.

I-75 NORTHBOUND
CONCRETE BARRIER WALL AT INSIDE SHOULDER

LEGEND

- EMERGENCY SHOULDER USE (ESU) LANE
- GENERAL USE LANE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

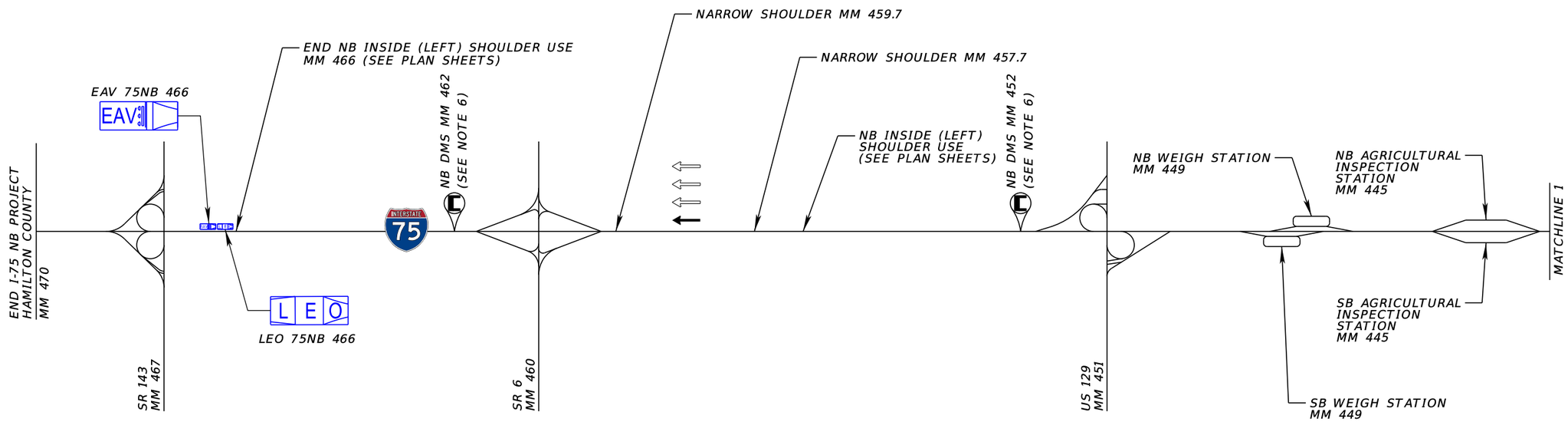
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

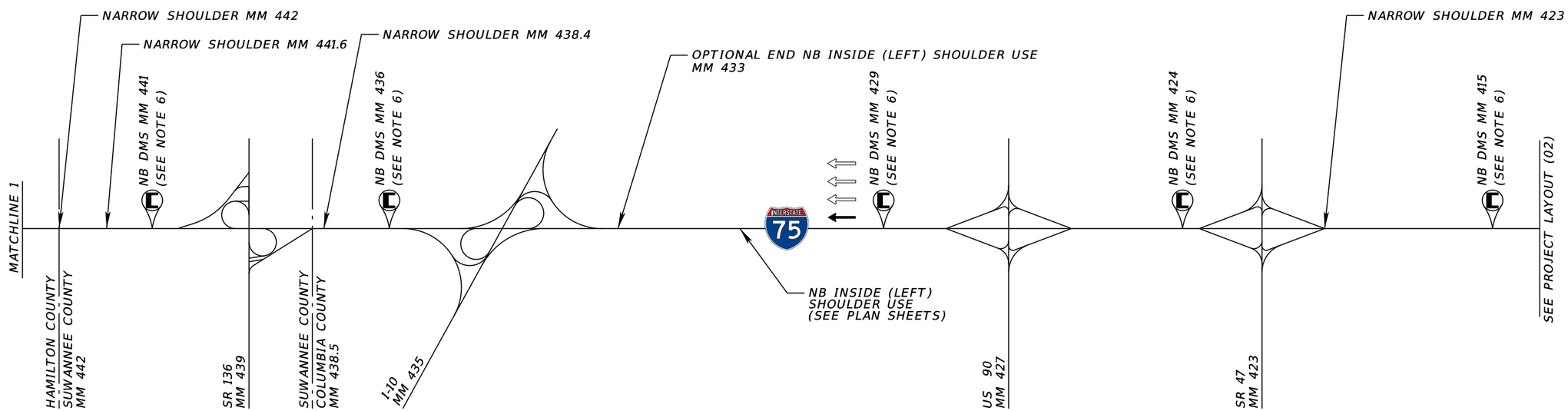
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

TYPICAL SIGN PLACEMENT

SHEET NO. 7

LEGEND
MM - MILE MARKER
⟵ - EMERGENCY SHOULDER USE (ESU) LANE
⇦ - GENERAL USE LANE





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

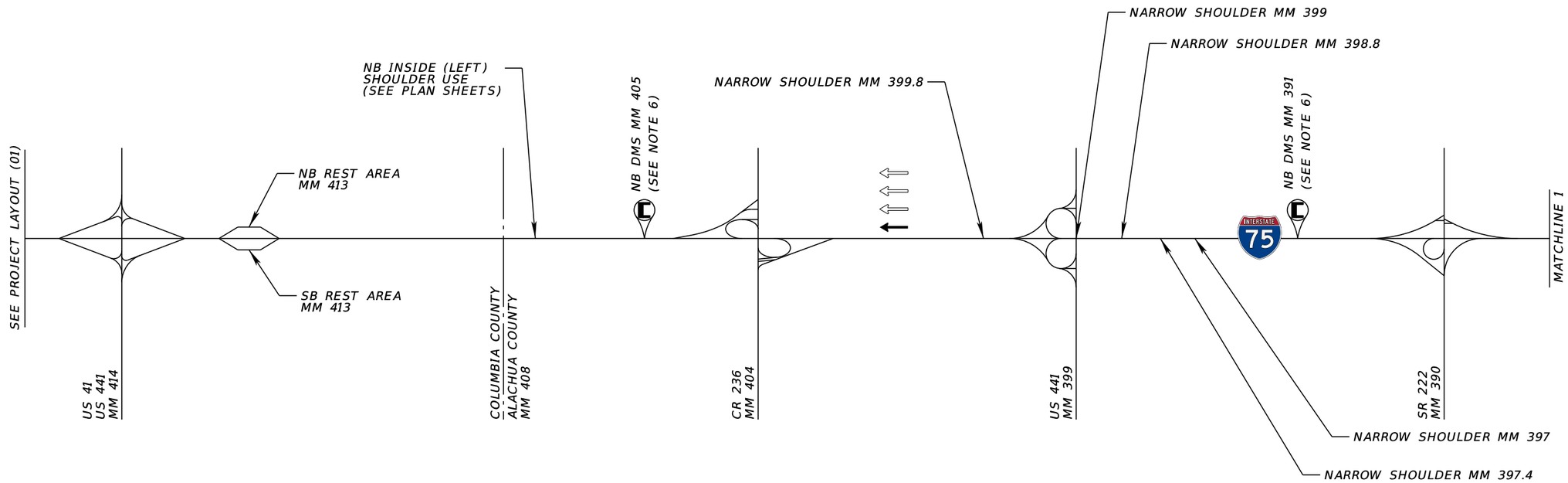
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

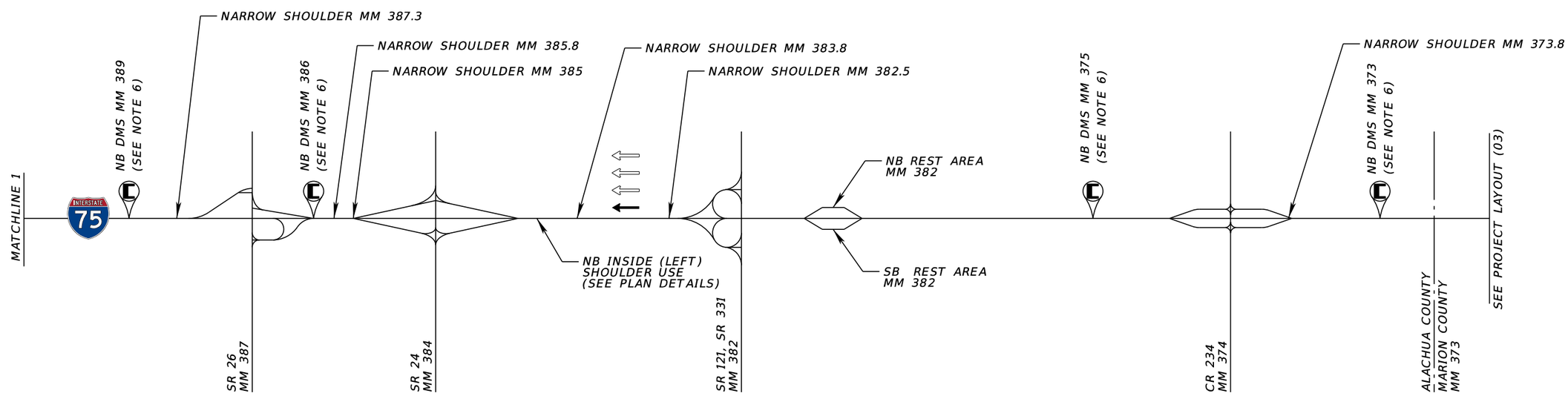
PROJECT LAYOUT (01)

SHEET NO.
8

dstutts 4/24/2020 10:15:29 AM J:\63045\TECHPROD\TW028_ESU2020\CADD\I75NB_Naples to State Line_ESU_Concept_Plans\NB_PLAYRD01.DGN

LEGEND
MM - MILE MARKER
⟵ - EMERGENCY SHOULDER USE (ESU) LANE
⇦ - GENERAL USE LANE





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

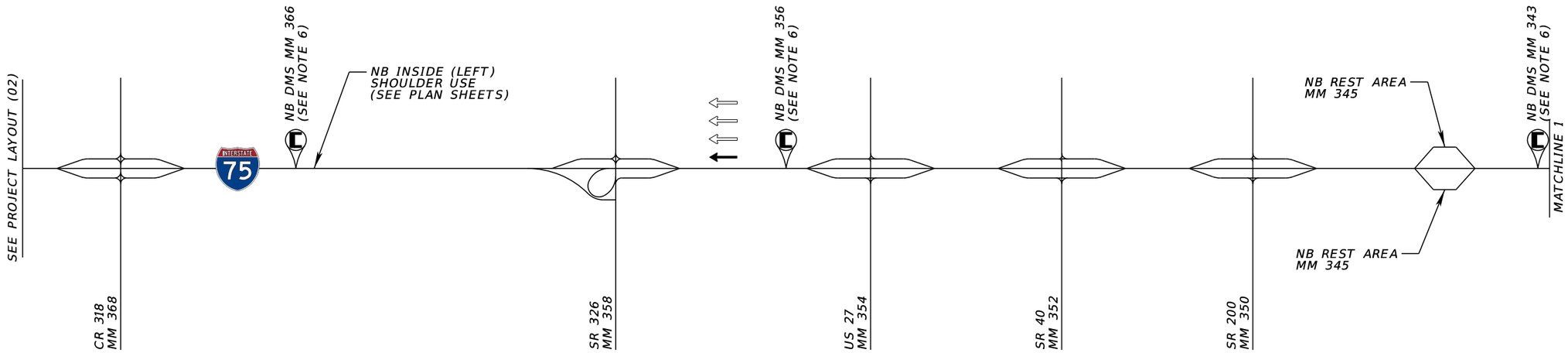
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

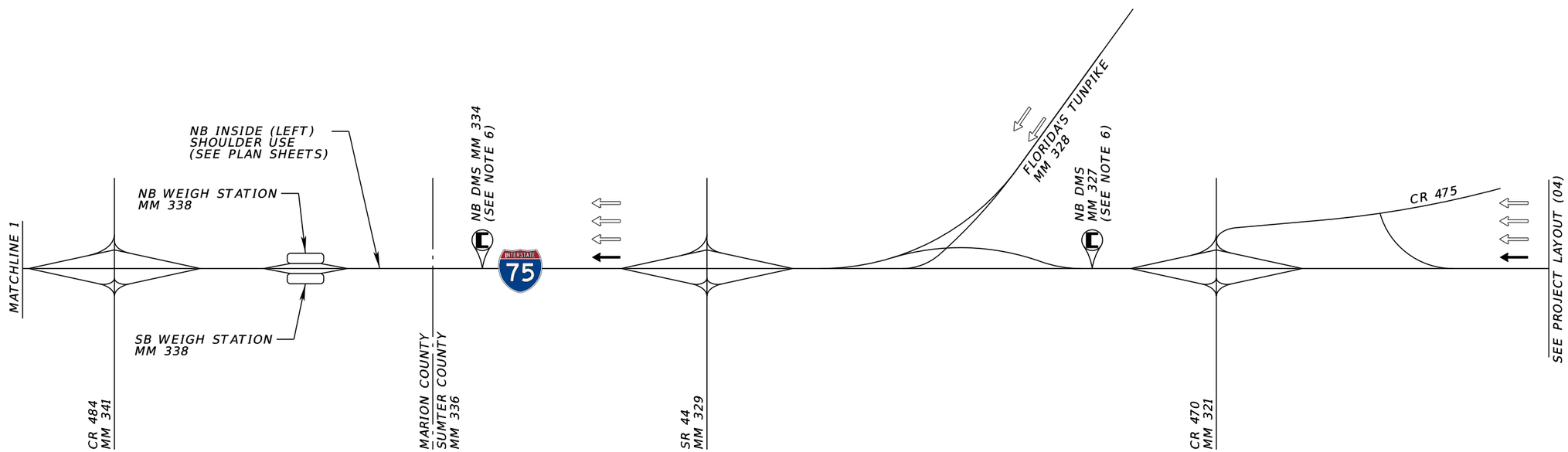
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

PROJECT LAYOUT (02)

SHEET NO. 9

LEGEND
MM - MILE MARKER
⟵ - EMERGENCY SHOULDER USE (ESU) LANE
⇦ - GENERAL USE LANE





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

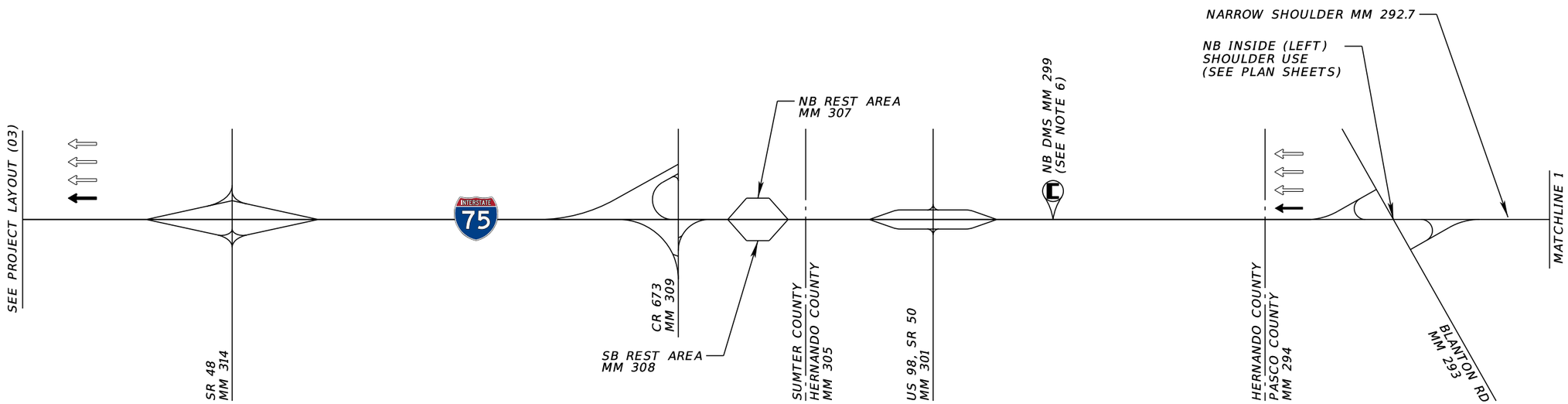
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

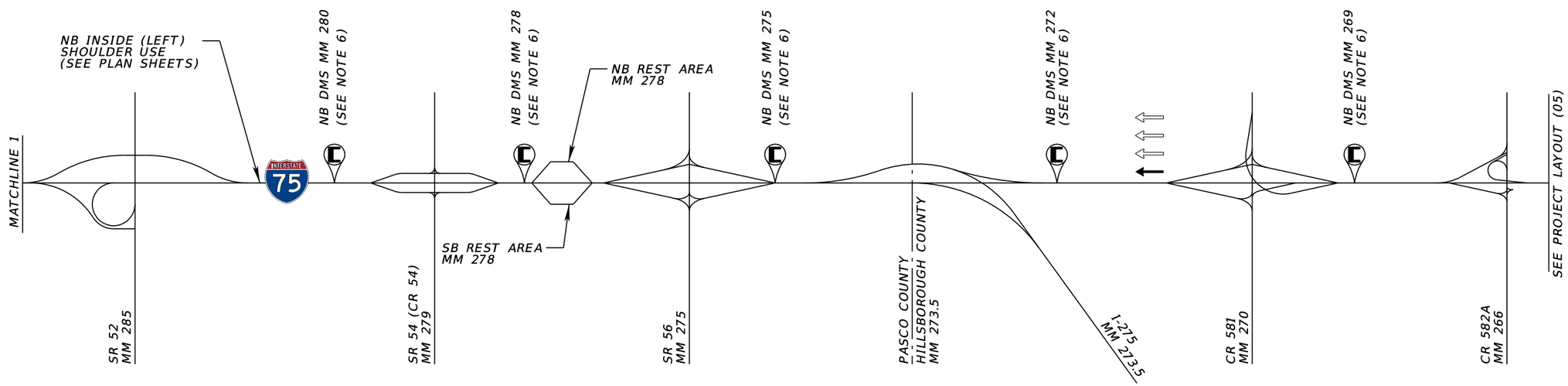
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

PROJECT LAYOUT (03)

SHEET NO. 10

LEGEND
MM - MILE MARKER
⟵ - EMERGENCY SHOULDER USE (ESU) LANE
⇦ - GENERAL USE LANE





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

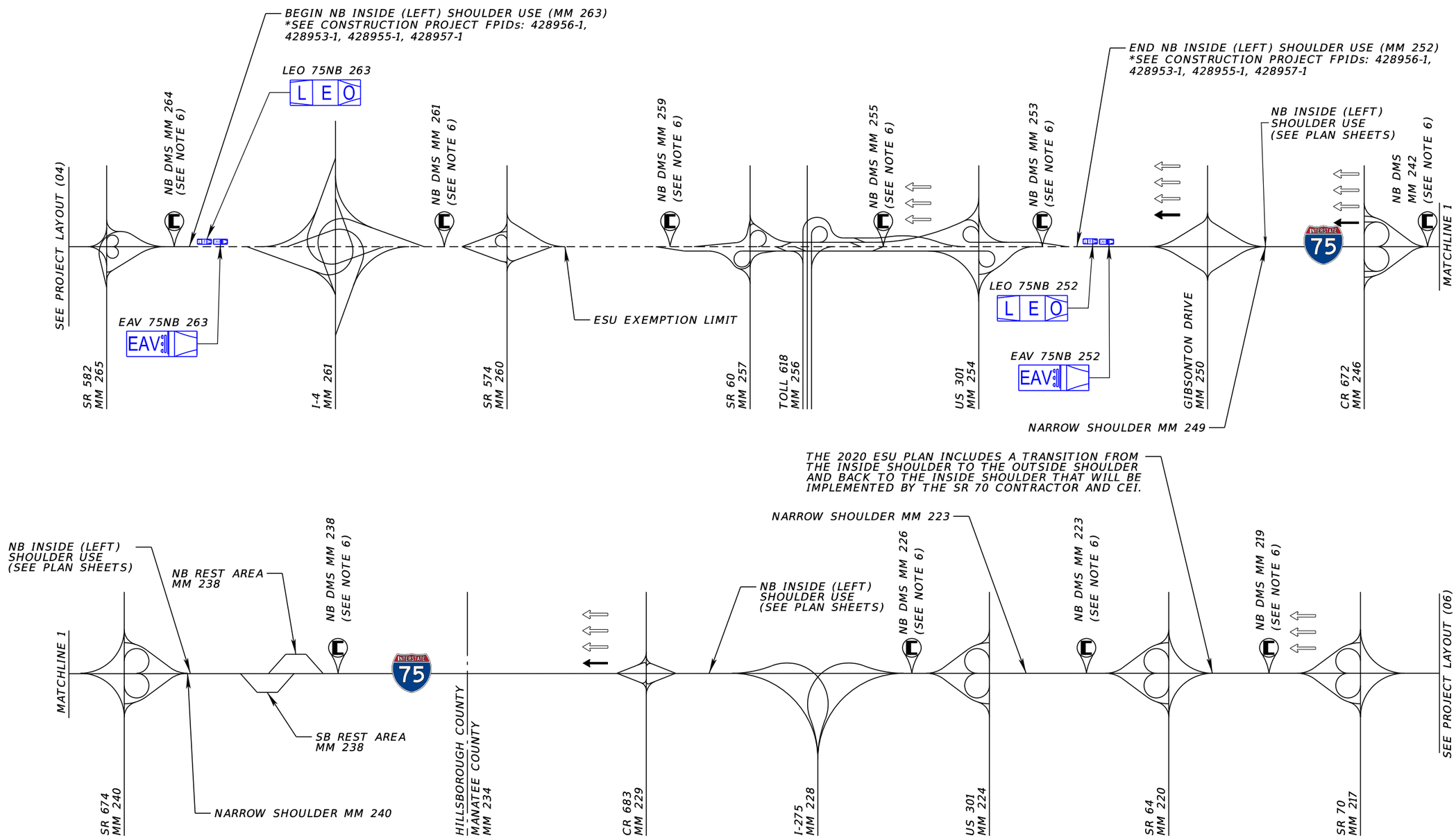
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

PROJECT LAYOUT (04)

SHEET NO.
11

LEGEND
MM - MILE MARKER
⟵ - EMERGENCY SHOULDER USE (ESU) LANE
⇦ - GENERAL USE LANE



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

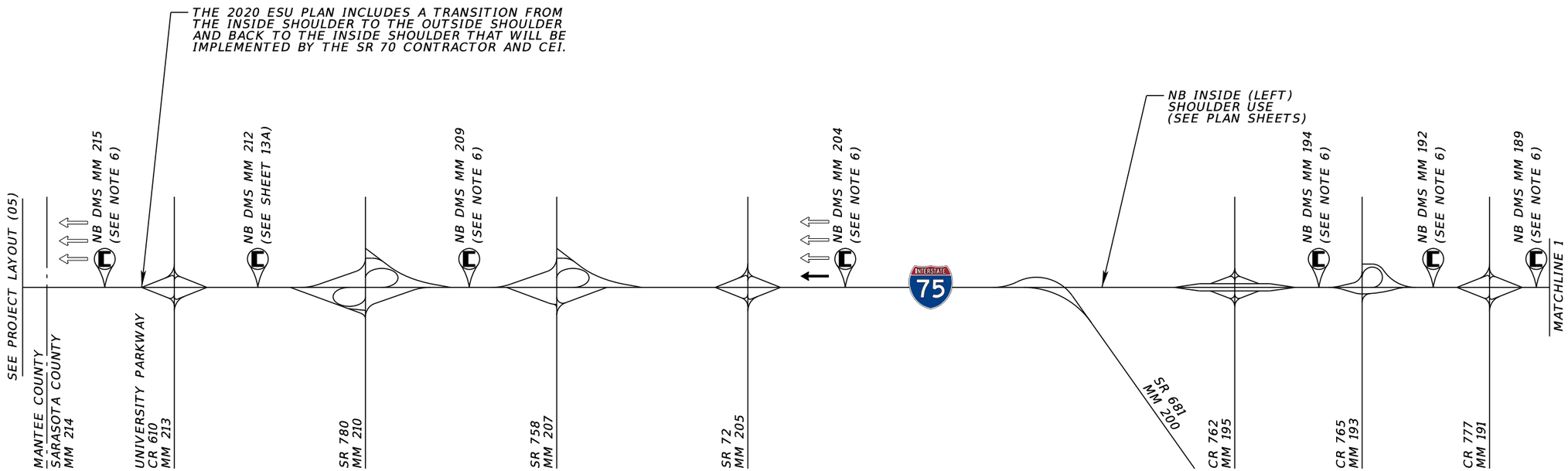
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

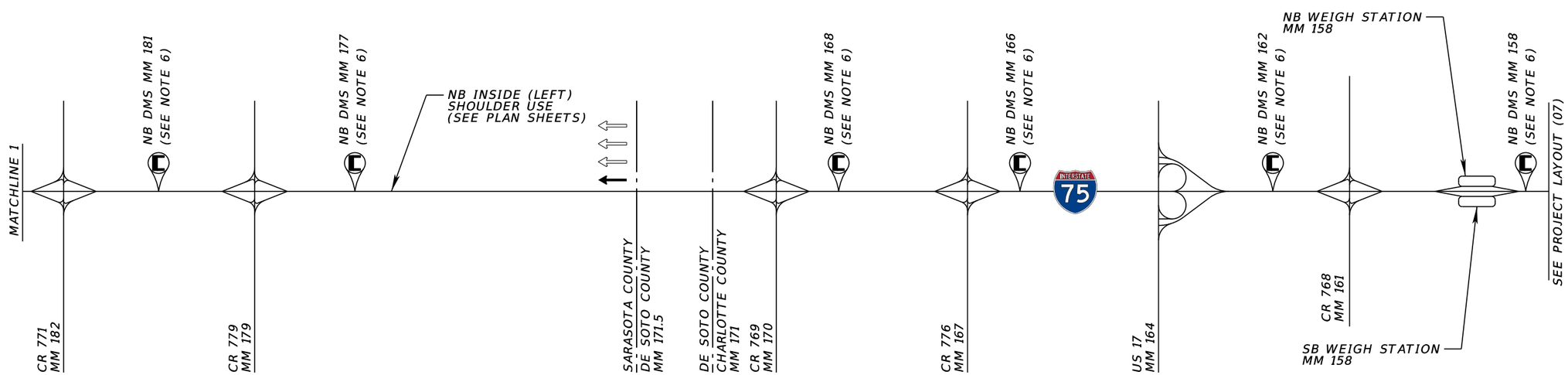
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

PROJECT LAYOUT (05)

SHEET NO.
12

LEGEND
MM - MILE MARKER
⟵ - EMERGENCY SHOULDER USE (ESU) LANE
⇦ - GENERAL USE LANE





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

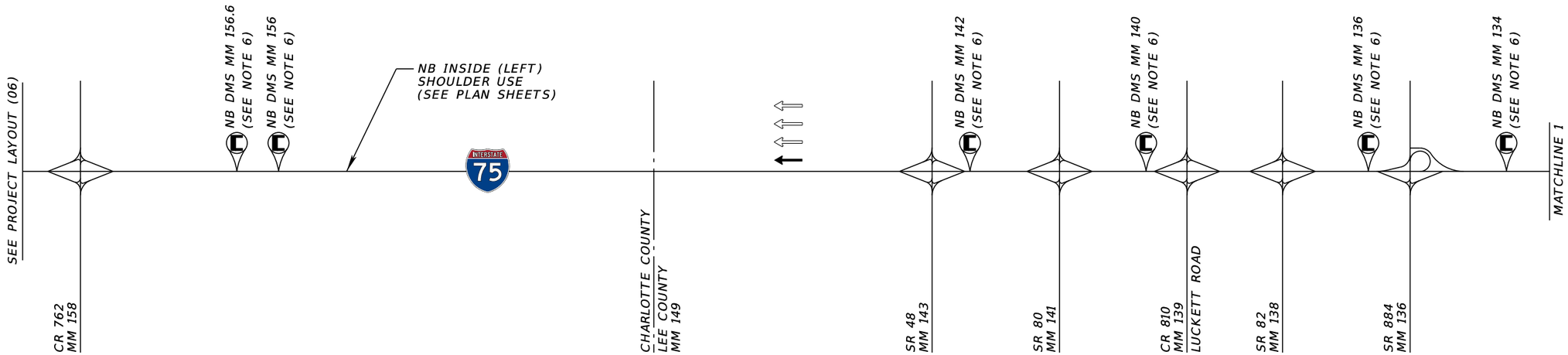
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

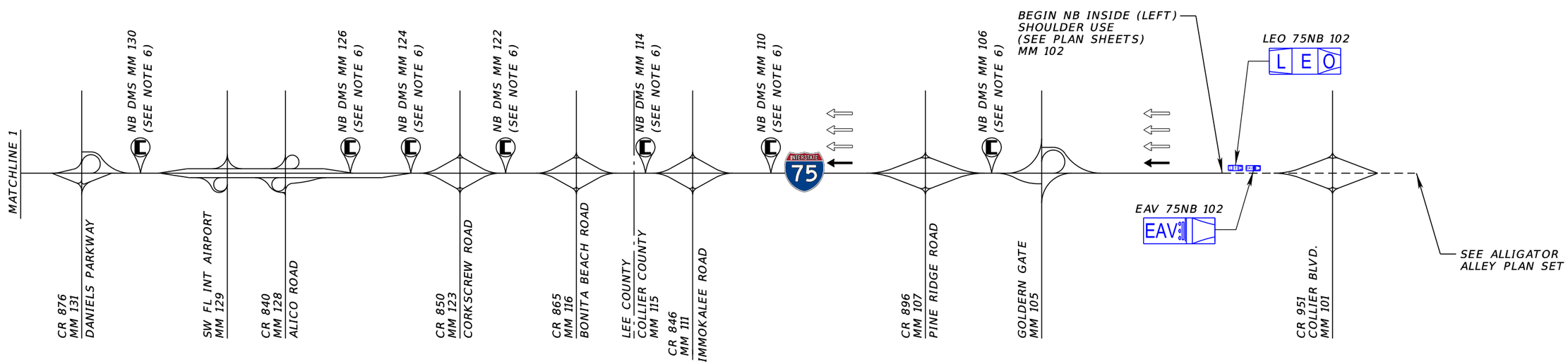
PROJECT LAYOUT (06)

SHEET NO.
13

dstutts 4/24/2020 10:15:35 AM J:\63045\TECHPROD\TW028_ESU2020\CADD\I75NB_Naples to State Line_ESU_Concept_Plans\NB_PLAYRD01.DGN

LEGEND
MM - MILE MARKER
⟵ - EMERGENCY SHOULDER USE (ESU) LANE
⇦ - GENERAL USE LANE





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

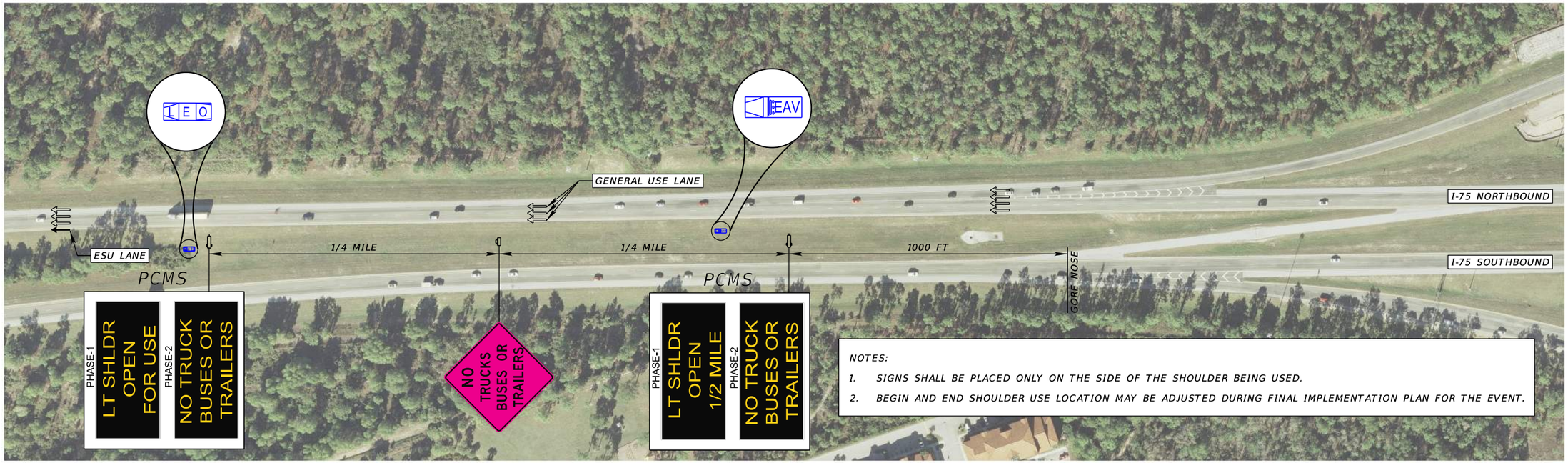
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

PROJECT LAYOUT (07)

SHEET NO.
14

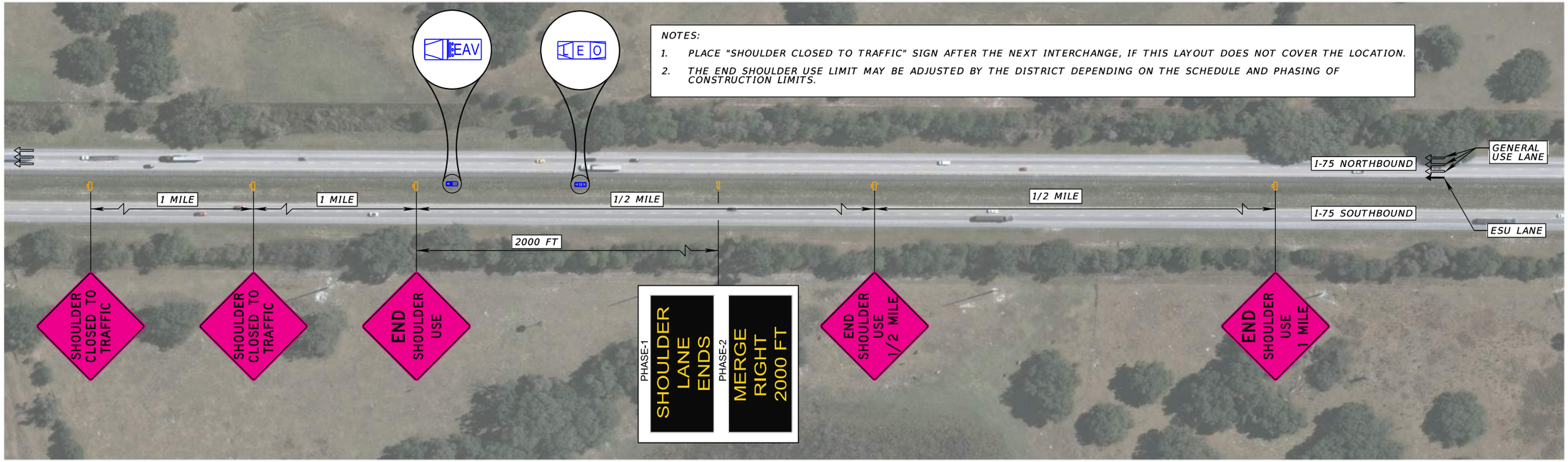
BEGIN SHOULDER USE (MM 102, 221, 263)



NOTES:

1. SIGNS SHALL BE PLACED ONLY ON THE SIDE OF THE SHOULDER BEING USED.
2. BEGIN AND END SHOULDER USE LOCATION MAY BE ADJUSTED DURING FINAL IMPLEMENTATION PLAN FOR THE EVENT.

END SHOULDER USE (MM 466, 252, 212)



NOTES:

1. PLACE "SHOULDER CLOSED TO TRAFFIC" SIGN AFTER THE NEXT INTERCHANGE, IF THIS LAYOUT DOES NOT COVER THE LOCATION.
2. THE END SHOULDER USE LIMIT MAY BE ADJUSTED BY THE DISTRICT DEPENDING ON THE SCHEDULE AND PHASING OF CONSTRUCTION LIMITS.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

PLAN SHEETS (01)
TYPICAL LAYOUT FOR BEGIN AND END SHOULDER USE

SHEET NO.
15

PLAN SHEET NOTE:

1. SIGNS SHOULD BE PLACED ONLY ON THE SIDE OF THE SHOULDER BEING USED.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

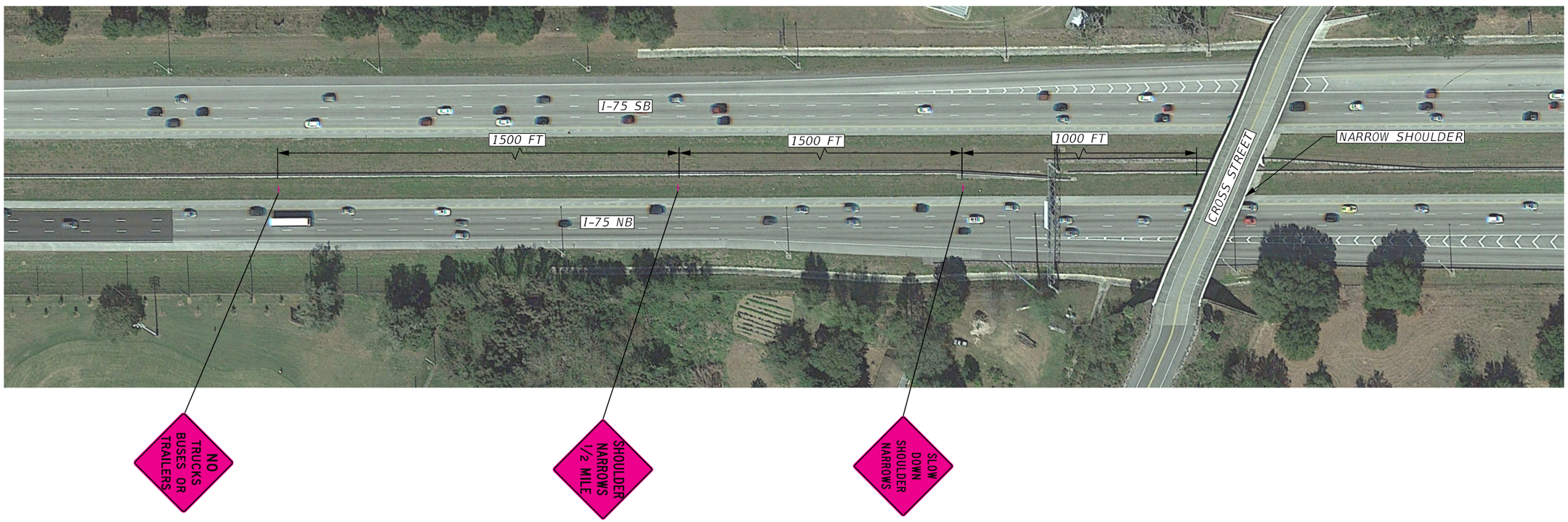
PLAN SHEETS (02)
TYPICAL LAYOUT
AT INTERCHANGES

SHEET NO.
16

dstutts 4/24/2020 10:46:51 AM J:\63045\TECHPROD\TW028_ESU2020\CADD\I75NB_Naples to State Line_ESU_Concept_Plans\NB_PLANRD02_INTERCHANGE.dgn

PLAN SHEET NOTE:

1. SIGNS SHALL BE PLACED ONLY ON THE SIDE OF THE SHOULDER ON WHICH A NARROW SHOULDER IS PRESENT.
2. THIS LAYOUT APPLIES TO ALL NARROW SHOULDER LOCATIONS.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

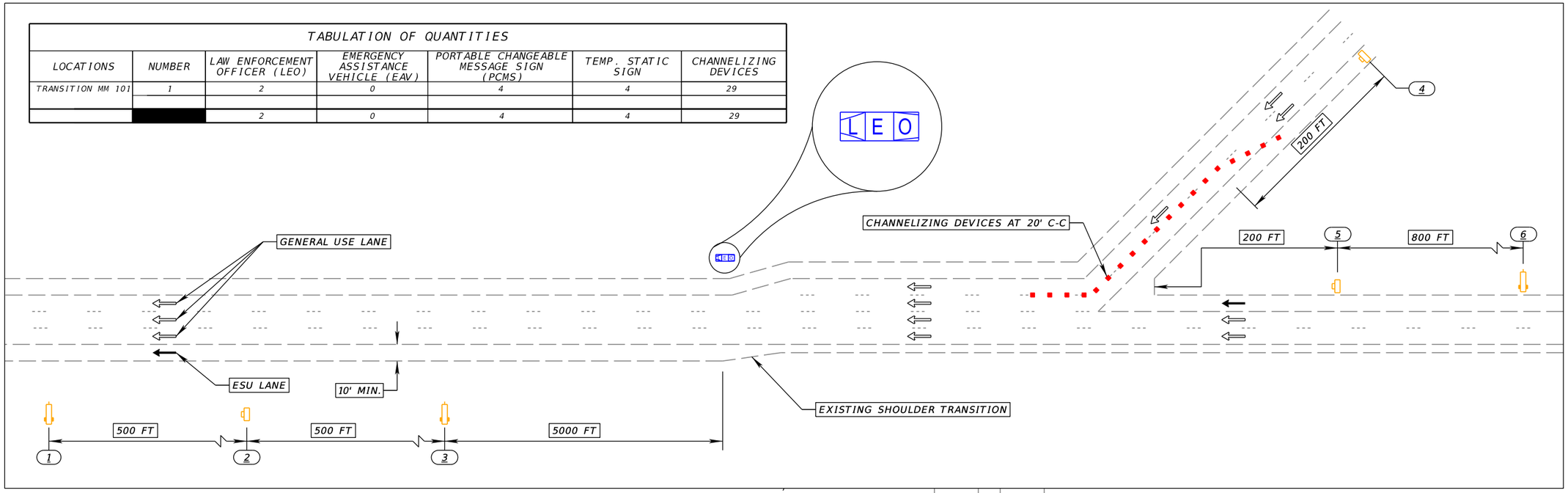
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

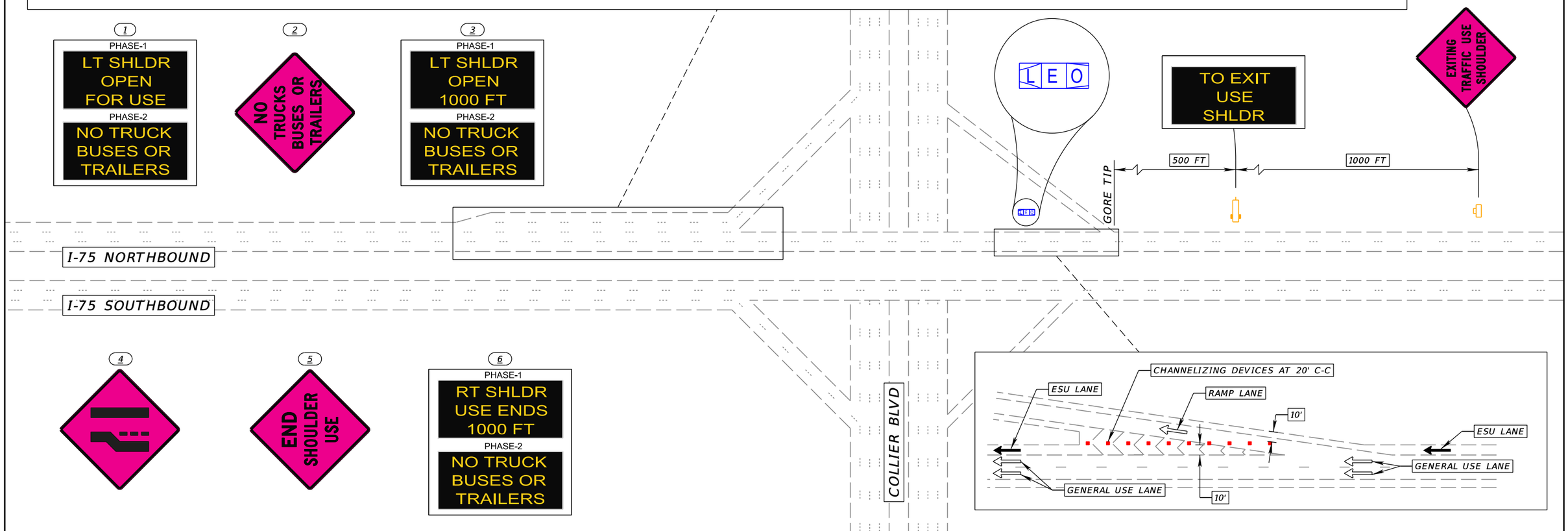
PLAN SHEETS (03)
TYPICAL LAYOUT
AT NARROW SHOULDERS

SHEET NO.
17

dstutts 4/24/2020 10:47:03 AM J:\63045\TECHPROD\TW028_ESU2020\CADD\I75NB_Naples to State Line_ESU_Concept_Plans\NB_PLANRD03_NARROW.dgn

TABULATION OF QUANTITIES						
LOCATIONS	NUMBER	LAW ENFORCEMENT OFFICER (LEO)	EMERGENCY ASSISTANCE VEHICLE (EAV)	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)	TEMP. STATIC SIGN	CHANNELIZING DEVICES
TRANSITION MM 101	1	2	0	4	4	29
		2	0	4	4	29





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

PLAN SHEETS (04)
ESU TRANSITION AT MM 101

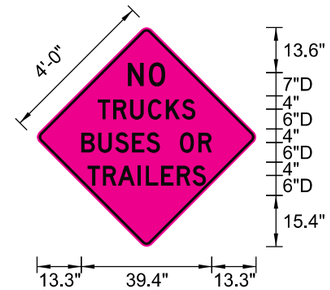
SHEET NO. 18

dstutts 4/24/2020 10:47:11 AM J:\63045\TECHPROD\TW028_ESU2020\CADD\I75NB_Naples to State Line_ESU_Concept_Plans\NB_PLANRD04_Transition.DGN

SIGN NAME	SIGN 113	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



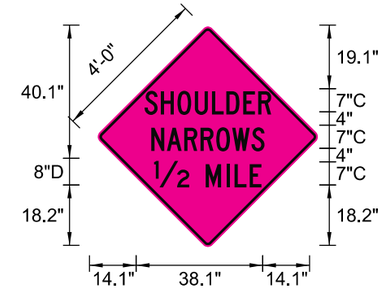
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		N	O		L																		
SPACE	27.4	6.3	5	27.4	11.3																		
COPY		T	R	U	C	K	S		L														
SPACE	18.3	4.6	5.1	5.4	5.4	4.8	4.1	18.3	29.4														
COPY		B	U	S	E	S		O	R		L												
SPACE	13.3	5.1	5.1	5.1	4.3	4.1	6	5.6	4.1	13.3	39.4												
COPY		T	R	A	I	L	E	R	S		L												
SPACE	15.2	4.6	4.6	6	2.4	4.6	4.7	4.7	4.1	15.1	35.7												
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 104	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



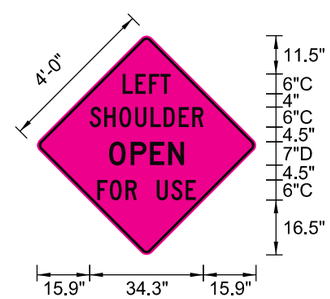
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		S	H	O	U	L	D	E	R		L												
SPACE	14.1	4.9	5	5.3	5.2	4.4	5	4.5	3.9	14.1	38.2												
COPY		N	A	R	R	O	W	S		L													
SPACE	16.1	4.7	5.3	4.9	4.8	4.8	5.8	3.9	16.1	34.1													
COPY		12		M	I	L	E		L														
SPACE	17	10.6	5	6.2	2.5	4.5	3.6	17	32.4														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 118	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



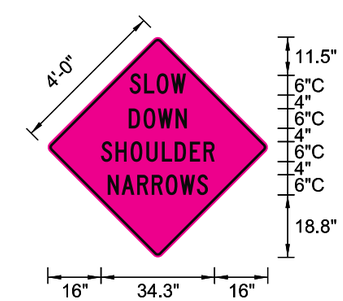
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		L	E	F	T		L																
SPACE	25.8	3.9	4.1	3.4	3.1	25.8	14.5																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	15.9	4.4	4.6	4.7	4.7	3.9	4.6	4.1	3.4	15.9	34.3												
COPY		O	P	E	N		L																
SPACE	21.7	6.5	5.8	5.5	4.8	21.7	22.6																
COPY		F	O	R		U	S	E		L													
SPACE	18.2	3.8	4.7	3.4	6	4.4	4.4	3.1	18.2	29.7													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 110	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		S	L	O	W		L																
SPACE	24.7	4.4	3.8	4.3	4.6	24.7	17																
COPY		D	O	W	N		L																
SPACE	24.4	4.4	4.3	5.4	3.4	24.4	17.5																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	16	4.4	4.6	4.7	4.7	3.9	4.6	4.1	3.4	16	34.3												
COPY		N	A	R	R	O	W	S		L													
SPACE	18	4.2	4.7	4.4	4.3	4.3	5.1	3.4	18	30.2													
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

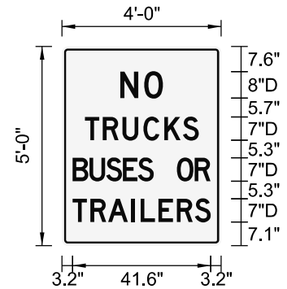
SIGN DETAILS (01)

SHEET NO. 19

SIGN NAME	SIGN 209	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



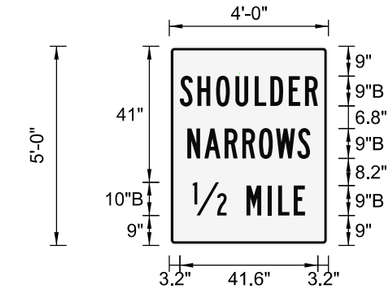
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		N	O		L																		
SPACE	17.6	7.2	5.7	17.6	12.9																		
COPY		T	R	U	C	K	S		L														
SPACE	6.9	5.4	6	6.3	6.3	5.6	4.8	6.8	34.3														
COPY		B	U	S	E	S		O	R		L												
SPACE	3.2	5.1	5.1	5.1	4.5	4.8	7	5.4	4.8	3.2	41.6												
COPY		T	R	A	I	L	E	R	S		L												
SPACE	3.2	5.4	5.3	7	2.8	5.4	5.5	5.5	4.8	3.2	41.6												
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 204	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



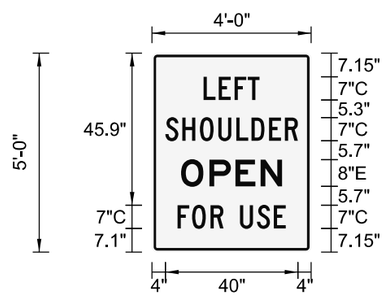
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		S	H	O	U	L	D	E	R		L												
SPACE	3.2	5.3	5.6	5.8	5.8	4.7	5.6	4.9	3.9	3.2	41.6												
COPY		N	A	R	R	O	W	S		L													
SPACE	5.5	5.1	6.1	5.3	5	5.1	6.5	3.9	5.5	37.1													
COPY		12		M	I	L	E		L														
SPACE	7.1	10.2	6	6.4	3.2	4.7	3.4	7.1	33.9														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 218	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



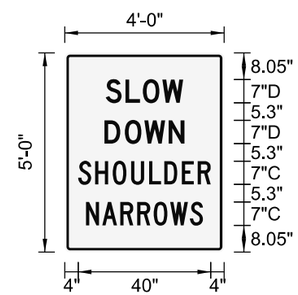
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		L	E	F	T		L																
SPACE	15.6	4.6	4.8	4	3.6	15.6	16.9																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	4	5.1	5.3	5.5	5.5	4.6	5.3	4.8	3.9	4	40												
COPY		O	P	E	N		L																
SPACE	8.8	8.6	7.8	7.6	6.5	8.8	30.5																
COPY		F	O	R		U	S	E		L													
SPACE	7.7	4.4	5.5	3.9	5	5.1	5.1	3.6	7.7	32.7													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 210	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		S	L	O	W		L																
SPACE	12.3	6	5.3	5.9	6.2	12.3	23.3																
COPY		D	O	W	N		L																
SPACE	12	6.2	5.9	7.3	4.8	12	24.1																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	4	5.1	5.3	5.5	5.5	4.5	5.3	4.8	3.9	4	40												
COPY		N	A	R	R	O	W	S		L													
SPACE	6.4	4.9	5.5	5.1	5	5	6	3.9	6.4	35.3													
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

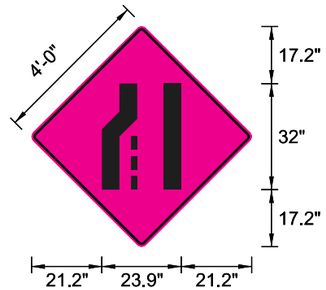
SIGN DETAILS (02)

SHEET NO. 20

SIGN NAME	SIGN 113	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



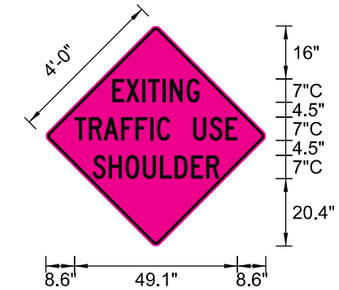
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 113	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



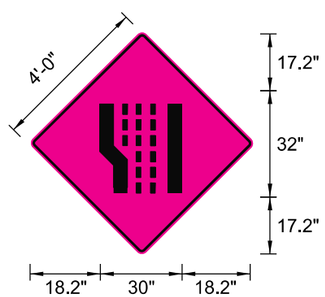
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		E	X	I	T	I	N	G		L													
SPACE	20.1	4.1	4.9	1.8	4.4	2.2	5	3.9	20	26.3													
COPY		T	R	A	F	F	I	C		U	S	E		L									
SPACE	8.6	4.4	4.4	5.3	4.4	4.4	2.1	3.9	7	4.9	4.9	3.6	8.6	49.1									
COPY		S	H	O	U	L	D	E	R		L												
SPACE	14.1	4.9	5	5.3	5.2	4.4	5	4.5	3.9	14.1	38.1												
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME		QTY		SIGN NUMBER	STATION(S)
PANEL		BORDER			
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



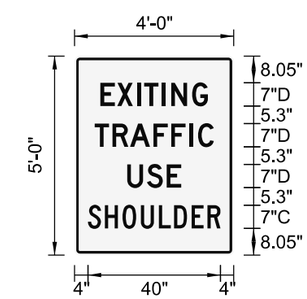
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 213	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		E	X	I	T	I	N	G		L													
SPACE	7.8	5	5.9	2.2	5.4	2.8	6.3	4.8	7.8	32.4													
COPY		T	R	A	F	F	I	C		L													
SPACE	6	5.4	5.3	7	5.4	5.4	2.7	4.8	6	35.9													
COPY		U	S	E		L																	
SPACE	15.9	5.9	6	4.3	15.9	16.2																	
COPY		S	H	O	U	L	D	E	R		L												
SPACE	4	5.1	5.3	5.5	5.5	4.6	5.3	4.8	3.9	4	40												
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

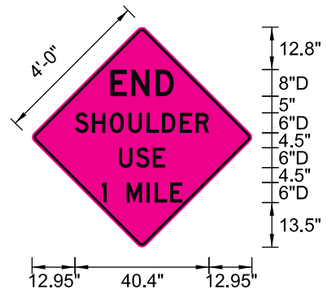
SIGN DETAILS (03)

SHEET NO. 21

SIGN NAME	SIGN 115	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



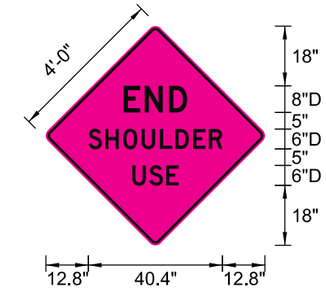
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		E	N	D		L																	
SPACE	23.6	6.3	7.4	5.4	23.6	19.1																	
COPY		S	H	O	U	L	D	E	R		L												
SPACE	12.9	5.1	5.4	5.6	5.5	4.6	5.4	4.7	4.1	12.9	40.4												
COPY		U	S	E		L																	
SPACE	26.2	5.1	5.1	3.7	26.2	13.9																	
COPY		1		M	I	L	E		L														
SPACE	21	1.5	6	6.1	2.4	4.6	3.7	21	24.4														
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 114	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



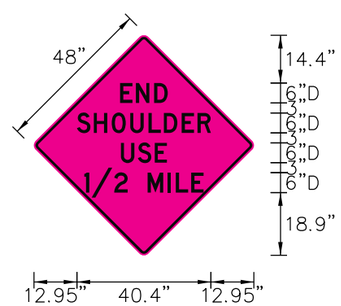
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		E	N	D		L																	
SPACE	23.4	6.3	7.4	5.4	23.4	19.1																	
COPY		S	H	O	U	L	D	E	R		L												
SPACE	12.8	5.1	5.4	5.6	5.5	4.6	5.4	4.7	4.1	12.8	40.4												
COPY		U	S	E		L																	
SPACE	26	5.1	5.1	3.7	26	13.9																	
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 502	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0"		
HEIGHT	5'-6"	RADII	0"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



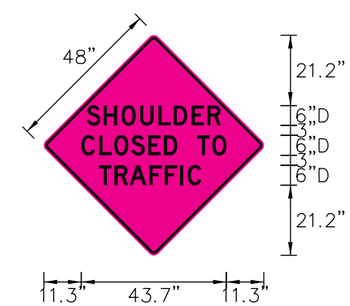
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	E	N	D		L																		
SPACE	26	30.7	36.3		14.3																		
COPY	S	H	O	U	L	D	E	R		L													
SPACE	12.9	18	23.4	29	34.5	39.2	44.6	49.3		40.4													
COPY	U	S	E		L																		
SPACE	26.2	31.3	36.4		13.9																		
COPY	1	/	2		M	I	L	E		L													
SPACE	15.2	17.4	24.2	28.3	34.3	40.4	42.8	47.4		35.9													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	name	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0"		
HEIGHT	5'-6"	RADII	0"		
LEGEND	Black	COLOR	Black		
COLOR	Fluorescent Pink				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	S	H	O	U	L	D	E	R		L													
SPACE	12.9	18	23.4	29	34.5	39.2	44.6	49.3		40.4													
COPY	C	L	O	S	E	D		T	O		L												
SPACE	11.3	16.7	21.2	26.4	31.5	36.2	40.3	46.3	50.8		43.7												
COPY	T	R	A	F	F	I	C		L														
SPACE	16.7	21.3	25.8	31.8	36.5	41.1	43.4		30.8														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

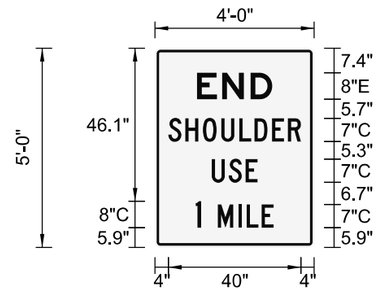
SIGN DETAILS (04)

SHEET NO. 22

SIGN NAME	SIGN 215	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



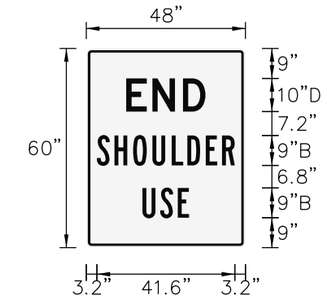
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		E	N	D		L																	
SPACE	12.7	7.6	8.6	6.5	12.7	22.6																	
COPY		S	H	O	U	L	D	E	R		L												
SPACE	4	5.1	5.3	5.5	5.5	4.5	5.3	4.8	3.9	4	40												
COPY		U	S	E		L																	
SPACE	17.1	5.1	5.1	3.6	17.1	13.8																	
COPY		1		M	I	L	E		L														
SPACE	12.3	1.7	5	6.2	2.5	4.6	3.6	12.3	23.5														
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 214	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



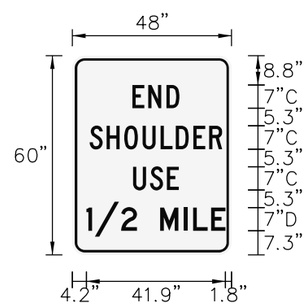
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	E	N	D		L																		
SPACE	224.5	232.1	240.6		22.6																		
COPY	E	N	D		L																		
SPACE	583.9	591.8	601		23.9																		
COPY	S	H	O	U	L	D	E	R		L													
SPACE	215.8	220.9	226.2	231.8	237.2	241.8	247.1	251.9		40													
COPY	S	H	O	U	L	D	E	R		L													
SPACE	575.1	580.4	586	591.8	597.7	602.3	607.9	612.8		41.6													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 503	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	3"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



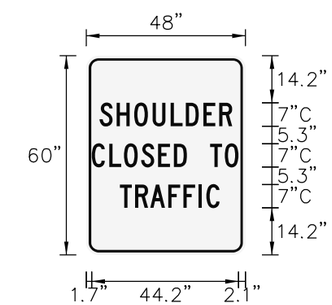
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	E	N	D		L																		
SPACE	18.1	22.9	28.4		14.1																		
COPY	S	H	O	U	L	D	E	R		L													
SPACE	5.2	10.3	15.7	21.2	26.6	31.2	36.5	41.3		40													
COPY	U	S	E		L																		
SPACE	18.3	23.4	28.5		13.8																		
COPY	1	/	2		M	I	L	E		L													
SPACE	4.2	6.8	14.7	19.5	26.5	33.6	36.4	41.8		41.9													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	name	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	3"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	S	H	O	U	L	D	E	R		L													
SPACE	4	9.1	14.5	20	25.5	30	35.3	40.1		40													
COPY	C	L	O	S	E	D		T	O		L												
SPACE	1.7	7	11.4	16.6	21.7	26.4	30.4	37.4	41.8		44.2												
COPY	T	R	A	F	F	I	C		L														
SPACE	10.2	14.7	19.3	24.7	29.3	33.8	36.2		30														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93 (NB)	ALL COUNTIES IN PROJECT LIMITS	

SIGN DETAILS (05)

SHEET NO.
23

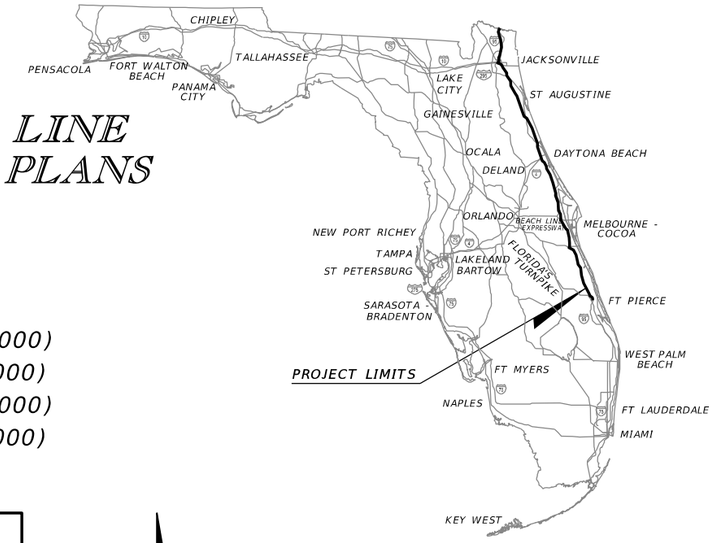
Appendix V

District 5
I-95 Emergency Shoulder Use Plans

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

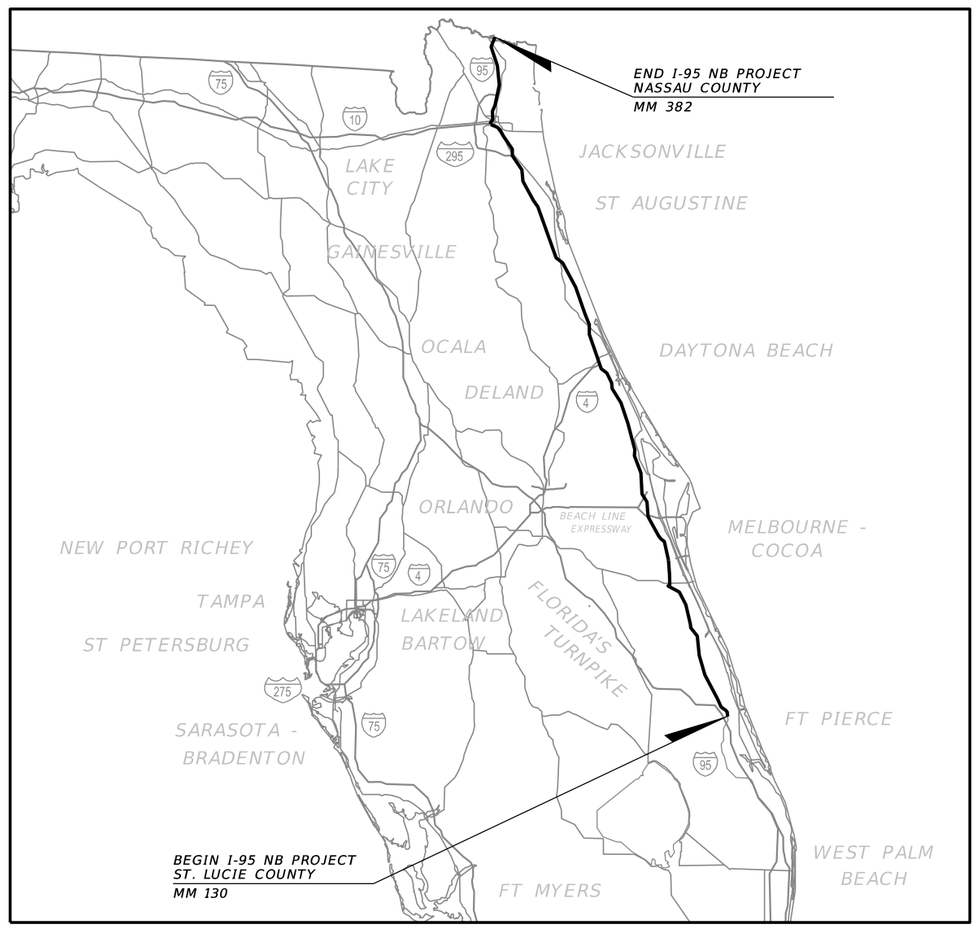
I-95 NORTHBOUND - FORT PIERCE TO STATE LINE EMERGENCY SHOULDER USE (ESU) CONCEPT PLANS 2018 (LEFT SHOULDER USE ONLY)



INDEX OF SHOULDER USE CONCEPT PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	GENERAL NOTES AND SUMMARY OF QUANTITIES
3	FEATURE TABULATION
4	TYPICAL SIGN PLACEMENT
5-8	PROJECT LAYOUT
9-13	PLANS
14-17	GUIDESIGN SHEETS

NASSAU COUNTY	(74160000)	DUVAL COUNTY	(72020000)
ST. JOHNS COUNTY	(78080000)	FLAGLER COUNTY	(73001000)
VOLUSIA COUNTY	(79002000)	BREVARD COUNTY	(70225000)
INDIAN RIVER COUNTY	(88081000)	ST. LUCIE COUNTY	(94001000)



N

04/6/2018

FISCAL YEAR	SHEET NO.
18	1

$USER$ $DATE$ $TIME$ $FILE$

GENERAL NOTES

1. THE PAVED SHOULDER WIDTH ALONG THIS CORRIDOR HAS BEEN FIELD VERIFIED TO BE AT LEAST 10'-0" MEASURED FROM THE EDGE OF THE PAVED SHOULDER OR FACE OF GUARDRAIL OR CONCRETE BARRIER WALL TO THE EDGE OF THE STRIPE. HOWEVER, IF CONSTRUCTION WORK OR OTHER CONDITION RESULTS IN A PAVED SHOULDER WIDTH, AT THE TIME OF IMPLEMENTATION, LESS THAN 10'-0" BUT AT LEAST 9'-0". SEE NARROW SHOULDER LAYOUT SHEET.
2. IMPLEMENTATION OF SHOULDER USE MAY BE ALONG THE ENTIRE CORRIDOR OR ALONG SPECIFIC SECTIONS OF THE CORRIDOR.
3. DEBRIS, ENCROACHING VEGETATION AND HAZARDS ON BOTH SHOULDERS SHALL BE REMOVED PRIOR TO IMPLEMENTATION OF SHOULDER USE.
4. SIGNS MAY BE PERMANENT, TEMPORARY, OR PORTABLE INSTALLATIONS. IF PERMANENT INSTALLATIONS ARE USED, THE MESSAGES SHALL ONLY BE DISPLAYED UPON IMPLEMENTATION.
5. DISTRICT SPECIFIC STANDARD OPERATING PROCEDURE (SOP) WILL BE DEVELOPED AND PROVIDED BY EACH FDOT DISTRICT. THESE WILL ADDRESS REQUIREMENTS AND STANDARD PROCEDURES FOR TEMPORARY AND PERMANENT SIGN INSTALLATIONS, EMERGENCY ASSISTANCE VEHICLE, LAW ENFORCEMENT OFFICER AND OTHER PERTINENT INFORMATION REGARDING THE IMPLEMENTATION OF SHOULDER USE FOR EMERGENCY EVACUATION PURPOSES.
6. UNLESS OTHER TRAFFIC INCIDENT MANAGEMENT MESSAGES TAKE PRECEDENCE, THE DEFAULT MESSAGE ON THE PERMANENT DMS SHALL BE SINGLE- PHASE, THREE -LINE MESSAGE:

LEFT SHOULDER OPEN
FOR USE - NO TRUCKS
BUSES OR TRAILERS

7. DMS - DYNAMIC MESSAGE SIGN
   PCMS - PORTABLE CHANGEABLE MESSAGE SIGN
   EAV -EMERGENCY ASSISTANCE VEHICLE
8. CHANNELIZING DEVICES MAY BE TRAFFIC CONES, PLASTIC DRUMS OR DELINEATORS.
9. SIGNS AND TEMPORARY MOUNTS SHALL BE ON THE APPROVED PRODUCTS LIST (APL).
10. ESU SHOULD ONLY BE IMPLEMENTED IN DRY CONDITIONS. IF RAIN OR FOG EXISTS, ESU SHOULD BE TERMINATED UNTIL FURTHER GUIDANCE IS PROVIDED BY THE STATE TRAFFIC ENGINEERING AND OPERATIONS OFFICE.

LEGEND

EAV — EMERGENCY ASSISTANCE VEHICLE (SHOWN FOR INFORMATION ONLY)

LEO — LAW ENFORCEMENT OFFICER (LEO) (FIXED POSITIONS)

PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

TEMPORARY STATIC SIGN

CHANNELIZING DEVICE

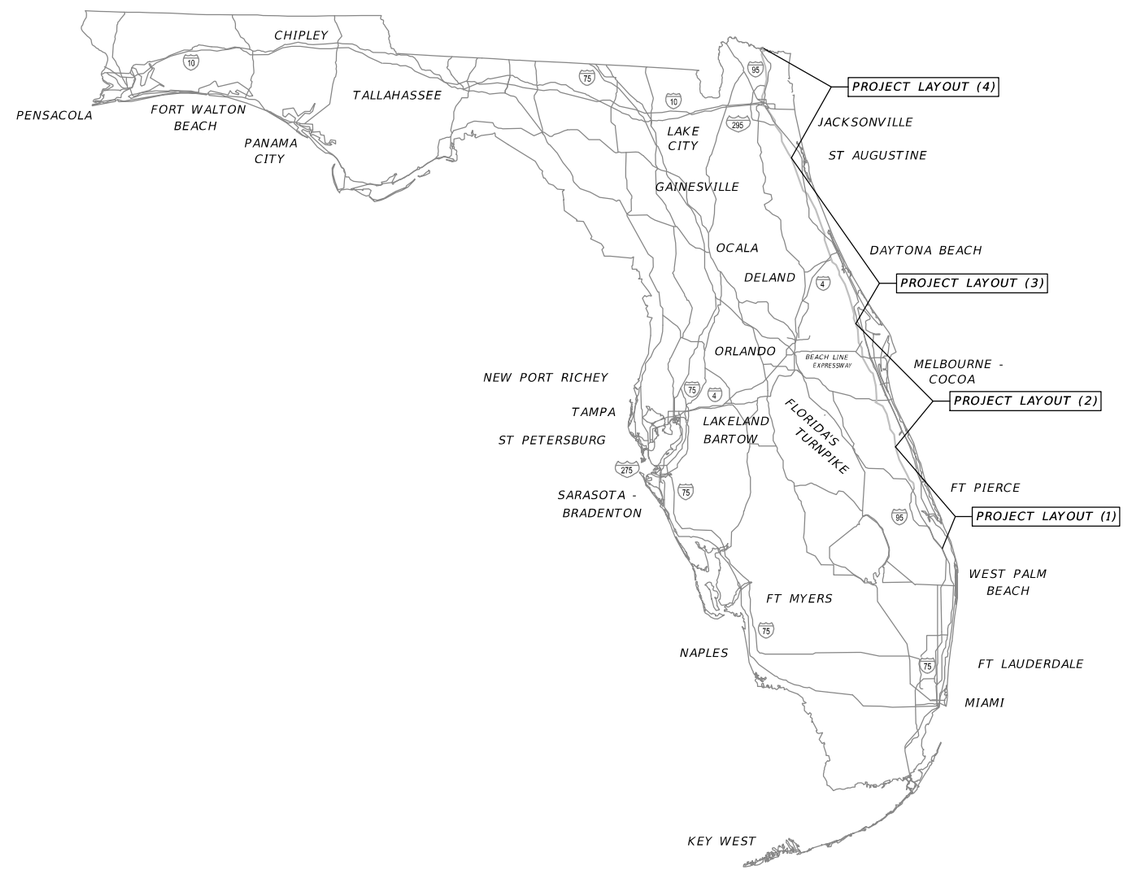
TABULATION OF QUANTITIES

LOCATIONS	LOCATIONS	NUMBER	LAW ENFORCEMENT OFFICER (LEO)	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)	TEMP. STATIC SIGN	CHANNELIZING DEVICES
3	BEGIN	2	2	4	2	0
	END	2	2	2	10	0
	INTERCHANGE	42	0	0	84	0
	REST AREA	5	0	0	10	0
	WEIGH STATION	2	0	0	4	0
	NARROW SHOULDER	4	0	0	12	0
TOTAL			4	6	122	0

NOTES:

1. LAW ENFORCEMENT OFFICER LOCATIONS SHOWN ON THE PLANS ARE FIXED LOCATIONS AND DO NOT ACCOUNT FOR SUPPORT ACTIVITIES OR PATROLLING ACTIVITIES.

SHEET LAYOUT



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ALL COUNTIES IN PROJECT LIMITS	

GENERAL NOTES AND SUMMARY OF QUANTITIES

SHEET NO. 2

LEO LOCATION ASSIGNMENT TABLE (FHP TROOPS)

NO.	LEO NUMBER	MILE MARKER	LOCATION	TYPE
1	95N 130	130	N. OF SR 70	BEGIN SHOULDER USE
2	95N 336	336	S. OF I-295 INTERCHANGE	END SHOULDER USE
3	95N 363	363	N. OF AIRPORT ROAD	BEGIN SHOULDER USE
4	95N 381	381	FL / GEORGIA STATE LINE	END SHOULDER USE

NARROW SHOULDER LOCATIONS

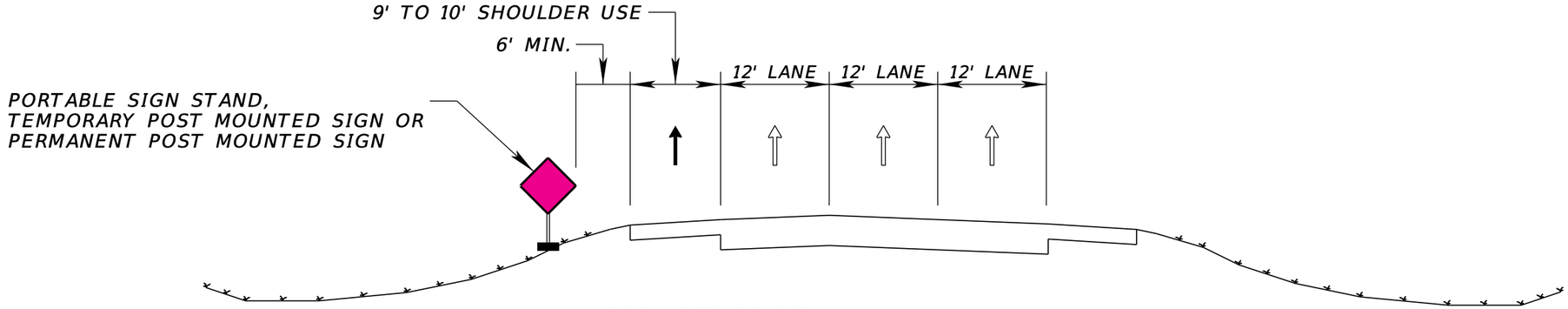
COUNTY	DISTRICT	MILE POST	MILE MARKER	WIDTHS	RECOMMENDATIONS
VOLUSIA	District 5	30.350	263	9'-4"	SEE NARROW SHOULDER LAYOUT SHEET
Martin	District 4	8.596	97	9'-11"	SEE NARROW SHOULDER LAYOUT SHEET
Martin	District 4	11.762	100	9'-4"	SEE NARROW SHOULDER LAYOUT SHEET
Martin	District 4	14.423	103	9'-4"	SEE NARROW SHOULDER LAYOUT SHEET

SUMMARY OF CROSSOVERS

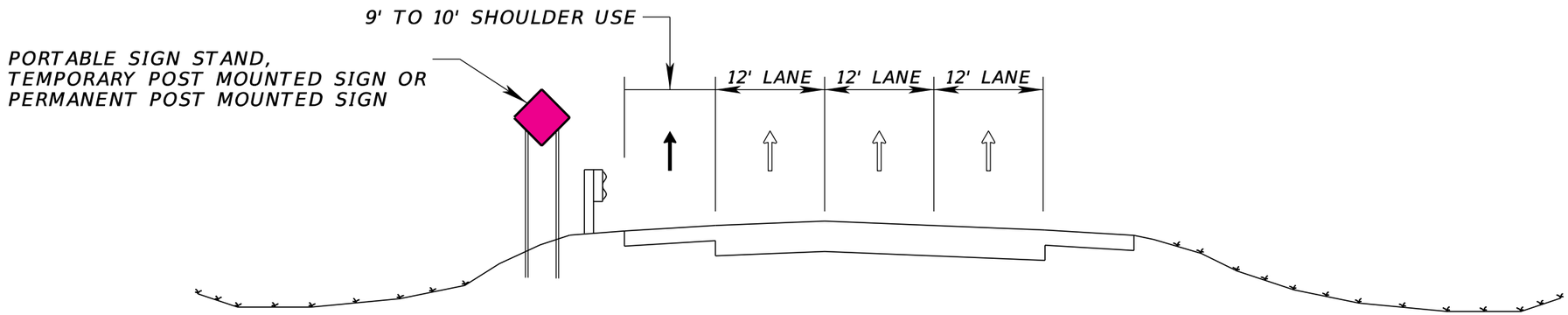
COUNTY	DISTRICT	MILE POST	MILE MARKER
Duval	District 2	2.934	336
Duval	District 2	10.224	369
St. Johns	District 2	4.236	301
St. Johns	District 2	6.230	303
St. Johns	District 2	10.947	308
St. Johns	District 2	16.919	314
St. Johns	District 2	23.873	321
St. Johns	District 2	29.092	326
Flagler	District 5	2.626	281
Flagler	District 5	8.926	287
Flagler	District 5	13.980	292
Flagler	District 5	17.496	296
Volusia	District 5	2.420	235
Volusia	District 5	26.548	259
Volusia	District 5	30.362	263
Volusia	District 5	38.245	271
Volusia	District 5	43.801	276
Brevard	District 5	19.165	160
Brevard	District 5	4.182	164
Brevard	District 5	6.479	166
Brevard	District 5	6.476	166
Brevard	District 5	10.223	170
Brevard	District 5	10.219	170
Brevard	District 5	26.774	186
Brevard	District 5	26.777	186
Brevard	District 5	38.666	198
Brevard	District 5	38.667	198
Brevard	District 5	24.678	226
Nassau	District 2	5.525	375
Nassau	District 2	8.226	378
Nassau	District 2	10.763	381

CONSTRUCTION PROJECTS

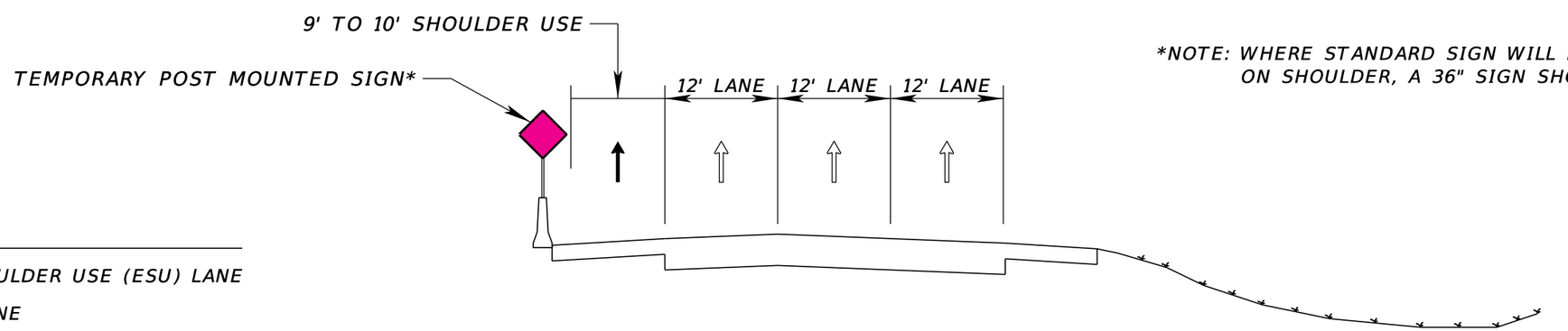
FPID	DISTRICT	COUNTY	DESCRIPTION	START DATE	END DATE
434273-1	4	MARTIN	FROM PALM BEACH COUNTYLINE TO N OF CR-708/SE BRIDGE ROAD	MAY,2017	NOV,2018
436617-1	4	ST. LUCIE	BRIDGE DECK REPLACEMENT OVER CR-709 & FEC RR & OVER 10 MILE CREEK	JUL,2017	JUN,2019
413049-2	4	INDIAN RIVER	FROM SR-60/OSCEOLA BLVD TO THE BREVARD CO LINE	MAY,2013	MAY,2018
426904-3	5	BREVARD	I-95 INT @ ST JOHNS HERITAGE PKWY/PALM BAY PK WY N OF MICCO RD	JAN,2017	NOV,2018
435054-1	5	BREVARD	I-95 (SR 9) AT WICKHAM ROAD, SR 520 & SR 524	JUL,2017	SEP,2018
428238-1	5	BREVARD	I-95 INTERCHANGE AT VIERA BLVD	NOV,2017	APR,2019
435054-1	5	BREVARD	I-95 (SR 9) AT WICKHAM ROAD, SR 520 & SR 524	JUL,2017	SEP,2018
242715-2	5	VOLUSIA	I-95 0.5 MILES N OF SR 44 TO 1.6 MI N OF US 92	NOV,2014	SEP,2018
433036-1	2	DUVAL	I-95(SR9) @ I-10 INTERCHANGE OPERATIONAL IMPROVEMENT	FEB,2017	JUL,2020
213323-1	2	DUVAL	I-95(SR9) @ NORTH I-295 INTERCHANGE	JUL,2016	OCT,2020



I-95 NORTHBOUND
GRASSED INSIDE SHOULDER



I-95 NORTHBOUND
GUARDRAIL AT INSIDE SHOULDER



*NOTE: WHERE STANDARD SIGN WILL ENCROACH ON SHOULDER, A 36" SIGN SHOULD BE USED.

I-95 NORTHBOUND
CONCRETE BARRIER WALL AT INSIDE SHOULDER

LEGEND

- EMERGENCY SHOULDER USE (ESU) LANE
- GENERAL USE LANE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

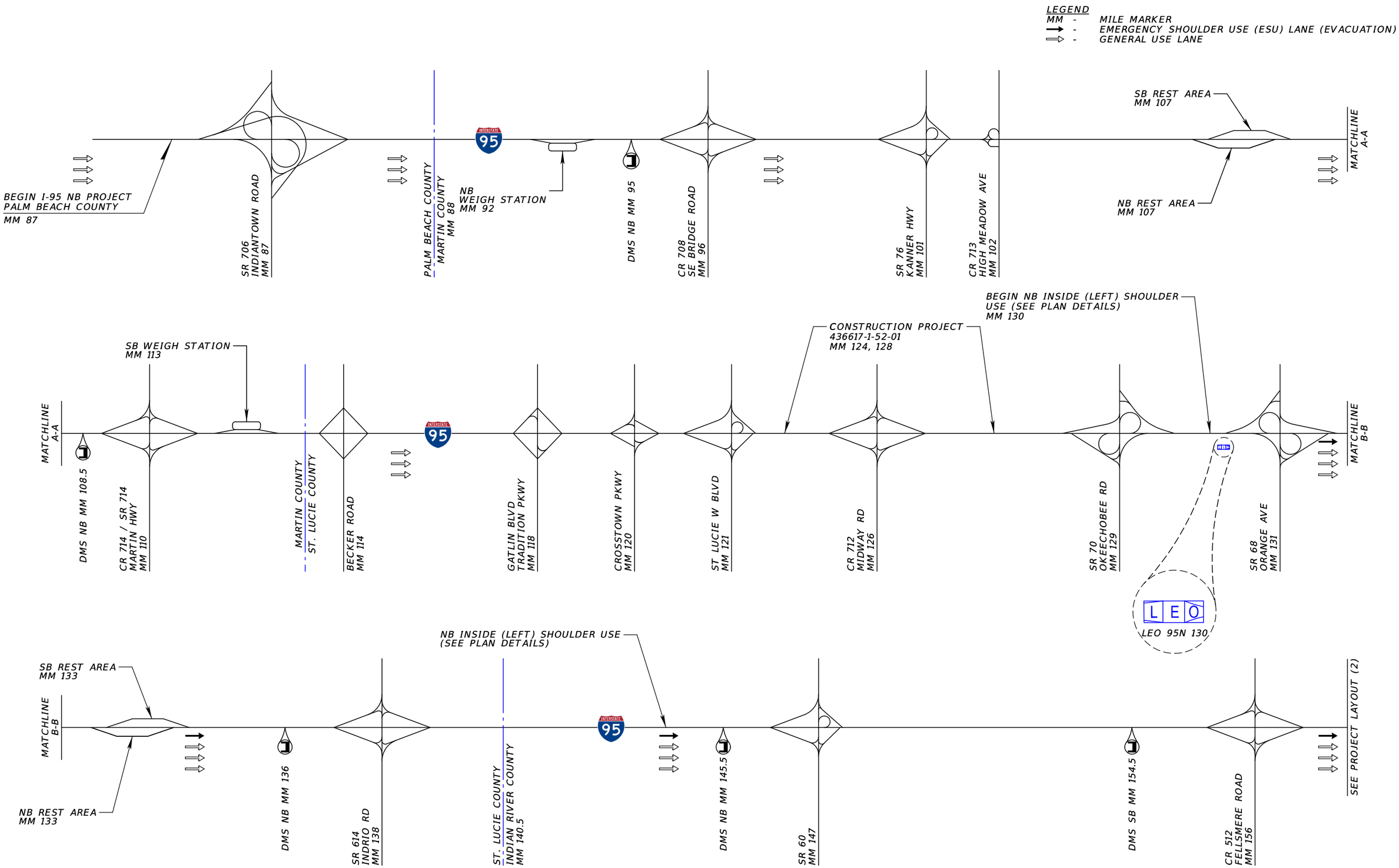
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ALL COUNTIES IN PROJECT LIMITS	

TYPICAL SIGN PLACEMENT

SHEET NO. 4

$USER$ $DATE$ $TIME$ $FILE$



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	PALM BEACH MARTIN, ST. LUCIE INDIAN RIVER	

PROJECT LAYOUT (1)

SHEET NO. 5

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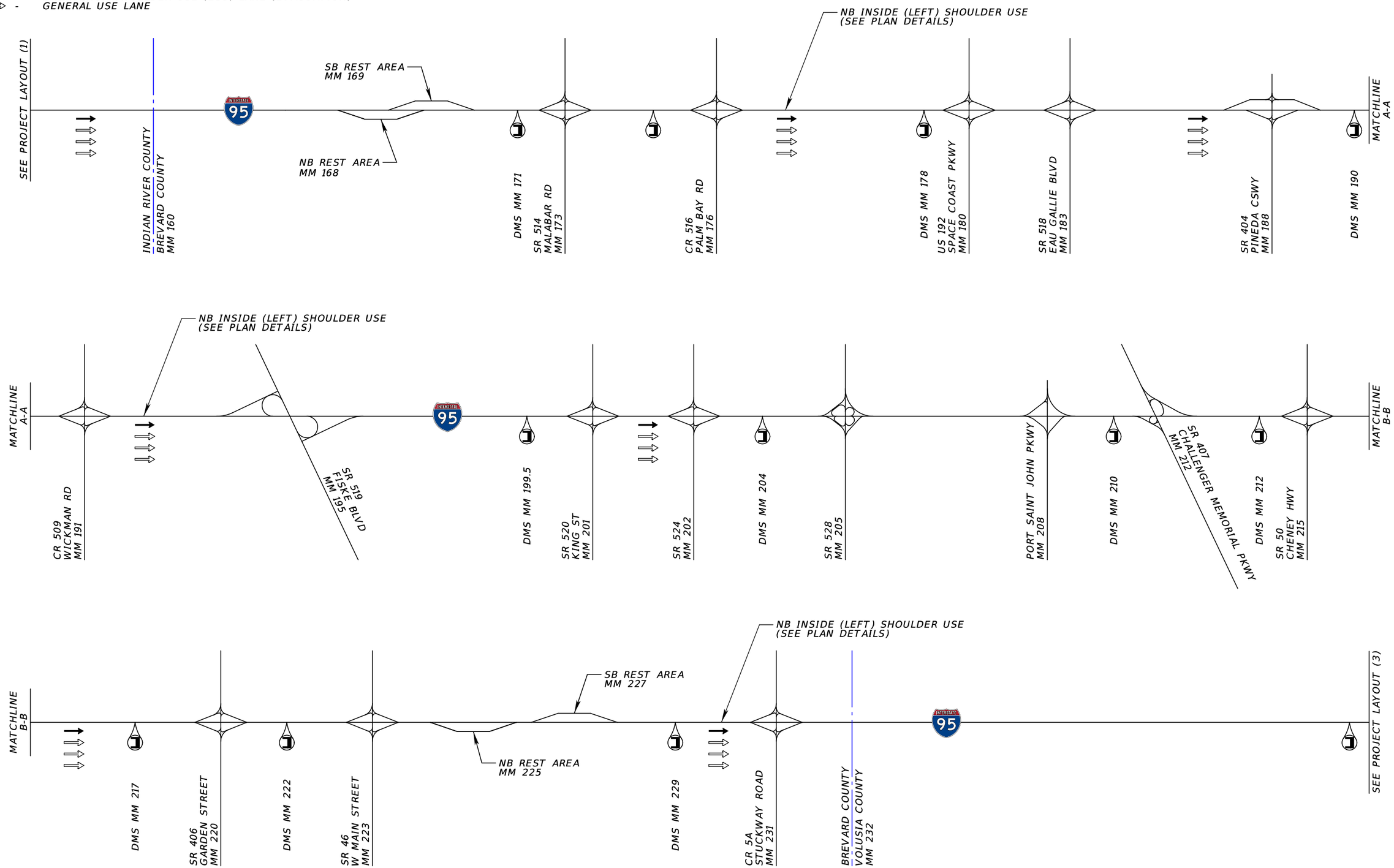
LEGEND
MM - MILE MARKER
→ - EMERGENCY SHOULDER USE (ESU) LANE (EVACUATION)
⇒ - GENERAL USE LANE



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

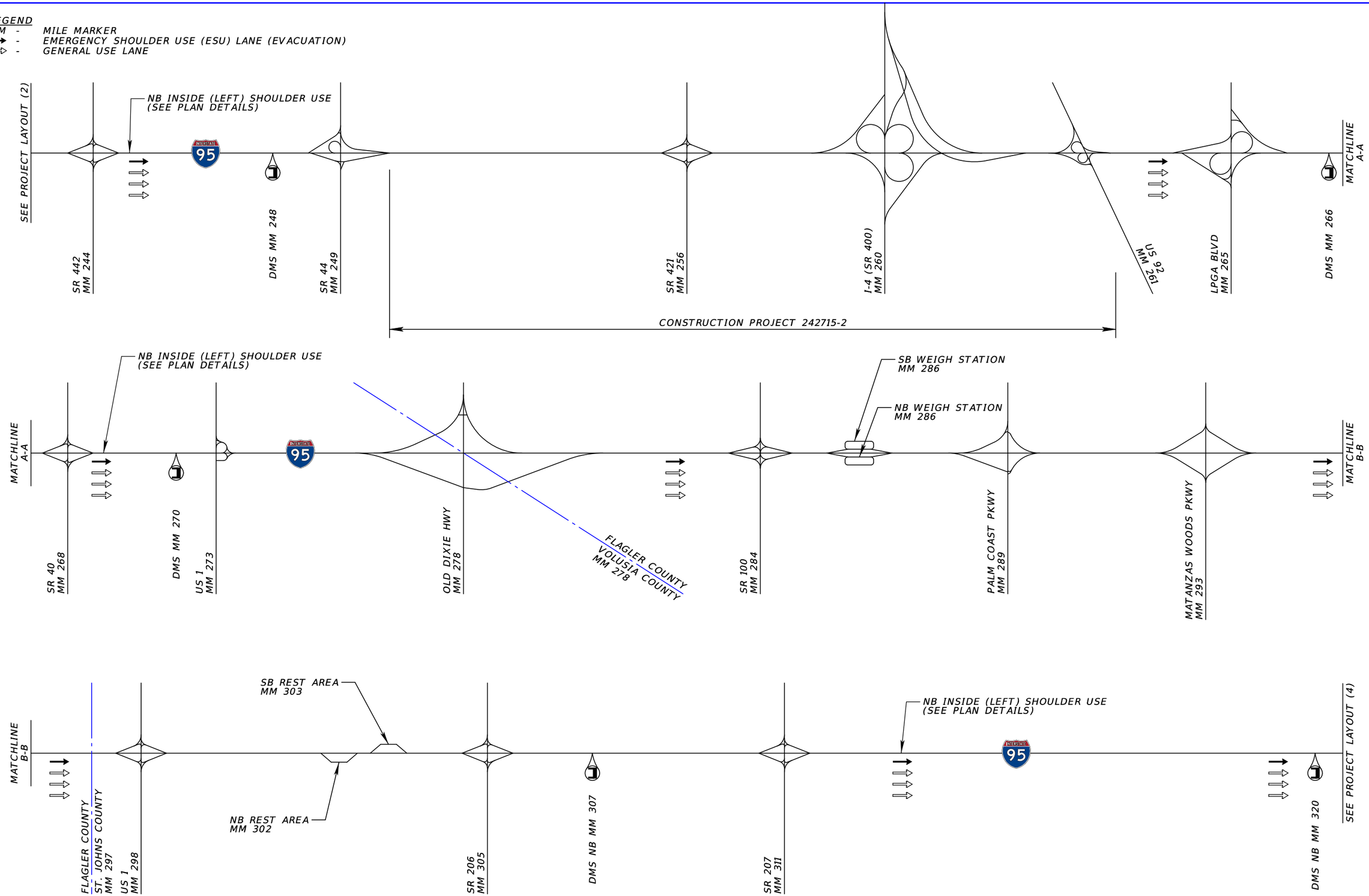
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	INDIAN RIVER BREVARD VOLUSIA	

PROJECT LAYOUT (2)

SHEET NO.
6

rbabb 4/6/2018 12:57:55 PM V:\JOBS\63045_Shoulder_Study\I-95-Shoulder-Study\PLAYRD02.DGN



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	VOLUSIA FLAGLER ST. JOHNS	

PROJECT LAYOUT (3)

SHEET NO.
7

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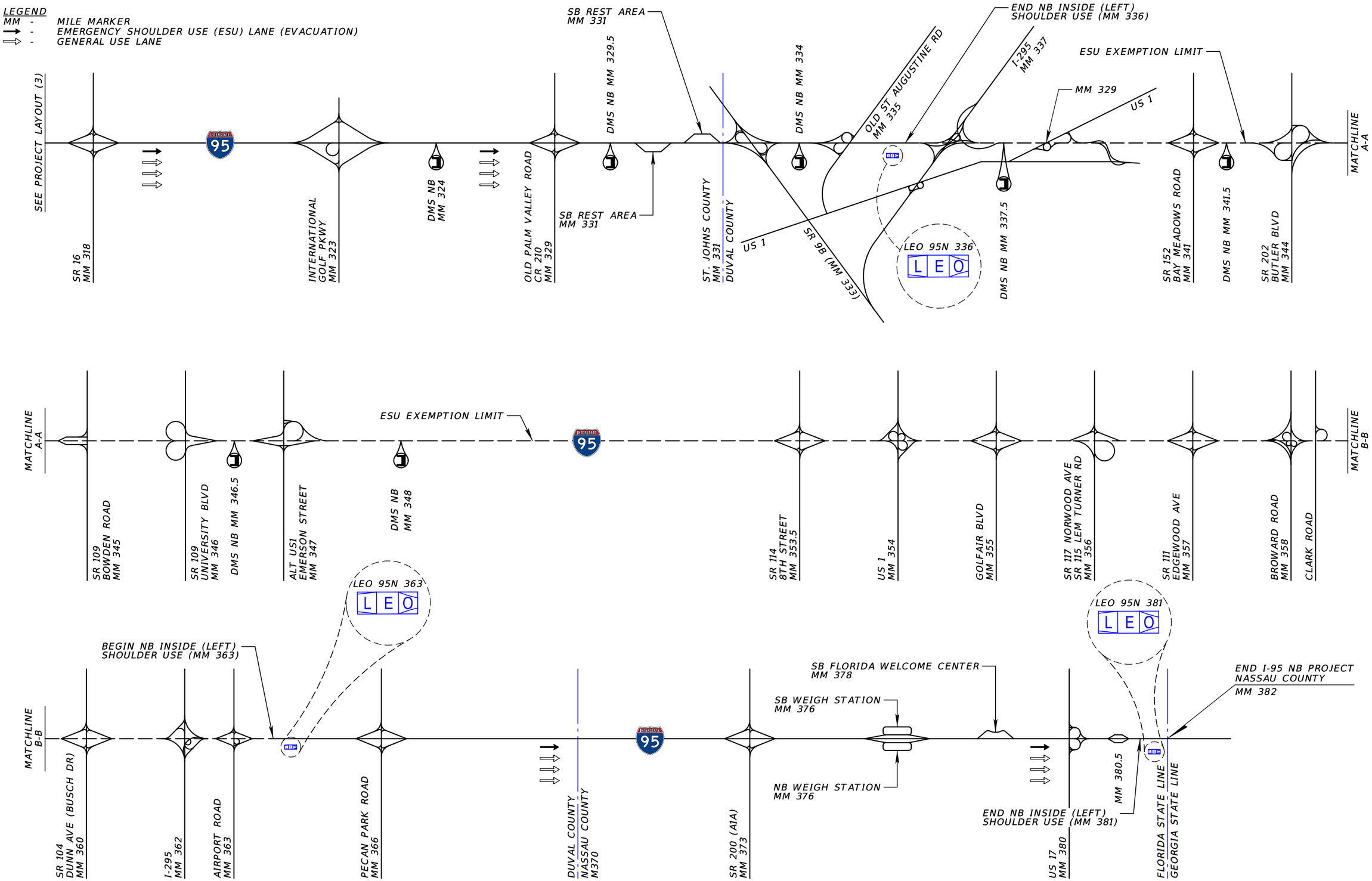

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ST. JOHNS DUVAL NASSAU	

PROJECT LAYOUT (4)

SHEET NO. 8

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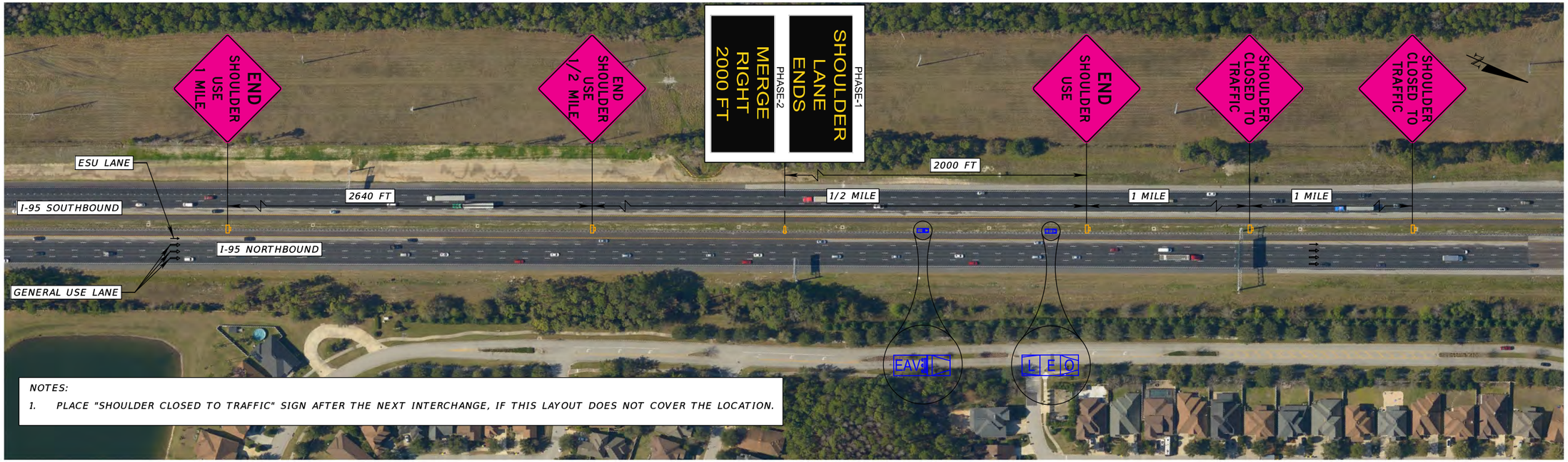
BEGIN LEFT SHOULDER USE (MM 130)

NOTES:

1. SIGNS SHALL BE PLACED ONLY ON THE SIDE OF THE SHOULDER BEING USED.
2. BEGIN AND END SHOULDER USE LOCATION MAY BE ADJUSTED DURING FINAL IMPLEMENTATION PLAN FOR THE EVENT.

END LEFT SHOULDER USE (MM 336)



NOTES:

1. PLACE "SHOULDER CLOSED TO TRAFFIC" SIGN AFTER THE NEXT INTERCHANGE, IF THIS LAYOUT DOES NOT COVER THE LOCATION.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ST. LUCIE ST. JOHNS	

PLAN (1)
BEGIN / END ESU LAYOUT

SHEET NO.
9

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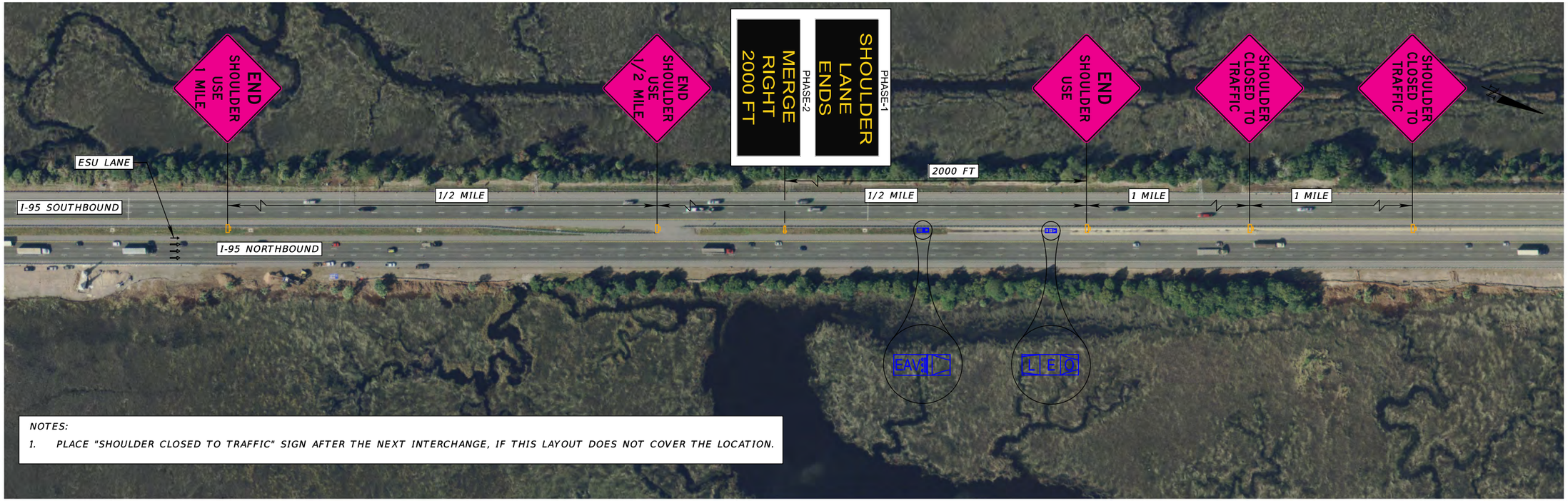
BEGIN LEFT SHOULDER USE (MM 363)

NOTES:

1. SIGNS SHALL BE REPLACED ONLY ON THE SIDE OF THE SHOULDER BEING USED.
2. BEGIN AND END SHOULDER USE LOCATION MAY BE ADJUSTED DURING FINAL IMPLEMENTATION PLAN FOR THE EVENT.

END SHOULDER USE (MM 381)



NOTES:

1. PLACE "SHOULDER CLOSED TO TRAFFIC" SIGN AFTER THE NEXT INTERCHANGE, IF THIS LAYOUT DOES NOT COVER THE LOCATION.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	DUVAL NASSAU	

PLAN (2)
BEGIN / END ESU LAYOUT

SHEET NO.
10

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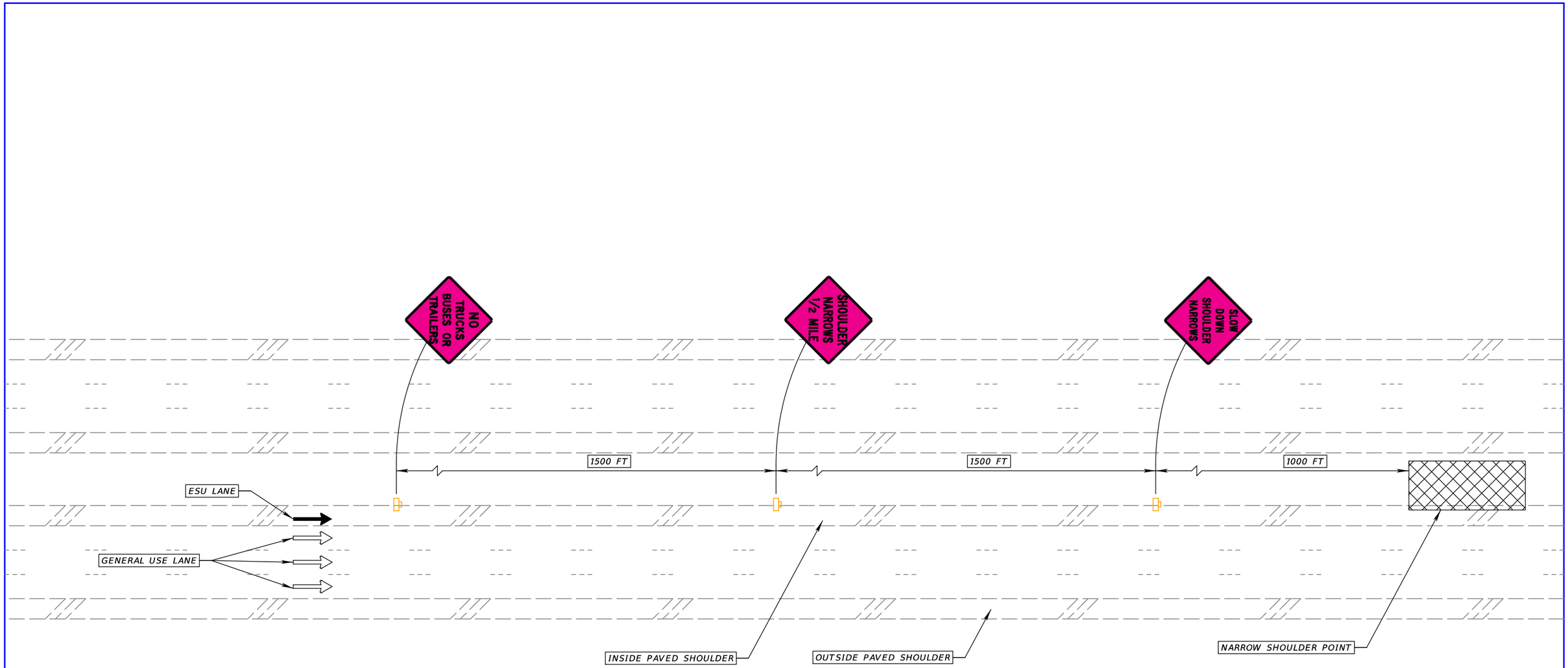

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ALL COUNTIES IN PROJECT LIMITS	

PLAN (3)
NARROW SHOULDER LAYOUT

SHEET NO. 11

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ALL COUNTIES IN PROJECT LIMITS	

PLAN (4)
INTERCHANGE LAYOUT

SHEET NO.
12

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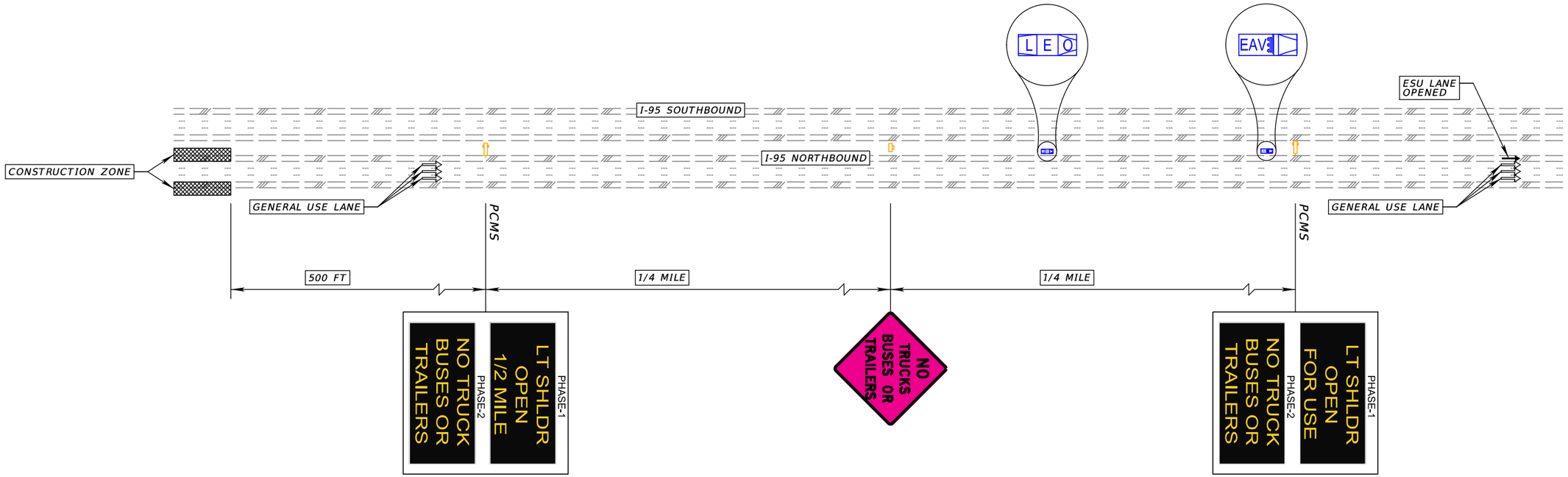
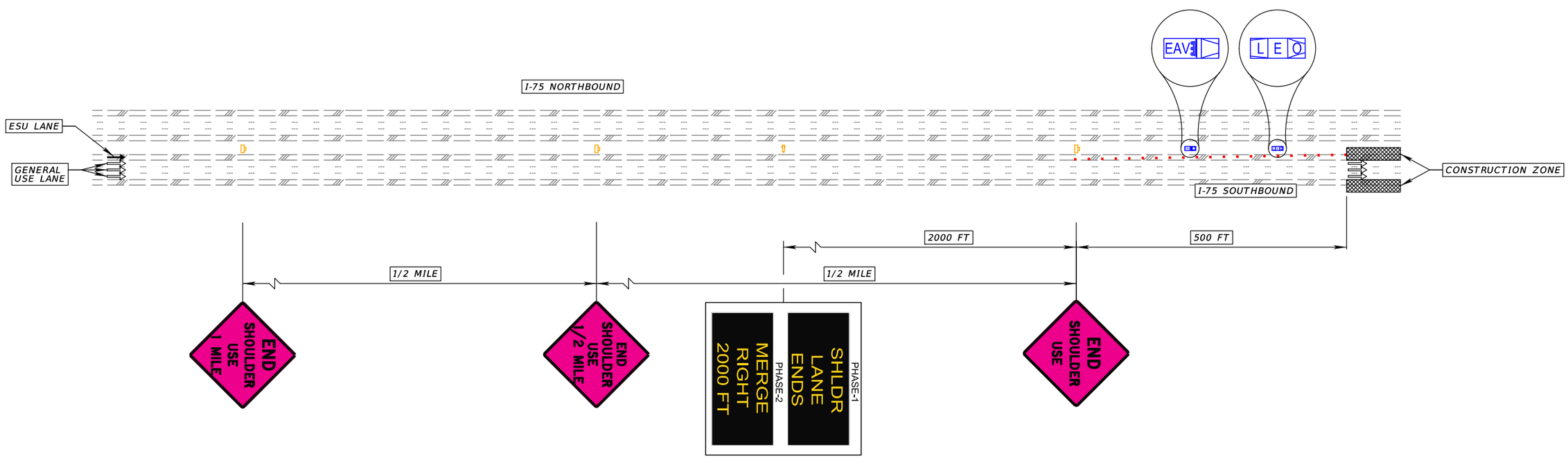
BEGIN SHOULDER USE - AFTER CONSTRUCTION ZONE



END SHOULDER USE - BEFORE CONSTRUCTION ZONE



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ALL COUNTIES IN PROJECT LIMITS	

PLAN (5)
CONSTRUCTION ZONE LAYOUT

SHEET NO. 13

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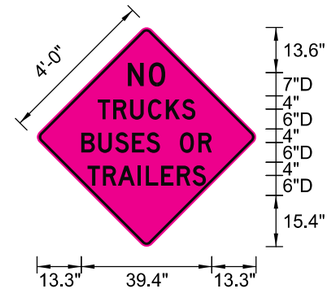
SIGN NAME	SIGN 113	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

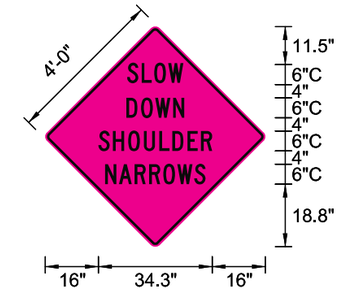
COPY		E	X	I	T	I	N	G		L													
SPACE	20.1	4.1	4.9	1.8	4.4	2.2	5	3.9	20	26.3													
COPY		T	R	A	F	F	I	C		U	S	E		L									
SPACE	8.6	4.4	4.4	5.3	4.4	4.4	2.1	3.9	7	4.9	4.9	3.6	8.6	49.1									
COPY		S	H	O	U	L	D	E	R		L												
SPACE	14.1	4.9	5	5.3	5.2	4.4	5	4.5	3.9	14.1	38.1												
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 110	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

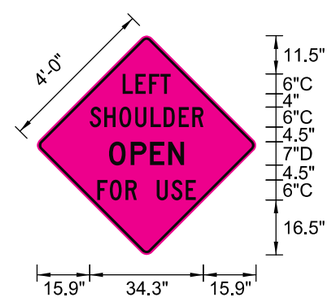
COPY		S	L	O	W		L																
SPACE	24.7	4.4	3.8	4.3	4.6	24.7	17																
COPY		D	O	W	N		L																
SPACE	24.4	4.4	4.3	5.4	3.4	24.4	17.5																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	16	4.4	4.6	4.7	4.7	3.9	4.6	4.1	3.4	16	34.3												
COPY		N	A	R	R	O	W	S		L													
SPACE	18	4.2	4.7	4.4	4.3	4.3	5.1	3.4	18	30.2													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 118	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

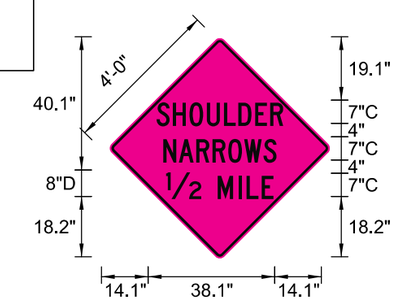
COPY		L	E	F	T		L																
SPACE	25.8	3.9	4.1	3.4	3.1	25.8	14.5																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	15.9	4.4	4.6	4.7	4.7	3.9	4.6	4.1	3.4	15.9	34.3												
COPY		O	P	E	N		L																
SPACE	21.7	6.5	5.8	5.5	4.8	21.7	22.6																
COPY		F	O	R		U	S	E		L													
SPACE	18.2	3.8	4.7	3.4	6	4.4	4.4	3.1	18.2	29.7													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 104	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		S	H	O	U	L	D	E	R		L												
SPACE	14.1	4.9	5	5.3	5.2	4.4	5	4.5	3.9	14.1	38.2												
COPY		N	A	R	R	O	W	S		L													
SPACE	16.1	4.7	5.3	4.9	4.8	4.8	5.8	3.9	16.1	34.1													
COPY		1/2		M	I	L	E		L														
SPACE	17	10.6	5	6.2	2.5	4.5	3.6	17	32.4														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ALL COUNTIES IN PROJECT LIMITS	

GUIDESIGN DETAIL FOR SHOULDER USE PLANS (FLUORESCENT PINK SIGNS)

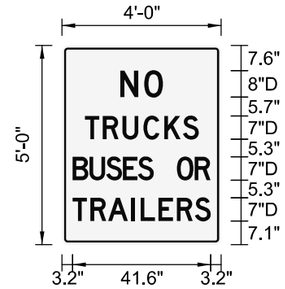
SHEET NO.
14

SIGN NAME	SIGN 209	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

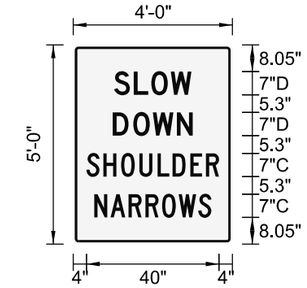
COPY		N	O		L																		
SPACE	17.6	7.2	5.7	17.6	12.9																		
COPY		T	R	U	C	K	S		L														
SPACE	6.9	5.4	6	6.3	6.3	5.6	4.8	6.8	34.3														
COPY		B	U	S	E	S		O	R		L												
SPACE	3.2	5.1	5.1	5.1	4.5	4.8	7	5.4	4.8	3.2	41.6												
COPY		T	R	A	I	L	E	R	S		L												
SPACE	3.2	5.4	5.3	7	2.8	5.4	5.5	5.5	4.8	3.2	41.6												
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 210	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

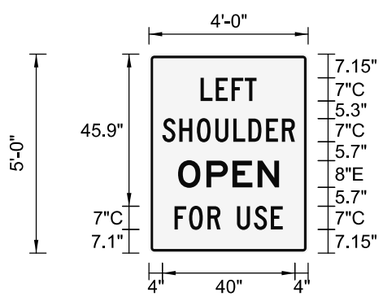
COPY		S	L	O	W		L																
SPACE	12.3	6	5.3	5.9	6.2	12.3	23.3																
COPY		D	O	W	N		L																
SPACE	12	6.2	5.9	7.3	4.8	12	24.1																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	4	5.1	5.3	5.5	5.5	4.5	5.3	4.8	3.9	4	40												
COPY		N	A	R	R	O	W	S		L													
SPACE	6.4	4.9	5.5	5.1	5	5	6	3.9	6.4	35.3													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 218	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

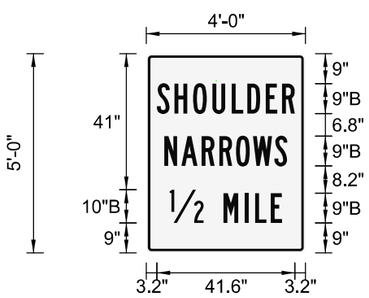
COPY		L	E	F	T		L																
SPACE	15.6	4.6	4.8	4	3.6	15.6	16.9																
COPY		S	H	O	U	L	D	E	R		L												
SPACE	4	5.1	5.3	5.5	5.5	4.6	5.3	4.8	3.9	4	40												
COPY		O	P	E	N		L																
SPACE	8.8	8.6	7.8	7.6	6.5	8.8	30.5																
COPY		F	O	R		U	S	E		L													
SPACE	7.7	4.4	5.5	3.9	5	5.1	5.1	3.6	7.7	32.7													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 204	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY		S	H	O	U	L	D	E	R		L												
SPACE	3.2	5.3	5.6	5.8	5.8	4.7	5.6	4.9	3.9	3.2	41.6												
COPY		N	A	R	R	O	W	S		L													
SPACE	5.5	5.1	6.1	5.3	5	5.1	6.5	3.9	5.5	37.1													
COPY		12		M	I	L	E		L														
SPACE	7.1	10.2	6	6.4	3.2	4.7	3.4	7.1	33.9														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ALL COUNTIES IN PROJECT LIMITS	

GUIDESIGN DETAIL FOR SHOULDER USE PLANS (OPTIONAL COLOR SIGNS)

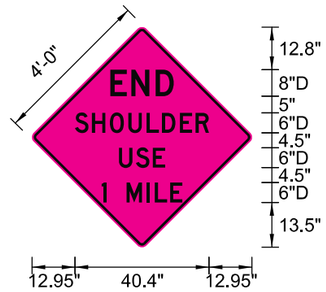
SHEET NO.
15

SIGN NAME	SIGN 115	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES		FIXTURE SPACING		PHOTOMETRIC CURVE		WATT		VOLTAGE	

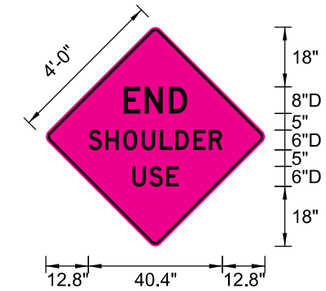
COPY		E	N	D		L																	
SPACE	23.6	6.3	7.4	5.4	23.6	19.1																	
COPY		S	H	O	U	L	D	E	R		L												
SPACE	12.9	5.1	5.4	5.6	5.5	4.6	5.4	4.7	4.1	12.9	40.4												
COPY		U	S	E		L																	
SPACE	26.2	5.1	5.1	3.7	26.2	13.9																	
COPY		1		M	I	L	E		L														
SPACE	21	1.5	6	6.1	2.4	4.6	3.7	21	24.4														
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 114	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0.75"		
HEIGHT	5'-6"	RADII	1.38"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES		FIXTURE SPACING		PHOTOMETRIC CURVE		WATT		VOLTAGE	

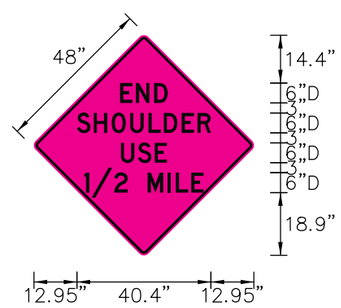
COPY		E	N	D		L																	
SPACE	23.4	6.3	7.4	5.4	23.4	19.1																	
COPY		S	H	O	U	L	D	E	R		L												
SPACE	12.8	5.1	5.4	5.6	5.5	4.6	5.4	4.7	4.1	12.8	40.4												
COPY		U	S	E		L																	
SPACE	26	5.1	5.1	3.7	26	13.9																	
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 502	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0"		
HEIGHT	5'-6"	RADII	0"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



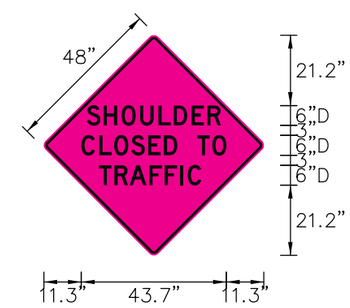
NO. OF LIGHT FIXTURES		FIXTURE SPACING		PHOTOMETRIC CURVE		WATT		VOLTAGE	

COPY	E	N	D		L																		
SPACE	26	30.7	36.3		14.3																		
COPY	S	H	O	U	L	D	E	R		L													
SPACE	12.9	18	23.4	29	34.5	39.2	44.6	49.3		40.4													
COPY	U	S	E		L																		
SPACE	26.2	31.3	36.4		13.9																		
COPY	1	/	2		M	I	L	E		L													
SPACE	15.2	17.4	24.2	28.3	34.3	40.4	42.8	47.4		35.9													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	name	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	5'-6"	WIDTH	0"		
HEIGHT	5'-6"	RADII	0"		
LEGEND	Black	COLOR	Black		
COLOR	Coral				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



NO. OF LIGHT FIXTURES		FIXTURE SPACING		PHOTOMETRIC CURVE		WATT		VOLTAGE	

COPY	S	H	O	U	L	D	E	R		L													
SPACE	12.9	18	23.4	29	34.5	39.2	44.6	49.3		40.4													
COPY	C	L	O	S	E	D		T	O		L												
SPACE	11.3	16.7	21.2	26.4	31.5	36.2	40.3	46.3	50.8		43.7												
COPY	T	R	A	F	F	I	C		L														
SPACE	16.7	21.3	25.8	31.8	36.5	41.1	43.4		30.8														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ALL COUNTIES IN PROJECT LIMITS	

GUIDESIGN DETAIL FOR SHOULDER USE PLANS (FLUORESCENT PINK SIGNS)

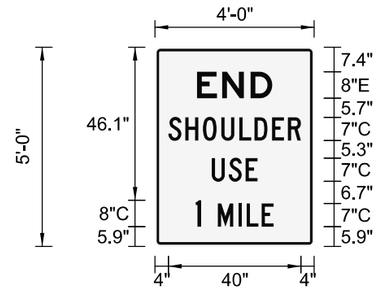
SHEET NO. 16

SIGN NAME	SIGN 215	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

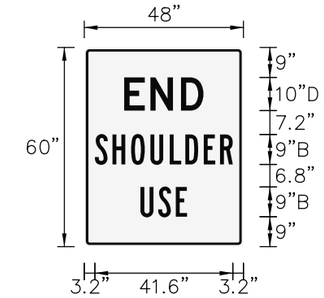
COPY		E	N	D		L																	
SPACE	12.7	7.6	8.6	6.5	12.7	22.6																	
COPY		S	H	O	U	L	D	E	R		L												
SPACE	4	5.1	5.3	5.5	5.5	4.5	5.3	4.8	3.9	4	40												
COPY		U	S	E		L																	
SPACE	17.1	5.1	5.1	3.6	17.1	13.8																	
COPY		1		M	I	L	E		L														
SPACE	12.3	1.7	5	6.2	2.5	4.6	3.6	12.3	23.5														
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 214	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	1.13"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

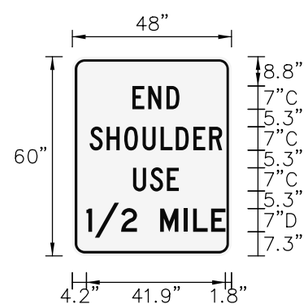
COPY	E	N	D		L																		
SPACE	224.5	232.1	240.6		22.6																		
COPY	E	N	D		L																		
SPACE	583.9	591.8	601		23.9																		
COPY	S	H	O	U	L	D	E	R		L													
SPACE	215.8	220.9	226.2	231.8	237.2	241.8	247.1	251.9		40													
COPY	S	H	O	U	L	D	E	R		L													
SPACE	575.1	580.4	586	591.8	597.7	602.3	607.9	612.8		41.6													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	SIGN 503	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	3"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

SIGN APPLICABLE TO:
I-95 NB



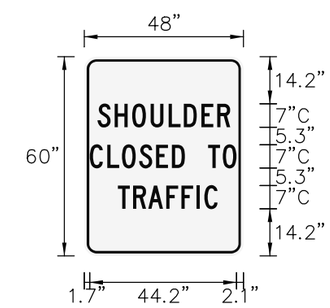
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	E	N	D		L																		
SPACE	18.1	22.9	28.4		14.1																		
COPY	S	H	O	U	L	D	E	R		L													
SPACE	5.2	10.3	15.7	21.2	26.6	31.2	36.5	41.3		40													
COPY	U	S	E		L																		
SPACE	18.3	23.4	28.5		13.8																		
COPY	1	/	2		M	I	L	E		L													
SPACE	4.2	6.8	14.7	19.5	26.5	33.6	36.4	41.8		41.9													
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	name	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			none
WIDTH	4'-0"	WIDTH	0.75"		
HEIGHT	5'-0"	RADII	3"		
LEGEND	Black	COLOR	Black		
COLOR	White				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	S	H	O	U	L	D	E	R		L													
SPACE	4	9.1	14.5	20	25.5	30	35.3	40.1		40													
COPY	C	L	O	S	E	D		T	O		L												
SPACE	1.7	7	11.4	16.6	21.7	26.4	30.4	37.4	41.8		44.2												
COPY	T	R	A	F	F	I	C		L														
SPACE	10.2	14.7	19.3	24.7	29.3	33.8	36.2		30														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

04/6/2018

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

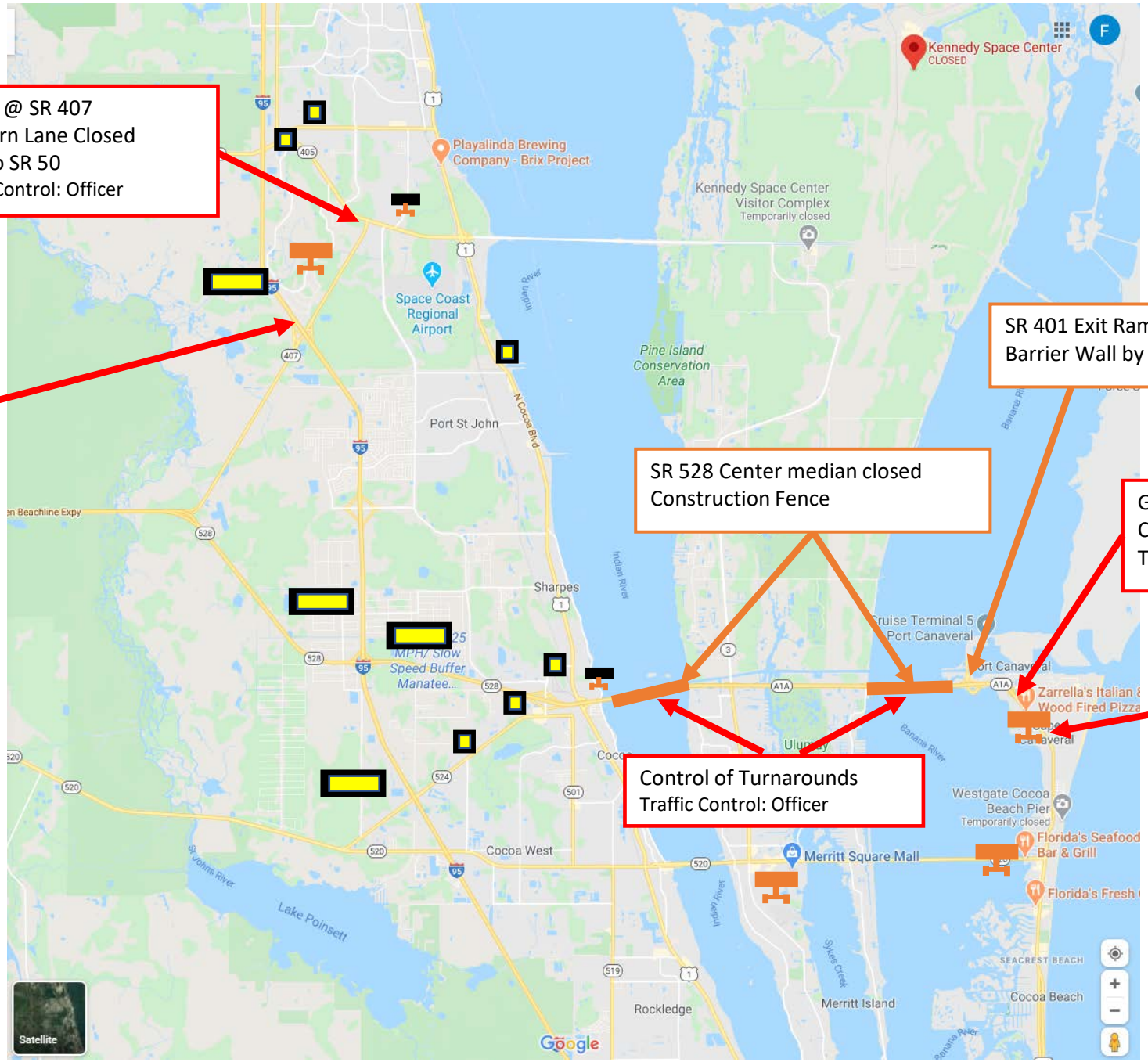
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 (NB)	ALL COUNTIES IN PROJECT LIMITS	

GUIDESIGN DETAIL FOR SHOULDER USE PLANS (OPTIONAL COLOR SIGNS)

SHEET NO.
17

Appendix W

District 5
Manned Launch Plan



SR 405 @ SR 407
Left Turn Lane Closed
Push to SR 50
Traffic Control: Officer

SR 407 @ I-95
Close SB 407, push traffic on to 95
Traffic Control: Road Ranger/DBI

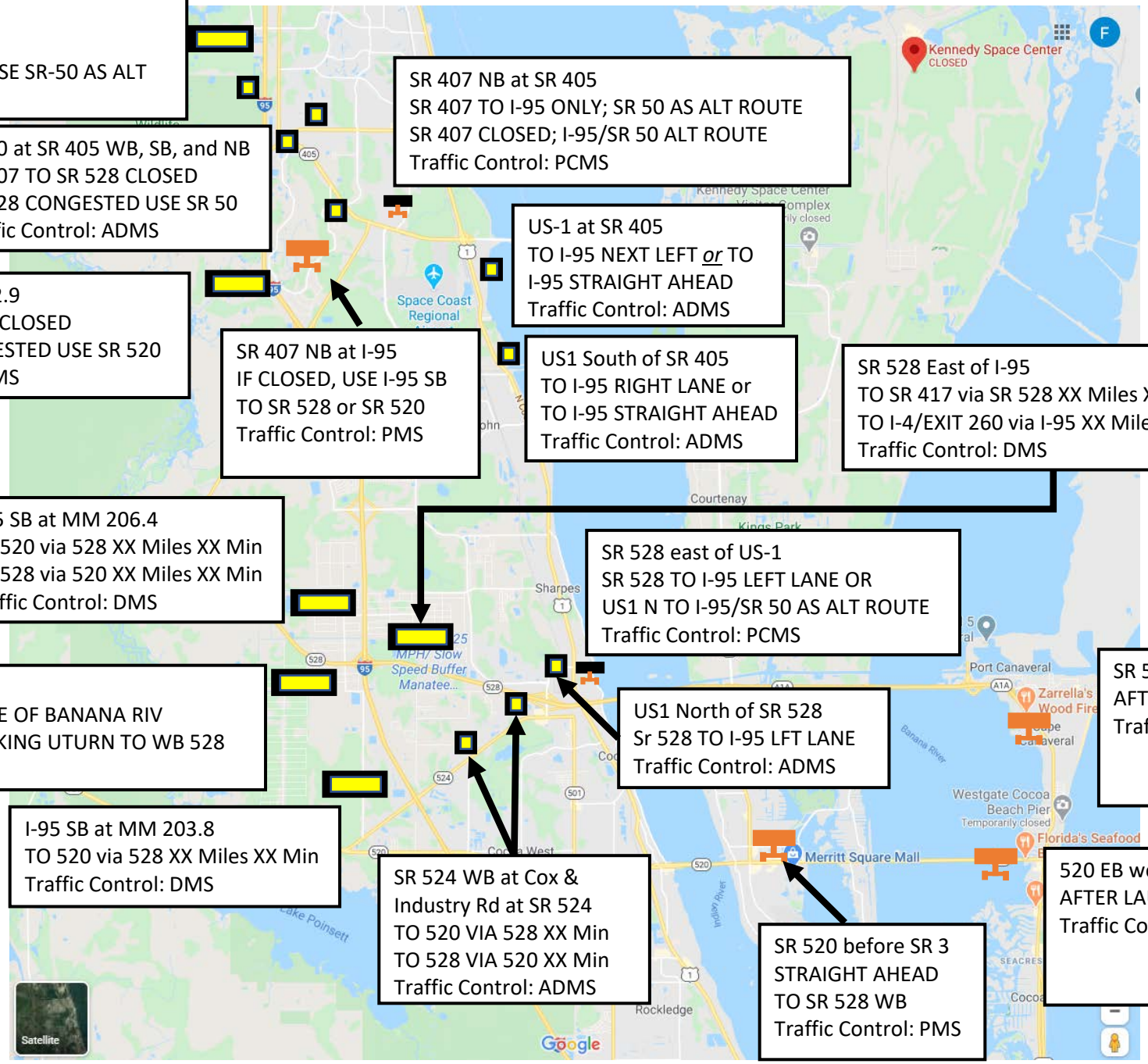
SR 401 Exit Ramps Closed
Barrier Wall by Port

SR 528 Center median closed
Construction Fence

George King at SR 528
Close 1 of 2 SBL direct U-turn
Traffic Control: DBI

A1A at SR 529
Flush all traffic SB until 528 is flowing
Traffic Control: Officer

Control of Turnarounds
Traffic Control: Officer



I-95 SB MM 217.4
SR 407 TO SB 528 CLOSED
SR 528 WB CONGESTED USE SR-50 AS ALT
Traffic Control: DMS

SR 50 at SR 405 WB, SB, and NB
SR 407 TO SR 528 CLOSED
SR 528 CONGESTED USE SR 50
Traffic Control: ADMS

I-95 SB at MM 212.9
SR 407 TO SR 528 CLOSED
SR 528 WB CONGESTED USE SR 520
Traffic Control: DMS

SR 407 NB at SR 405
SR 407 TO I-95 ONLY; SR 50 AS ALT ROUTE
SR 407 CLOSED; I-95/SR 50 ALT ROUTE
Traffic Control: PCMS

US-1 at SR 405
TO I-95 NEXT LEFT *or* TO
I-95 STRAIGHT AHEAD
Traffic Control: ADMS

SR 407 NB at I-95
IF CLOSED, USE I-95 SB
TO SR 528 or SR 520
Traffic Control: PMS

US1 South of SR 405
TO I-95 RIGHT LANE or
TO I-95 STRAIGHT AHEAD
Traffic Control: ADMS

SR 528 East of I-95
TO SR 417 via SR 528 XX Miles XX Min
TO I-4/EXIT 260 via I-95 XX Miles XX Min
Traffic Control: DMS

I-95 SB at MM 206.4
TO 520 via 528 XX Miles XX Min
TO 528 via 520 XX Miles XX Min
Traffic Control: DMS

SR 528 east of US-1
SR 528 TO I-95 LEFT LANE OR
US1 N TO I-95/SR 50 AS ALT ROUTE
Traffic Control: PCMS

SR 528 EB W of I-95
AFTER LAUNCH USE EXIT 54B E OF BANANA RIV
AFTER LAUNCH USE GEORGE KING UTURN TO WB 528
Traffic Control: DMS

US1 North of SR 528
Sr 528 TO I-95 LFT LANE
Traffic Control: ADMS

I-95 SB at MM 203.8
TO 520 via 528 XX Miles XX Min
Traffic Control: DMS

SR 524 WB at Cox &
Industry Rd at SR 524
TO 520 VIA 528 XX Min
TO 528 VIA 520 XX Min
Traffic Control: ADMS

SR 520 before SR 3
STRAIGHT AHEAD
TO SR 528 WB
Traffic Control: PMS

Relocate this PMS
to NB A1A s/of
520

SR 528/A1A South of George King (facing SB)
AFTER LAUNCH USE A1A SB to SR 520
Traffic Control: PMS

520 EB west of Banana River
AFTER LAUNCH USE A1A SB to SR 404
Traffic Control: PMS

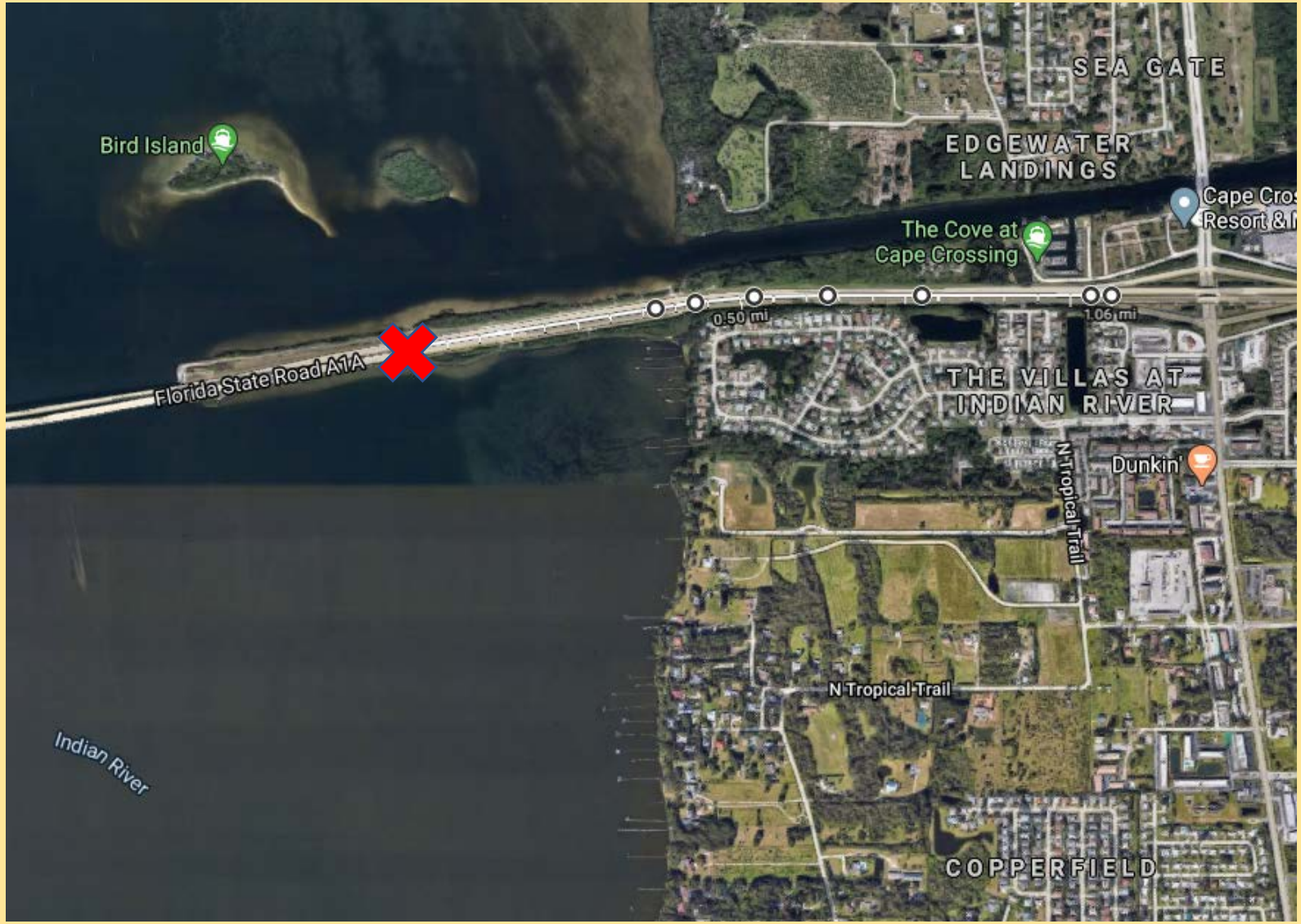
SR 528 Center Median

- Prohibit unauthorized u-turns
- Install orange construction fencing along center median as shown in following slides
- Use FDOT trucks/law enforcement to block center median turn-arounds and/or barricades

Area 1 – West side of Indian River

- 5160’ Construction Fence

✖ FDOT vehicle/barricades



Area 2 – West side of Banana River

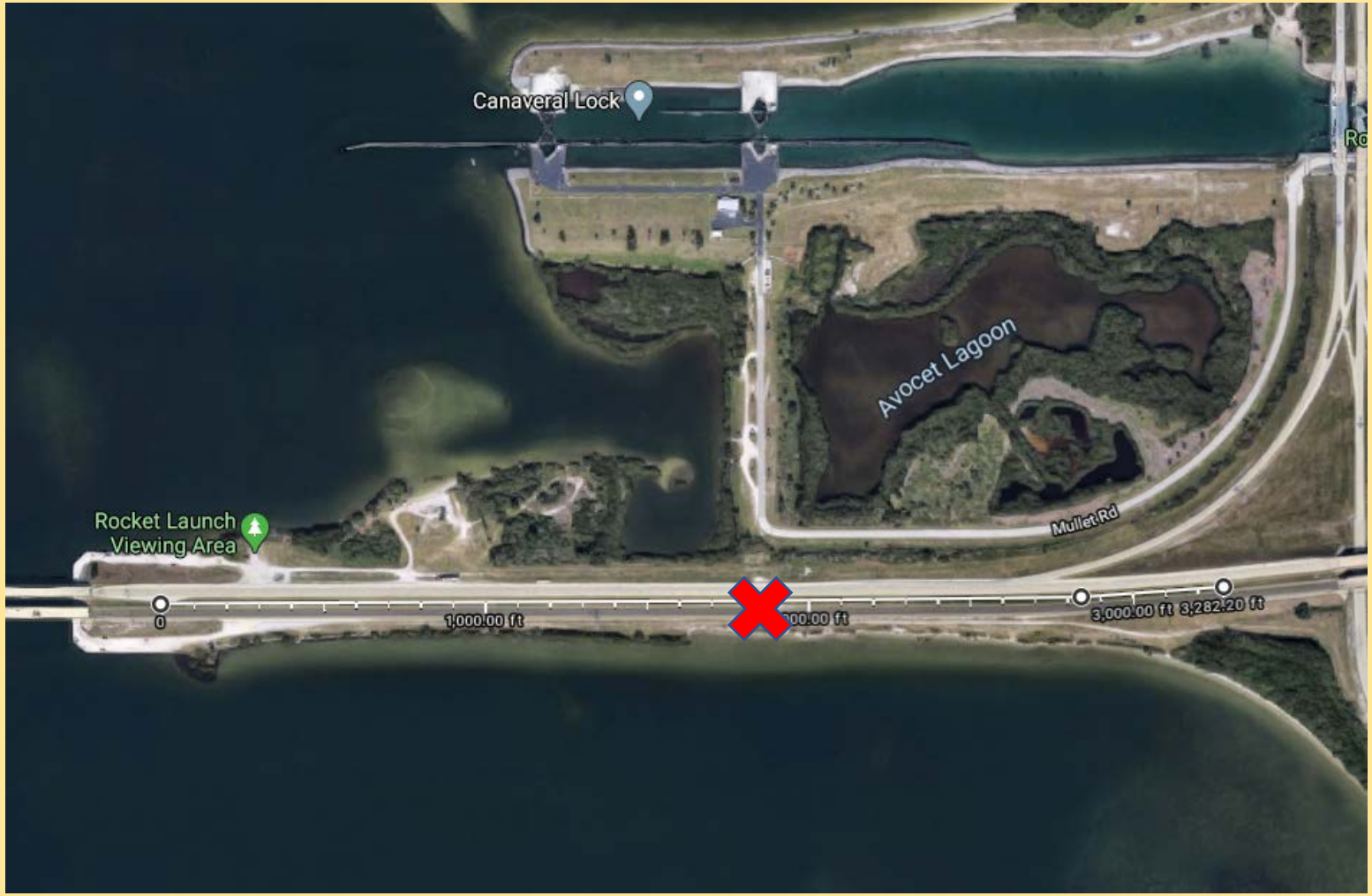
- 2900’ Construction Fence

✖ FDOT vehicle/barricades

Area 3 – East side of Banana River

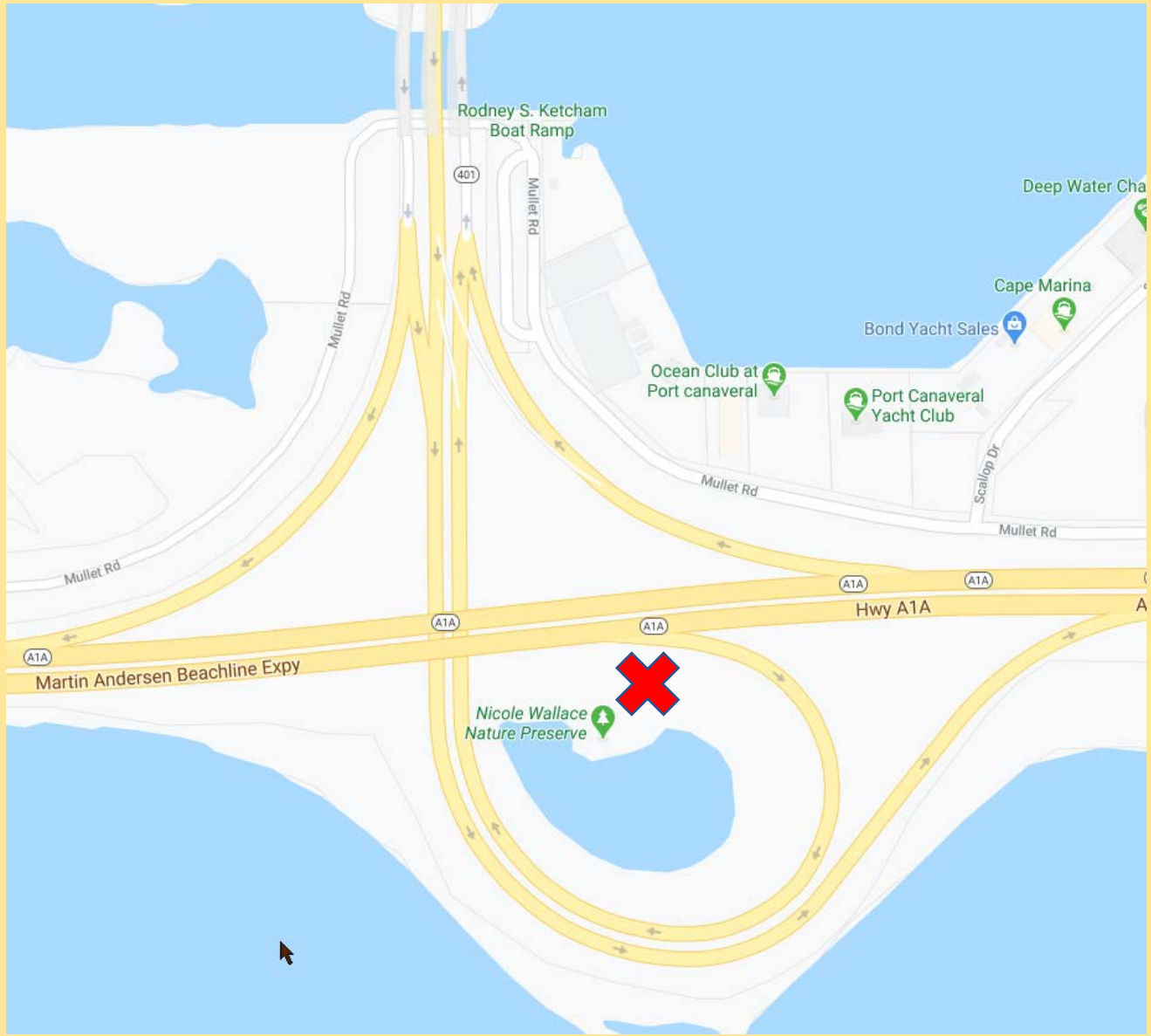
- 2930’ Construction Fence

✖ FDOT vehicle/barricades



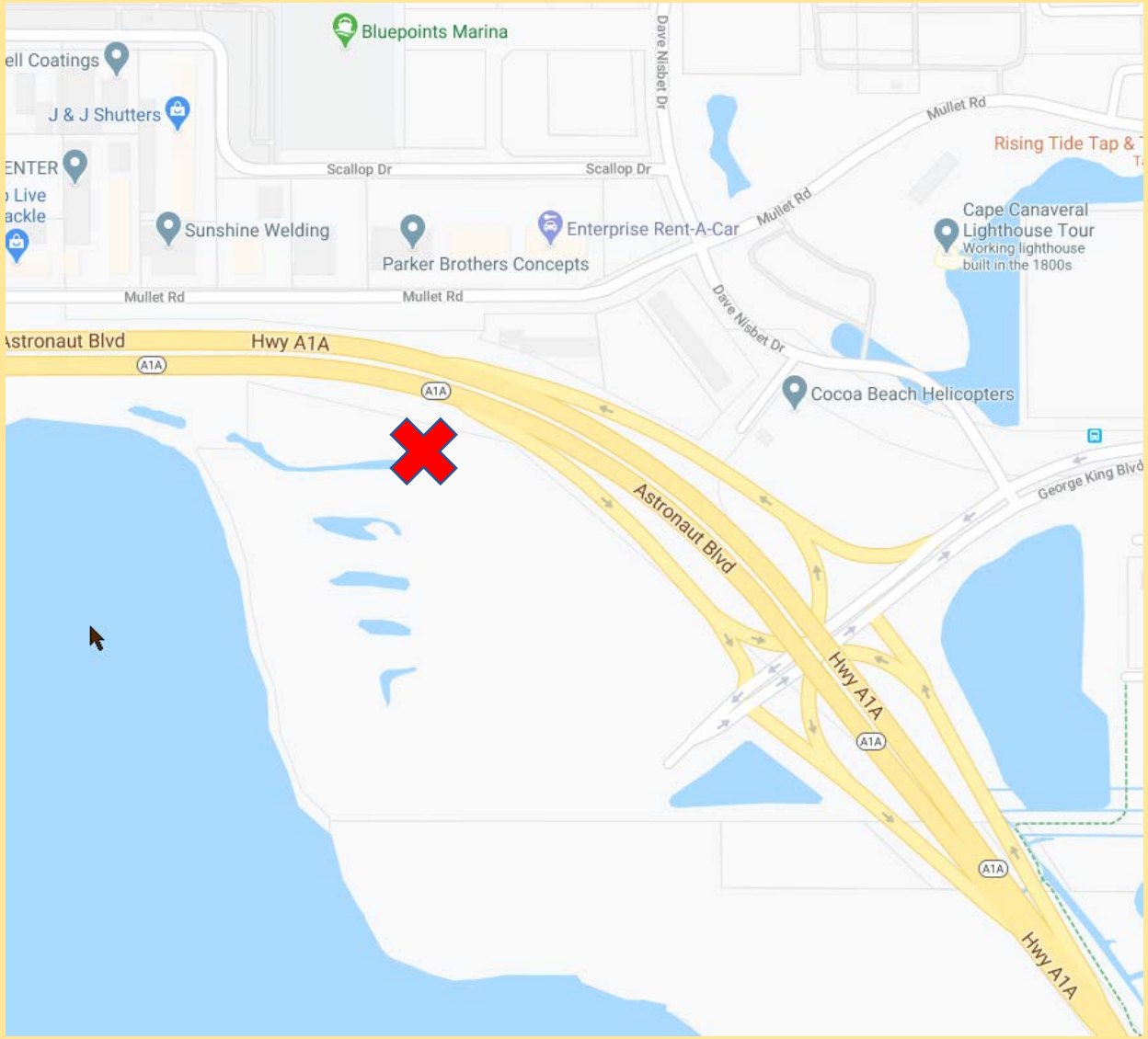
A1A @ SR 401 off-ramp

- Drop 10 36” cones on right shoulder at SR 401 off-ramp
- BCSO to manage closure



A1A @ Exit 54 (George King) off-ramp

- Drop 10 36” cones on right shoulder at Exit 54 (George King) off-ramp
- BCSO to manage closure



SR 406 (Garden St) and Hopkins

- Drop 20 36” cones on NW corner
- Titusville PD to man lane closures

CANCEL PER TPD

SR 405 @ SR 407

- Drop 30 36” cones in center median (3 stacks of 10)
- Titusville PD to man lane closures

CANCEL PER TPD

SR 405 @ I-95

- Drop 28 36” cones in safety gore
- Road Ranger/FHP to man lane closure, as needed

George King at SR 528

- Cone off 1 Left Turn
- Make U-turn Continuous

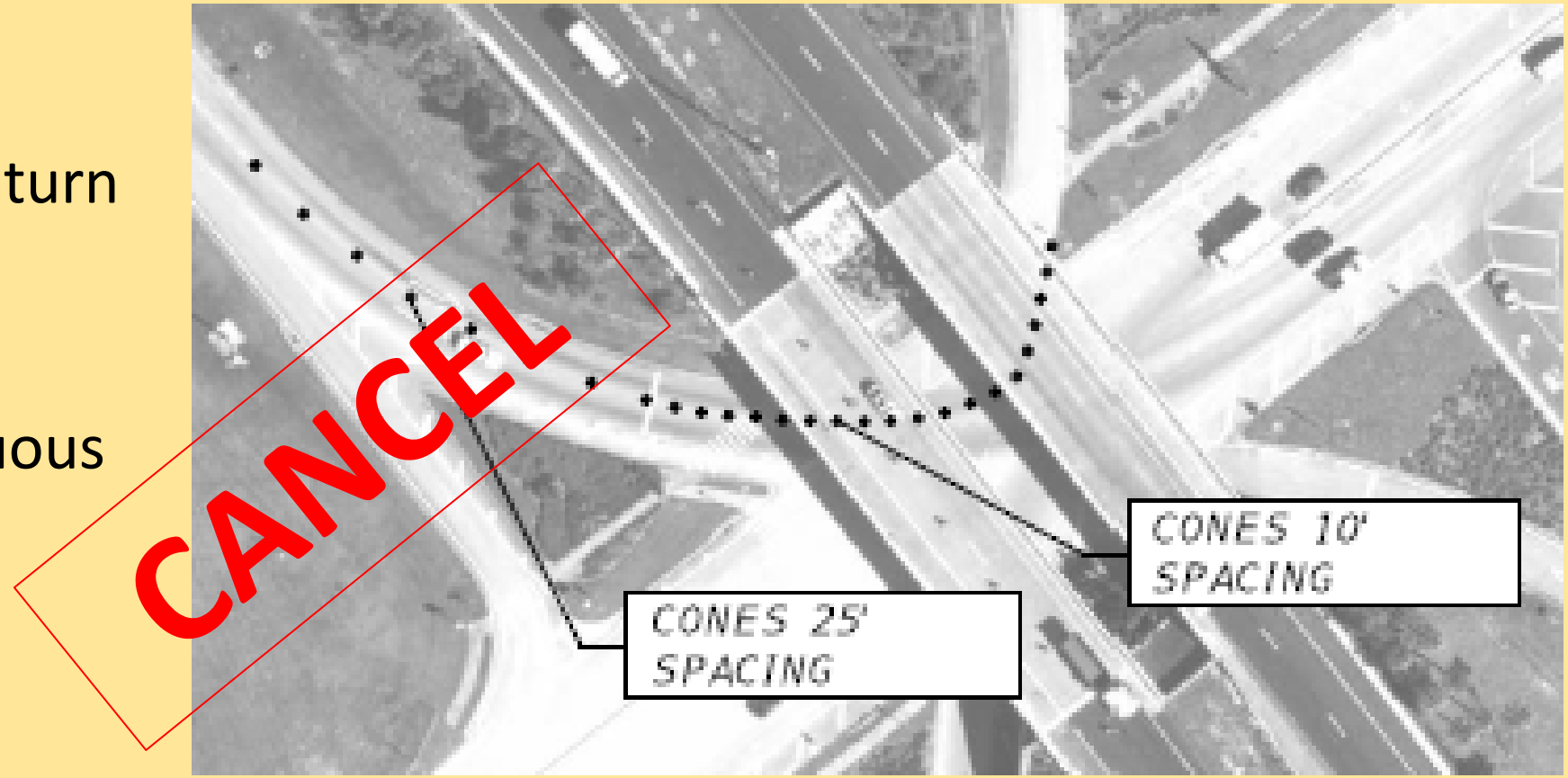
(See next slide)

CANCEL

George King at SR 528

- Cone off outside left turn lane
- 43 36” cones
- Make U-turn Continuous

(See next slide)

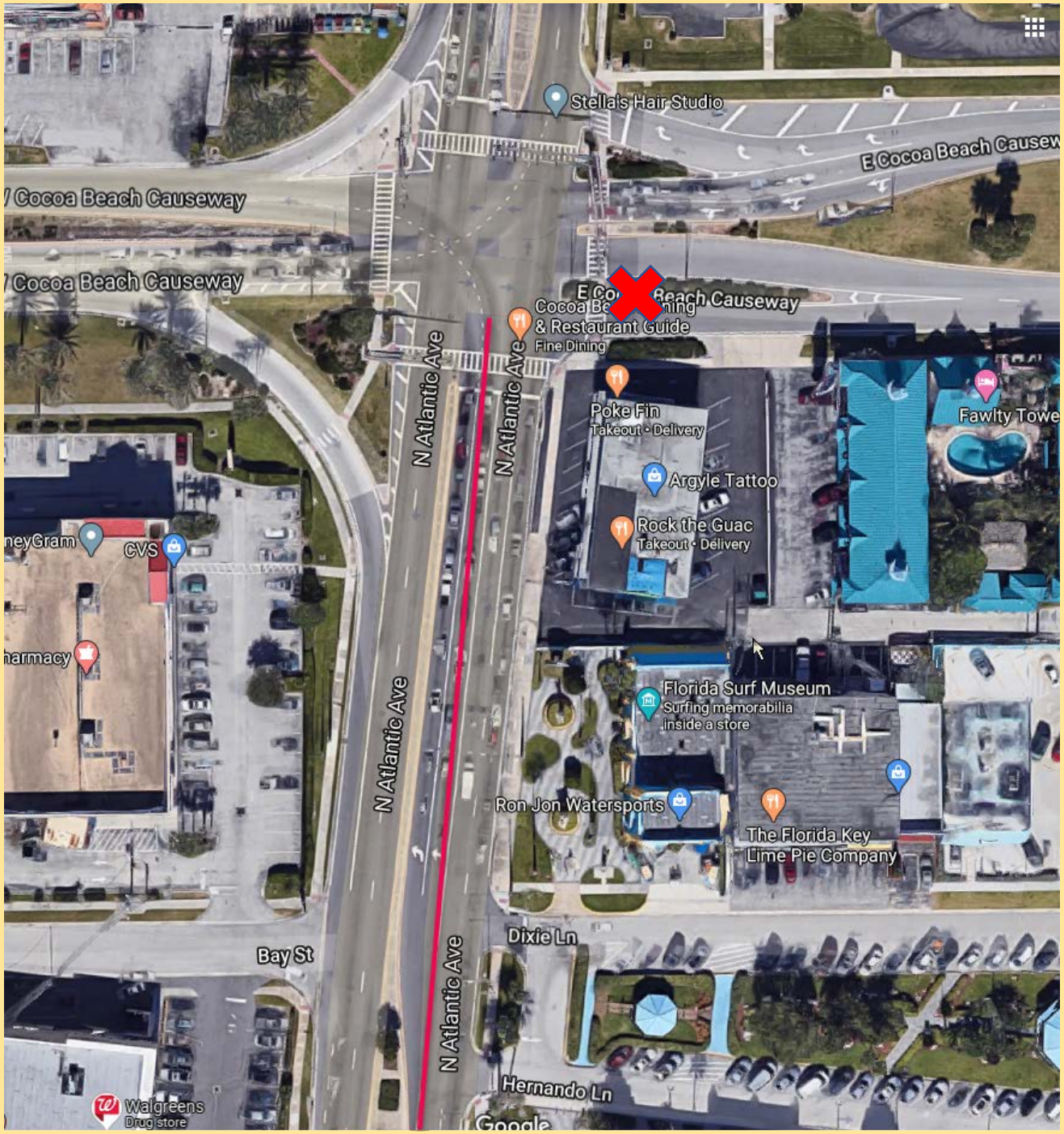


George King at SR 528

- 10 36” cones
- Prohibit left turn

SR 520 @ A1A

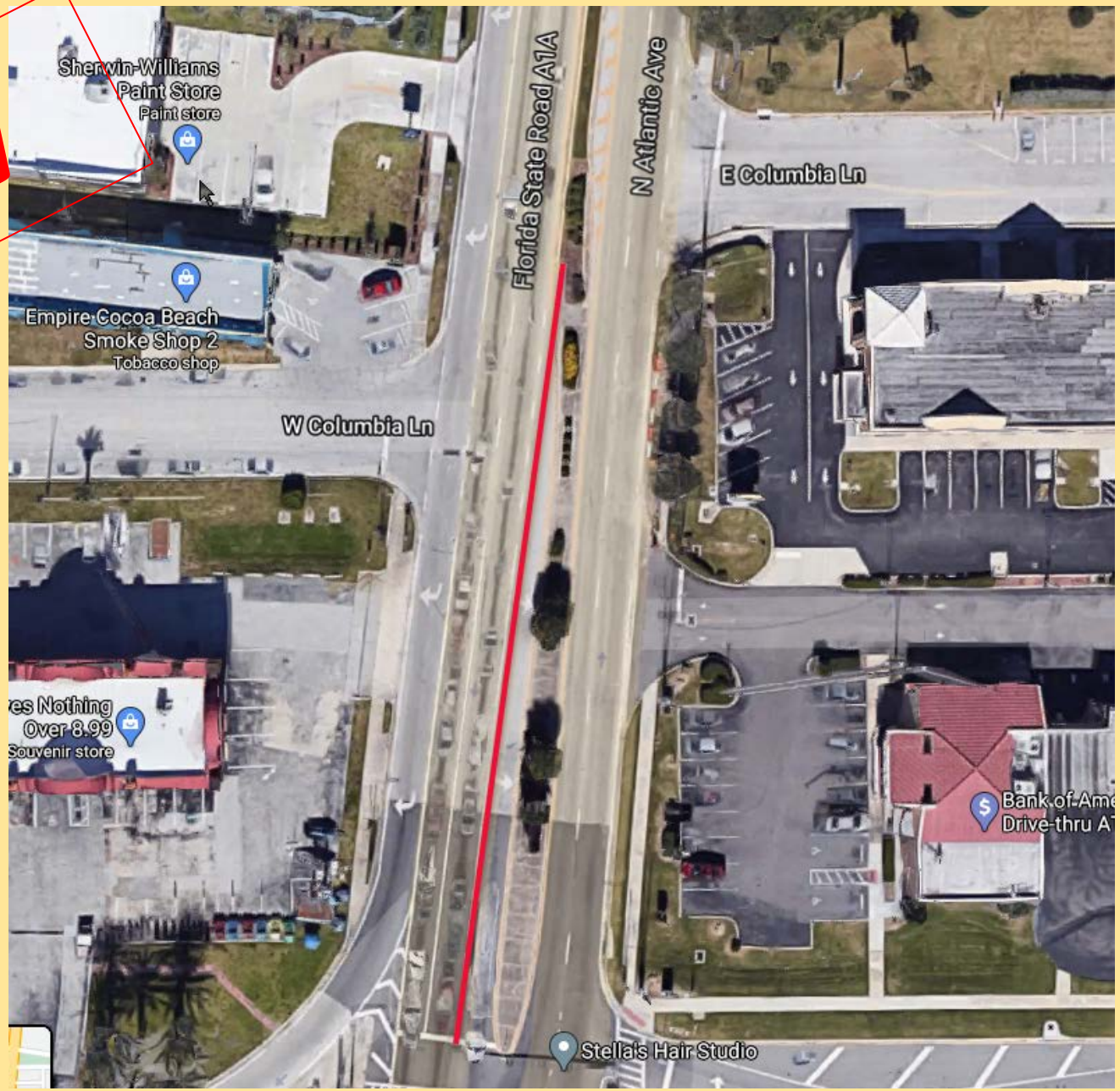
- Block NB left turn lanes
  - 40 36” cones – 10’ spacing
- Drop 20 36” cones in center median of EB movement



SR 520 @ A1A

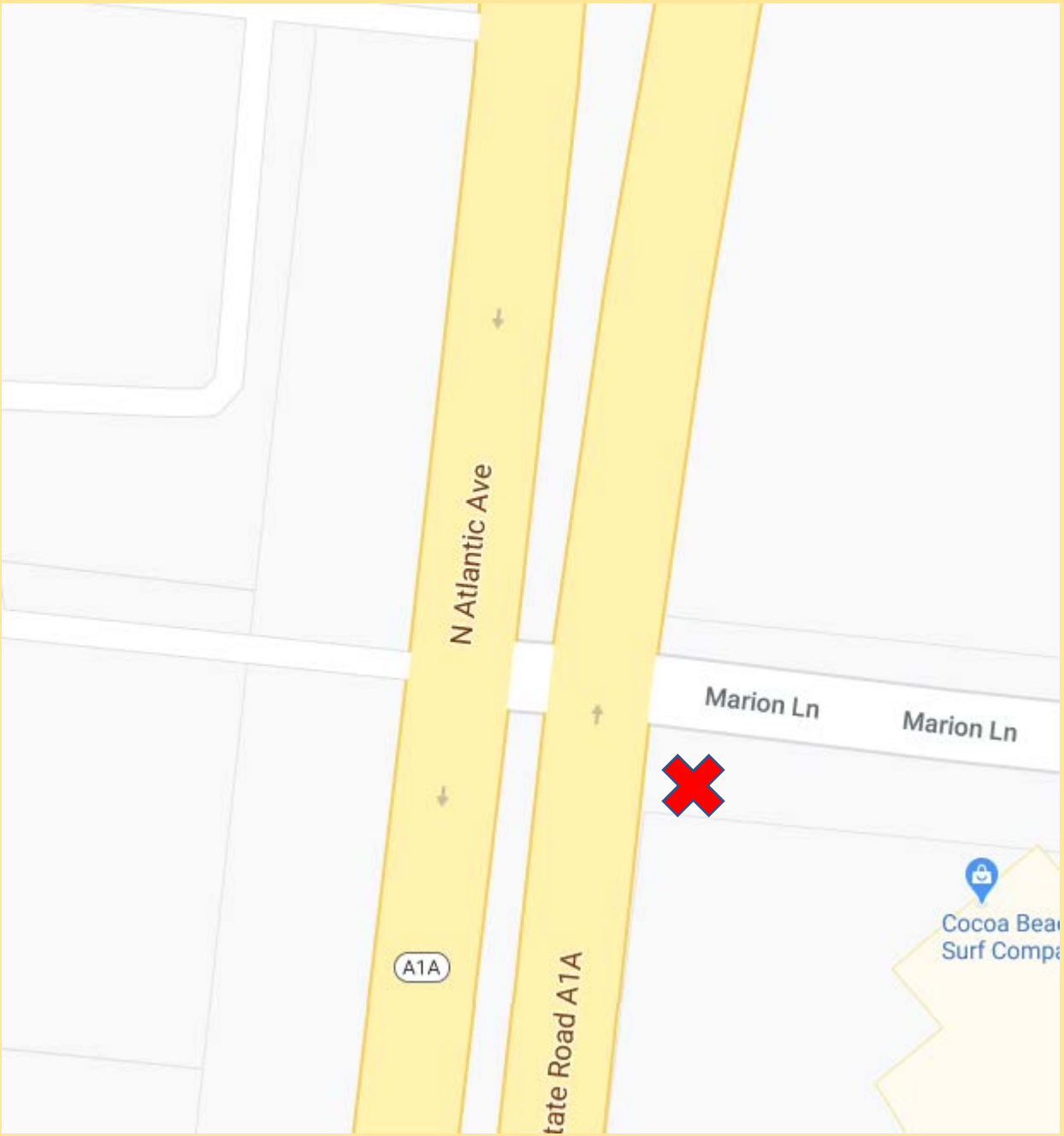
NEW

- Block SB left turn lanes
  - 25 36” cones – 10’ spacing



Marion Ln @ A1A

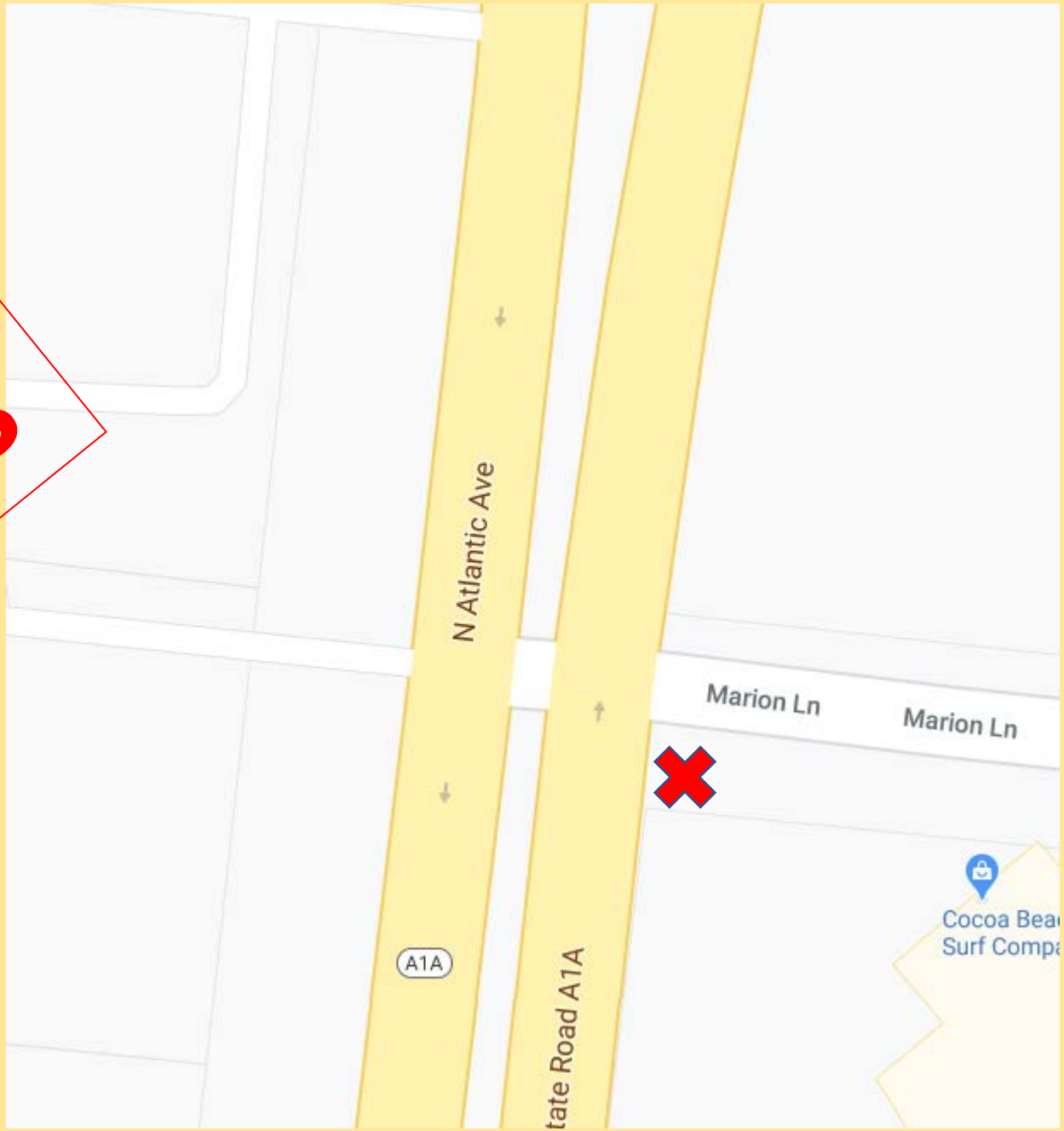
- Drop 10 36” cones on SE corner



St. Lucie Ln@ A1A

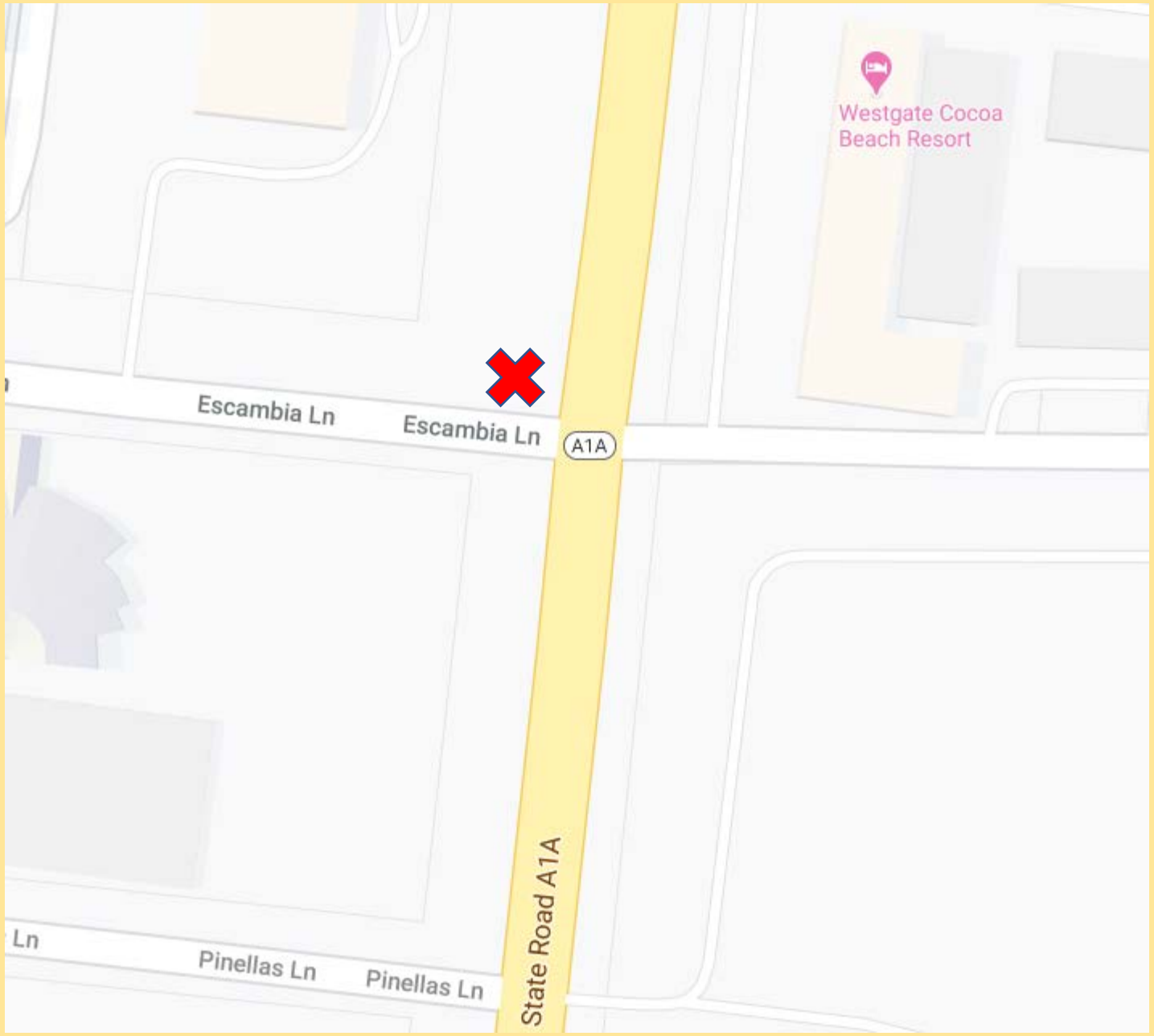
- Drop **20** 36” cones on SE corner

Increase cones



Escambia Ln@ A1A

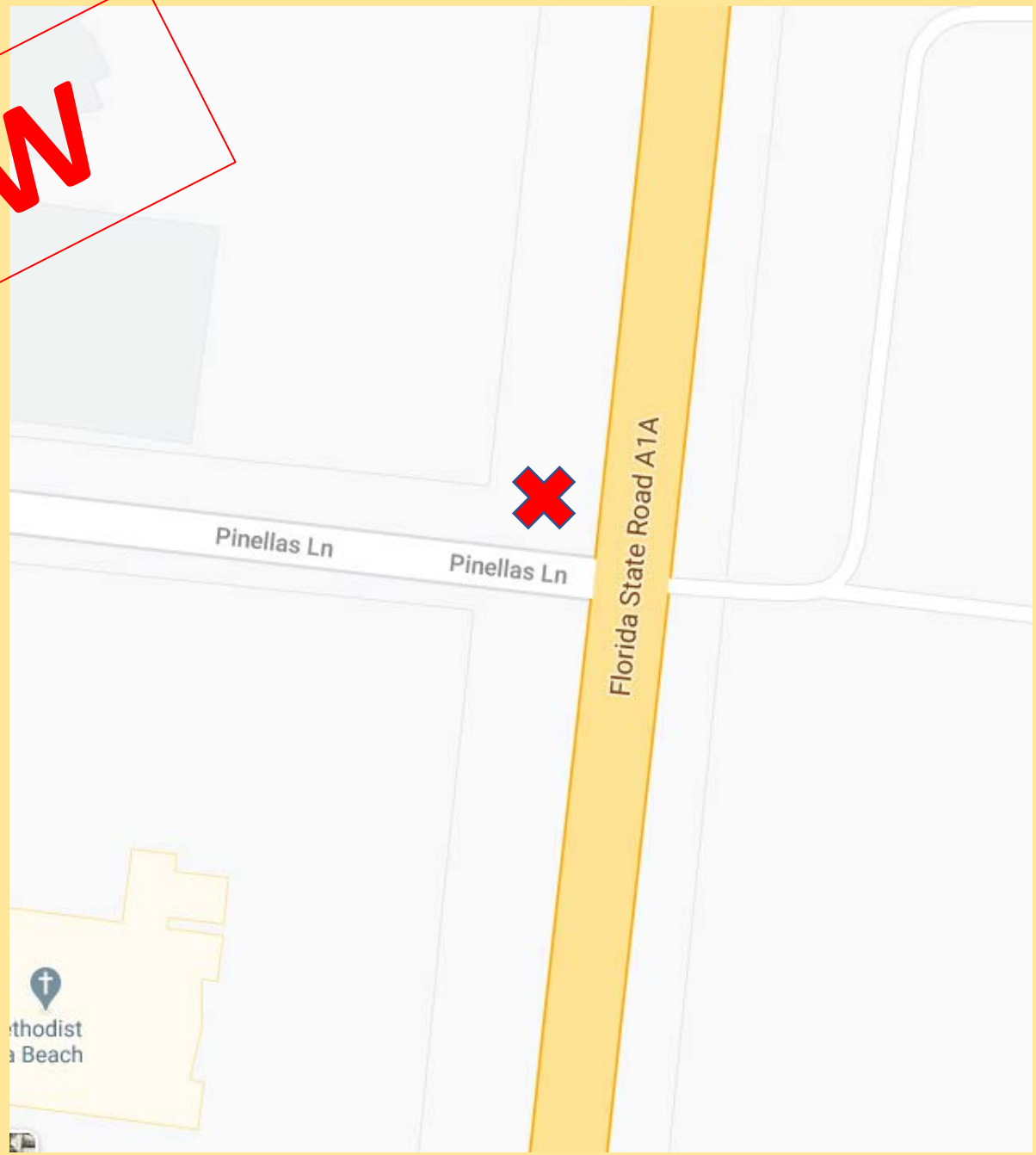
- Drop 10 36” cones on NW corner



Pinellas Ln@ A1A

NEW

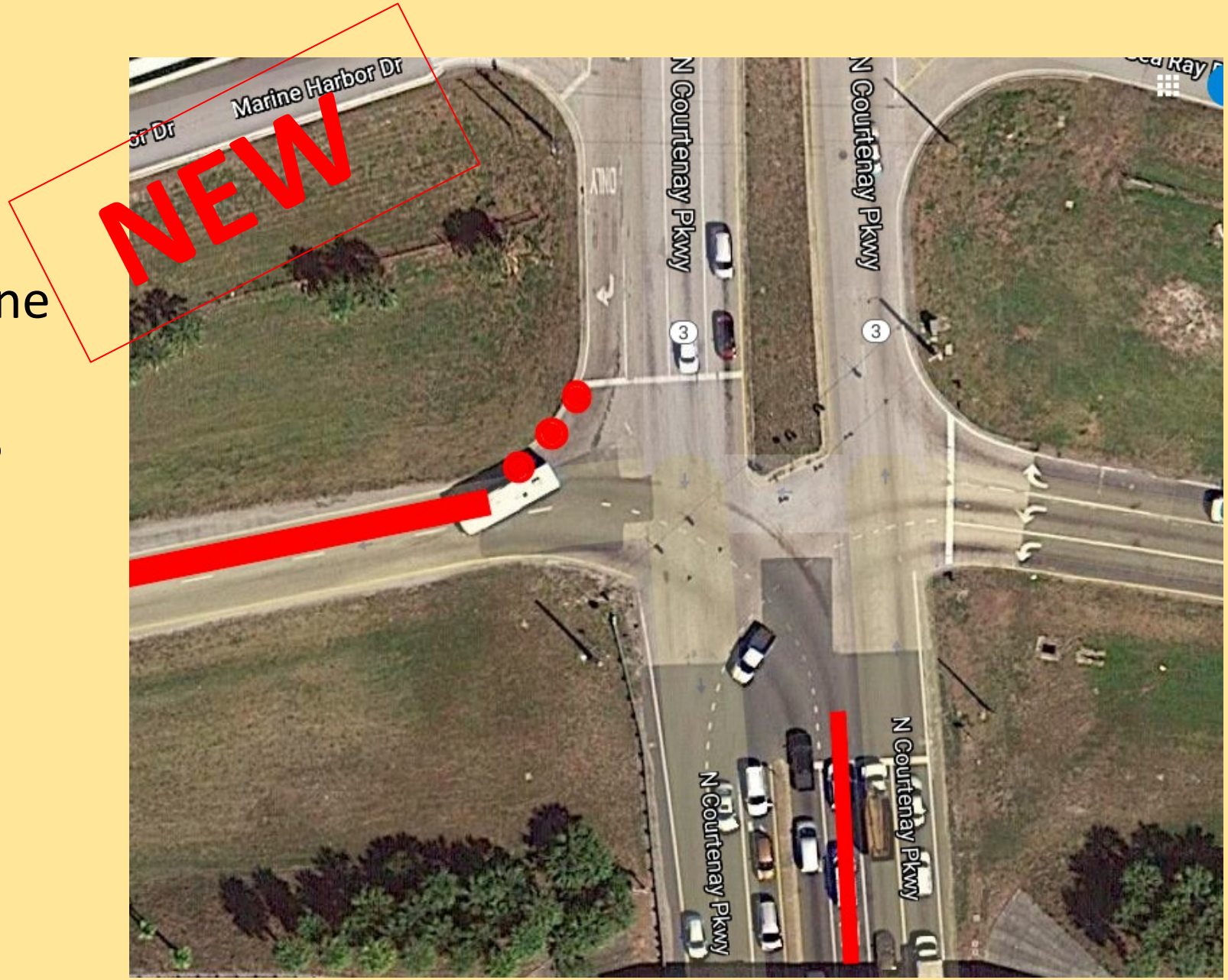
- Drop 10 36” cones on NW corner



SR 3 @ SR 520

- Close outside left turn lane on NB SR 3
- Close outside lane of WB on-ramp to SR 520

- Cone count :
  - 27 for left turn lane
  - 85 for ramp
  - (See next page for placement)



0 50 200
Feet
N
SR 3
CONES 10' SPACED BEGINNING FROM STOP BAR TO START OF LANE MARKINGS
CONES 25' SPACED BEGINNING START OF LANE MARKINGS TO END OF TAPER
SR 528/A1A
SR 528/A1A
CONES 25' SPACED BEGINNING FROM STOP BAR TO FINAL ARROW MARKING
CONES 10' SPACED BEGINNING FROM FINAL ARROW MARKING
CONES 10' SPACED BEGINNING FROM FINAL ARROW MARKING
SR 3
LEGEND
36" CONES 27 UNITS FOR OUTSIDE LEFT TURN LANE CLOSURE
36" CONES 85 UNITS FOR INSIDE LANE CLUSRE

A1A - PMS

- Deploy 1 PMS
  - SB: South of George King

Message:

AFTER LAUNCH
USE A1A SB

TO SR 520 WB
ALT TO SR 528

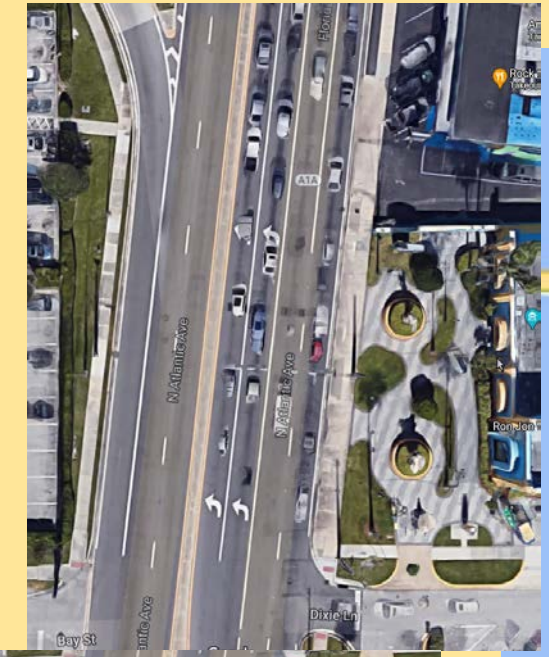
A1A - PMS

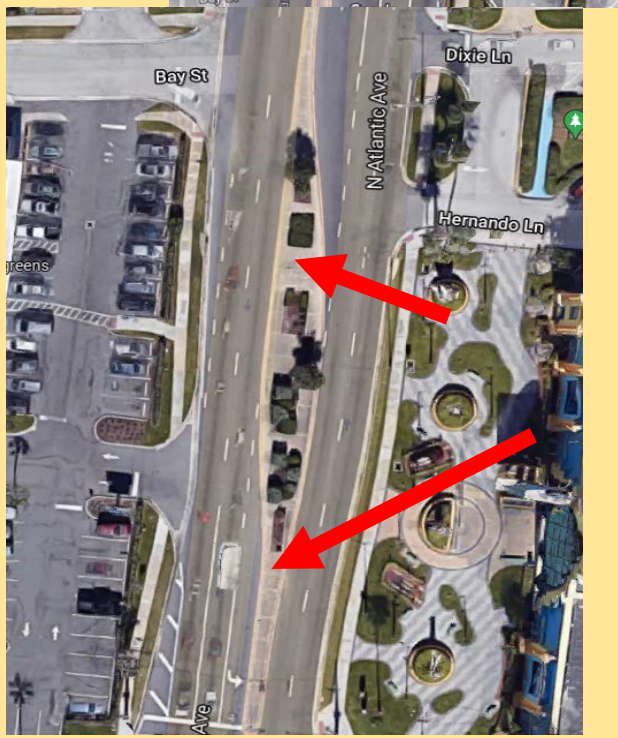
- Deploy 1 PMS
  - NB: A1A s/of SR 520

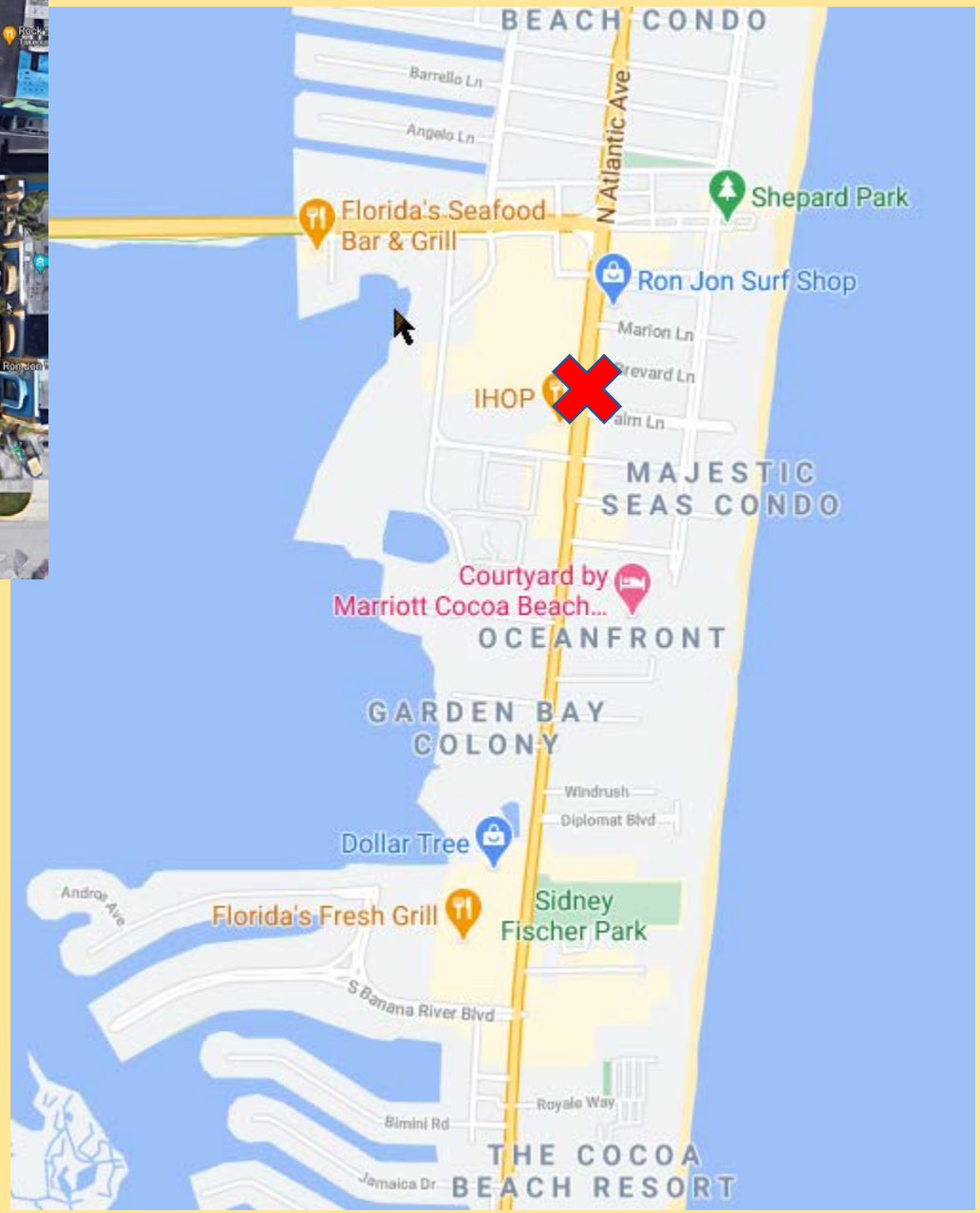
Message:

AFTER LAUNCH
USE A1A NB

NO LEFT TURN
TO SR 528 WB







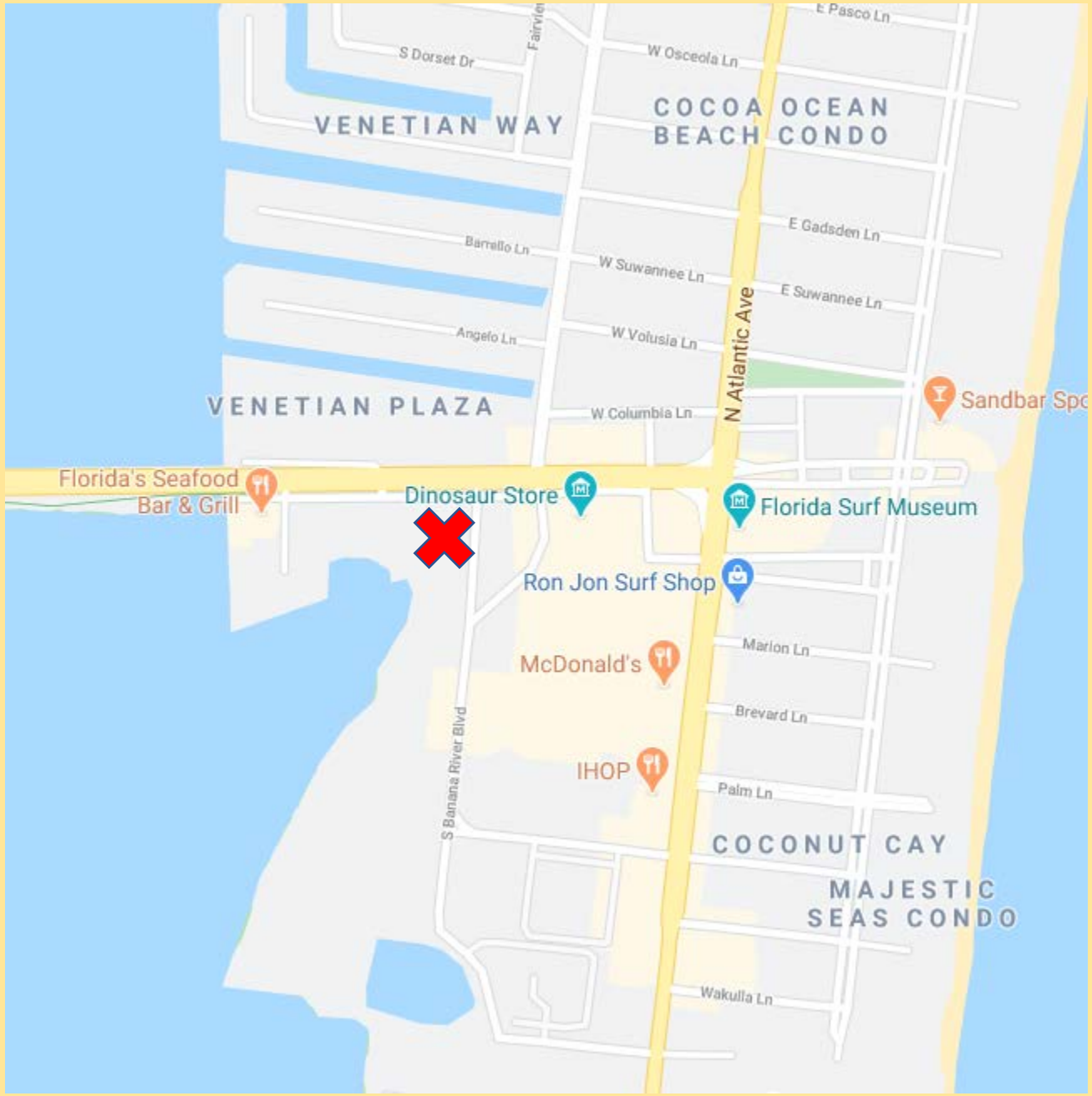
SR 520 - PMS

- Deploy 1 PMS
  - EB: West of Banana River

Message:

AFTER LAUNCH
USE A1A SB

TO SR 404
THEN I-95

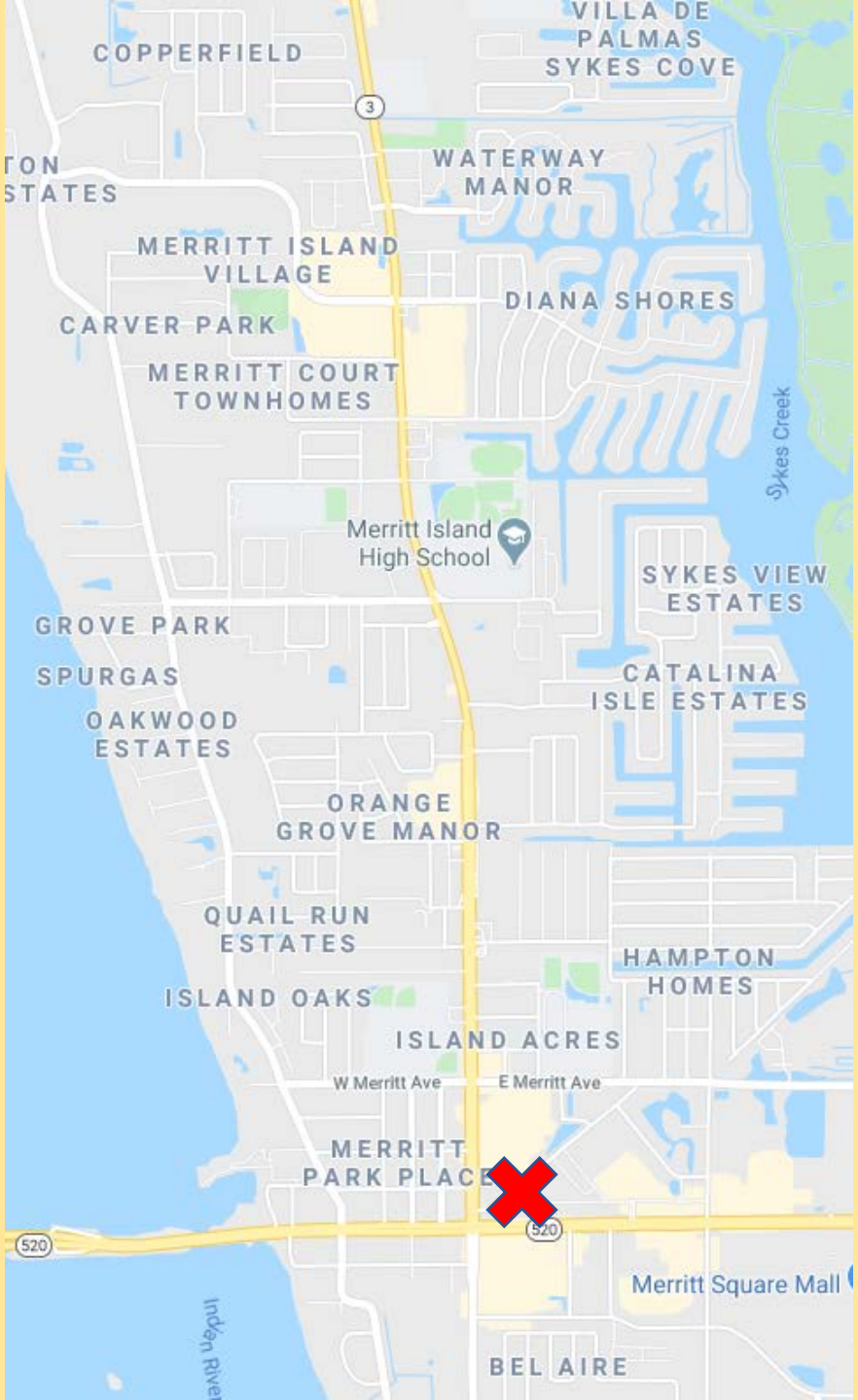


SR 520 @ SR 3 - PMS

- Deploy 1 PMS
  - SR 520 WB just before SR 3

Message:

AFTER LAUNCH
STRAIGHT AHEAD
TO WB SR 528

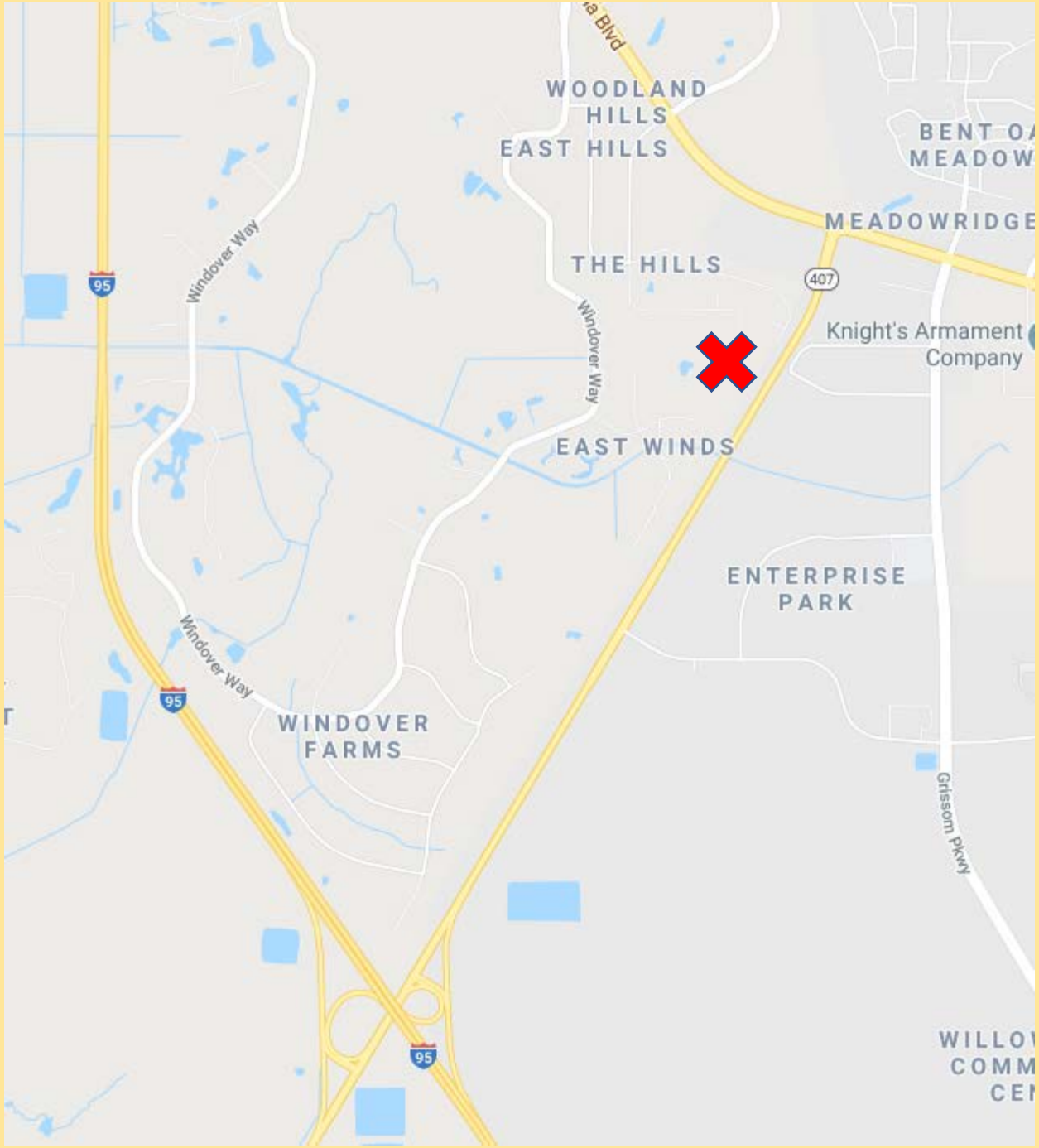


SR 407 south of SR 405 - PMS

- Deploy 1 PMS
  - SR 407 SB south of SR 405

Message:

IF CLOSED,
USE I-95 SB TO
SR 528 OR SR 520



SR 528 east of US 1- PCMS

- ITS DEPLOYMENT!
- Deploy 1 PCMS
  - SR 528 WB before US 1 juncture

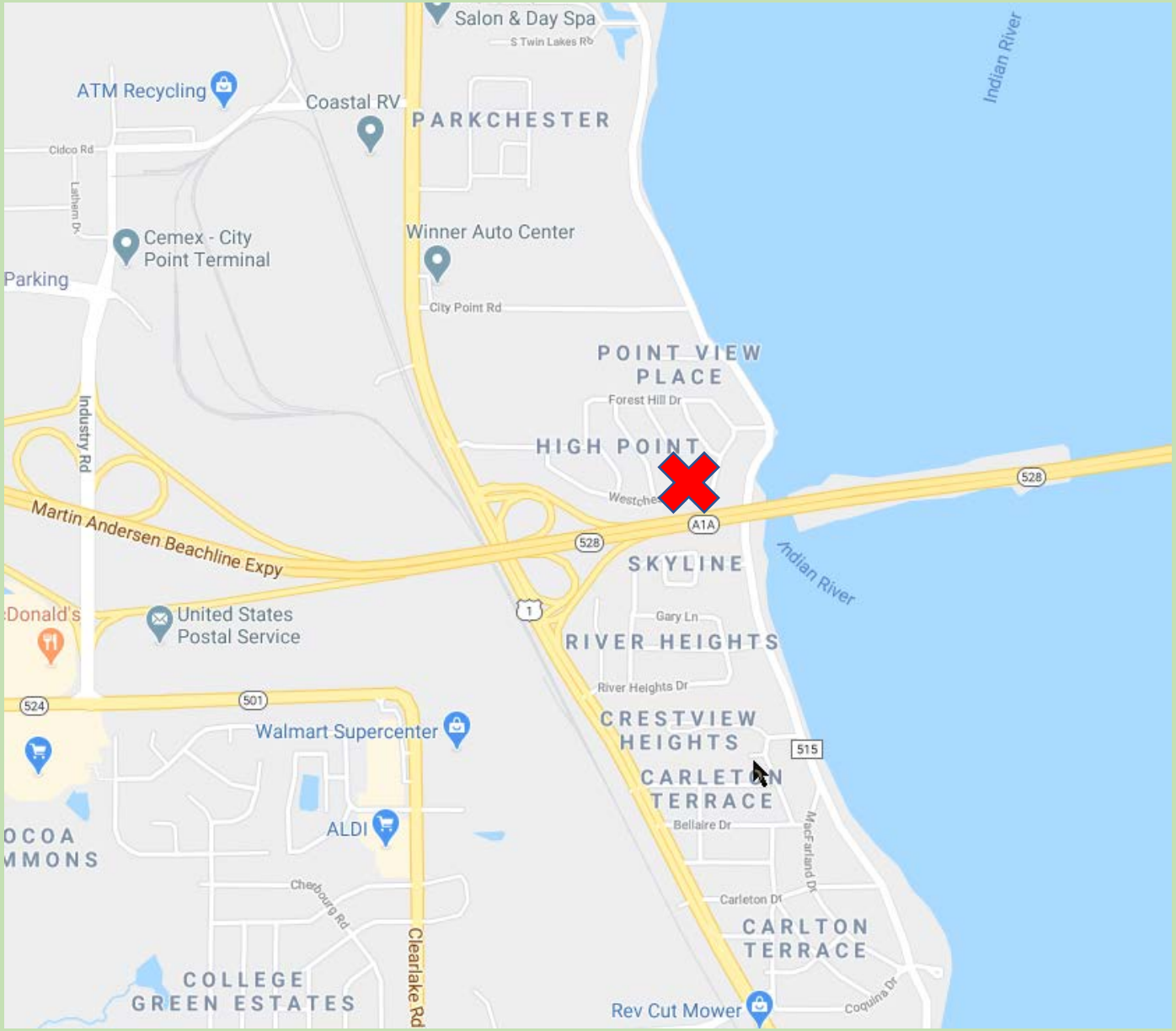
Message:

528 TO I-95
LEFT LANE

or

US1 NORTH TO
I-95/SR 50
AS ALT ROUTE

USE SR 520 WB
AS ALT ROUTE

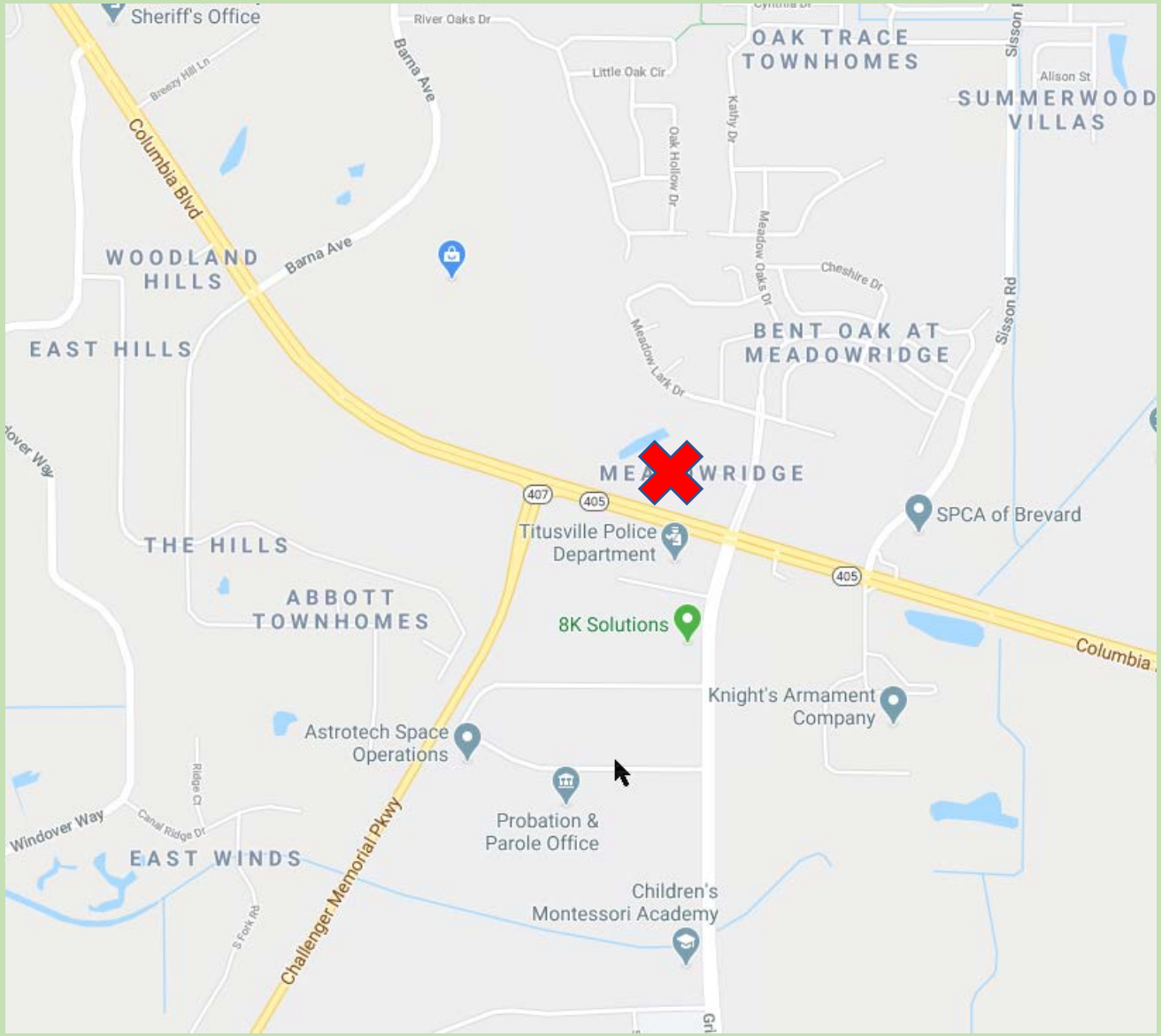


SR 405 east of SR 407- PCMS

- ITS DEPLOYMENT!
- Deploy 1 PCMS
  - SR 405 WB before SR 407

Message:

STRAIGHT TO I-95/SR 50 ALT ROUTE	SR 407 TO I-95 ONLY	SR 407 CLOSED STAY STRAIGHT
	USE SR 50 AS ALT ROUTE	USE I-95/SR50 AS ALT ROUTE
(Everything open)	(407 closed @ 95)	(407 closed)



PRE-EVENT & POST EVENT

- Start running at 6:00am day of launch; revert when traffic clears

EB SR 528

SR-528 EB MM 44.3 (W of Industry Rd exit)

ROAD SHOULDER
EMERGENCY
STOPPING ONLY

SR-401 DMS (4 total)-no change for compliance issues

NO PARKING
ON SR-401

SR-528 EB MM 51.5-A
SR-528 EB MM 51.8-B
SR-528 EB MM 52.1-A
SR-528 EB MM 52.8-B
SR-528 WB MM 54.3-A
SR-528 WB MM 54.3-B

CENTER MEDIAN
AND SHOULDERS
FOR EMERGENCY USE ONLY

AFTER LAUNCH USE
A1A SOUTH TO SR-520
AS ALTERNATE

If/When Compliance Issues

NO PARKING SHOULDERS
OR CENTER MEDIAN
FOR EMERGENCY VEH ONLY

*Predefined Plans:
Launch SR-528/SR-401 INBOUND-1
Launch SR-528/SR-401 INBOUND-2
(use 2 if/when compliance issues)

SR 528 EB W of I-95 (MM 40.7)

CENTER MEDIAN
& SHOULDERS FOR
EMERGENCY USE

AFTER LAUNCH USE
A1A SB TO SR-520
AS ALTERNATE

If/When Compliance Issues

NO PARKING
SHOULDERS OR
CENTER MEDIAN

AFTER LAUNCH USE
A1A SB TO SR-520
AS ALTERNATE

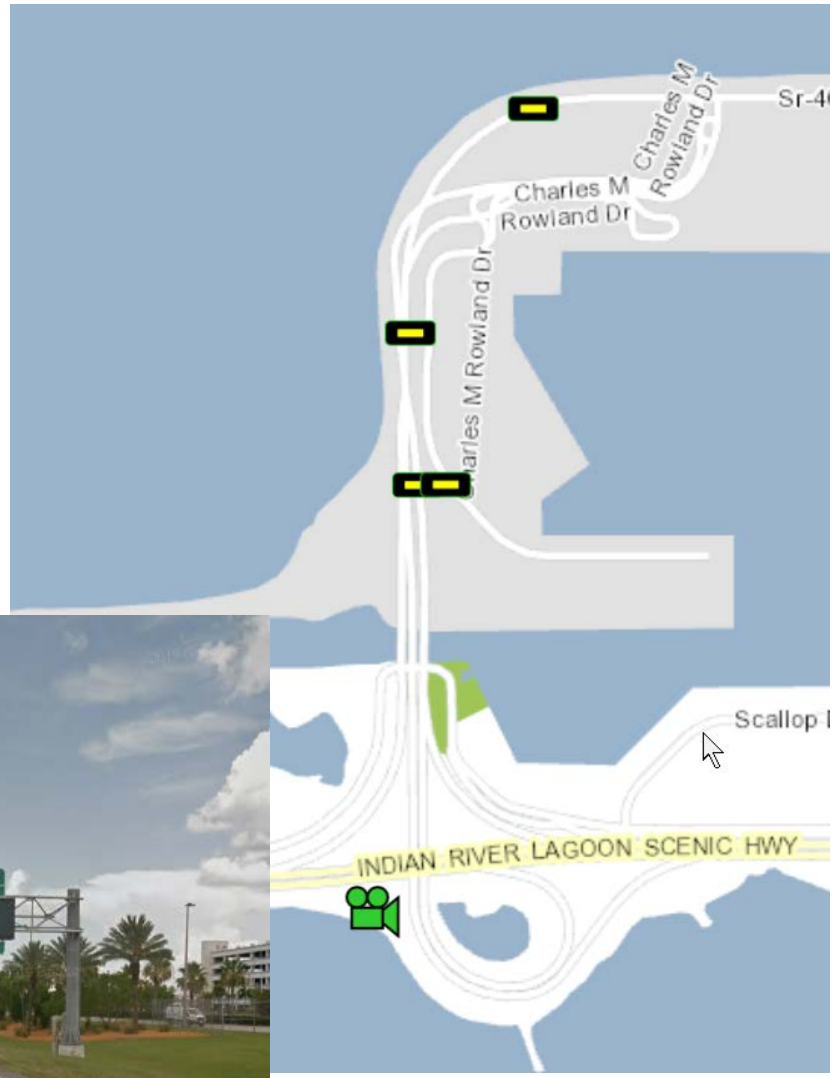
SR 401

- Terminal DMS

SR 401 NB
Dynamic Message Signs (x 4)
Facing Northbound
Placed by: N/A

Messages
NO PARKING
ON SR 401

Optional Message
PARKING AHEAD
XXXXXXXXXXXXX
(TBD)



Location 20

I-95 NB MM 199.5
Dynamic Message Sign
Facing Northbound
Placed by: N/A

Messages
TO SR 528
VIA SR 520
XX MI XX MIN

MERGE TT

Location 6

US-1 north of SR 528
Arterial Dynamic Message Sign
Facing Southbound Traffic

Placed by: N/A in place

Messages
SR 528
TO I-95
LEFT LANE

SR 520
TO SR 528
STRAIGHT

Location 11

I-95 SB at MM 203.8
Dynamic Message Sign
Facing Southbound
Placed by: N/A in place

Messages
TO SR 528 via SR 520
XX Miles
XX Min

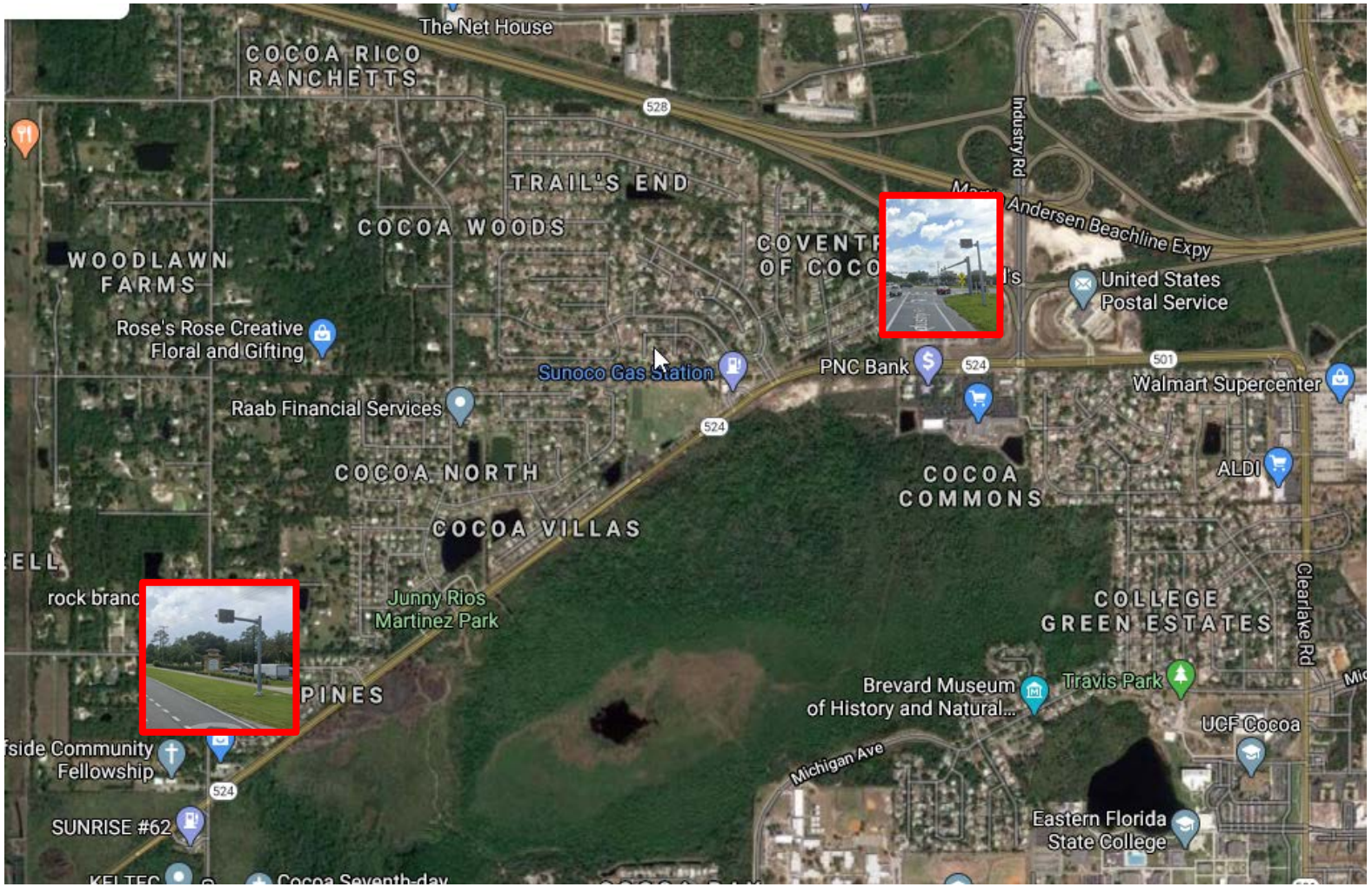
Merge

Location 12 and 13

Industry Road at SR 524 &
SR 524 at Cox Road
Arterial Dynamic Message Sign
Facing Southbound
Placed by: N/A in place

Messages
TO 520
VIA 528
XX Min

TO 528
VIA 520
XX Min



POST EVENT

- Turn On
- After Port Flush
- SR 528 Congested
- SR 407 Open Close
  - Maintenance Staffing and Officer
  - Maintenance to use sign
  - Officer to Handle Cones
  - Data Source Google Traffic
- SR 405/SR 50 Message
  - Monitor queues on either road to balance demand
  - Data Source Google Traffic
- US-1 Diversion Off SR 528
  - Monitor US-1 traffic
  - Data Source Google Traffic

Location 15

SR 528/A1A South of George King
Portable Message Sign
Facing Southbound
Placed by: FDOT Maintenance

Messages

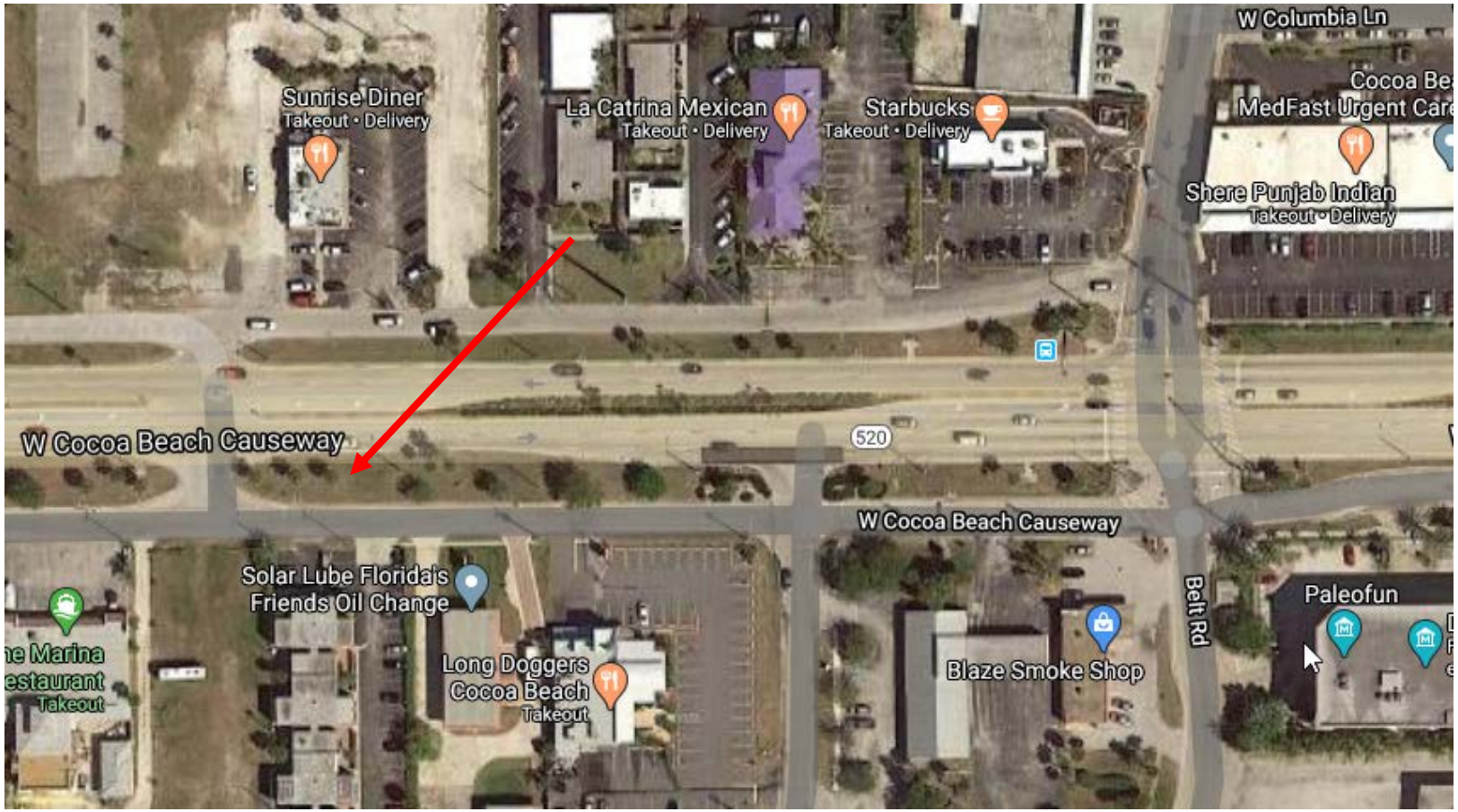
AFTER
LAUNCH
USE A1A SB
TO SR 520 WB

Location 16

SR 520 West of Banana River Blvd
Portable Message Sign
Facing Eastbound
Placed by: FDOT Maintenance

Messages

AFTER
LAUNCH
USE A1A SB
To SR 404 WB



Location 10

I-95 SB at MM 206.4
Dynamic Message Sign
Facing Southbound
Placed by: N/A in place

Messages
TO SR 520 via SR 528
XX Miles
XX Min

TO SR 528 via SR 520
XX Miles
XX Min

Location 14

SR-528 WB E of I-95
Dynamic Message Sign
Facing Westbound
Placed by: N/A in place

Messages
TO SR 417 via SR 528
XX Miles
XX Min

TO I-4/EXIT 260 via I-95
XX Miles
XX Min

Location 18

I-95 SB MM 217.4
Dynamic Message Sign
Facing Southbound
Placed by: N/A

Messages
SR 407 TO
SB 528
CLOSED

SR 528 WB
CONGESTED
USE SR-50 AS ALT

Locations 7 & 8 & 8A

North, South and East of SR 50 and SR 405
Arterial Dynamic Message Sign
Facing Northbound, Southbound, and
Westbound Traffic

Placed by: N/A in place

Messages
USE SR 50
AS ALT

SR 407 Open

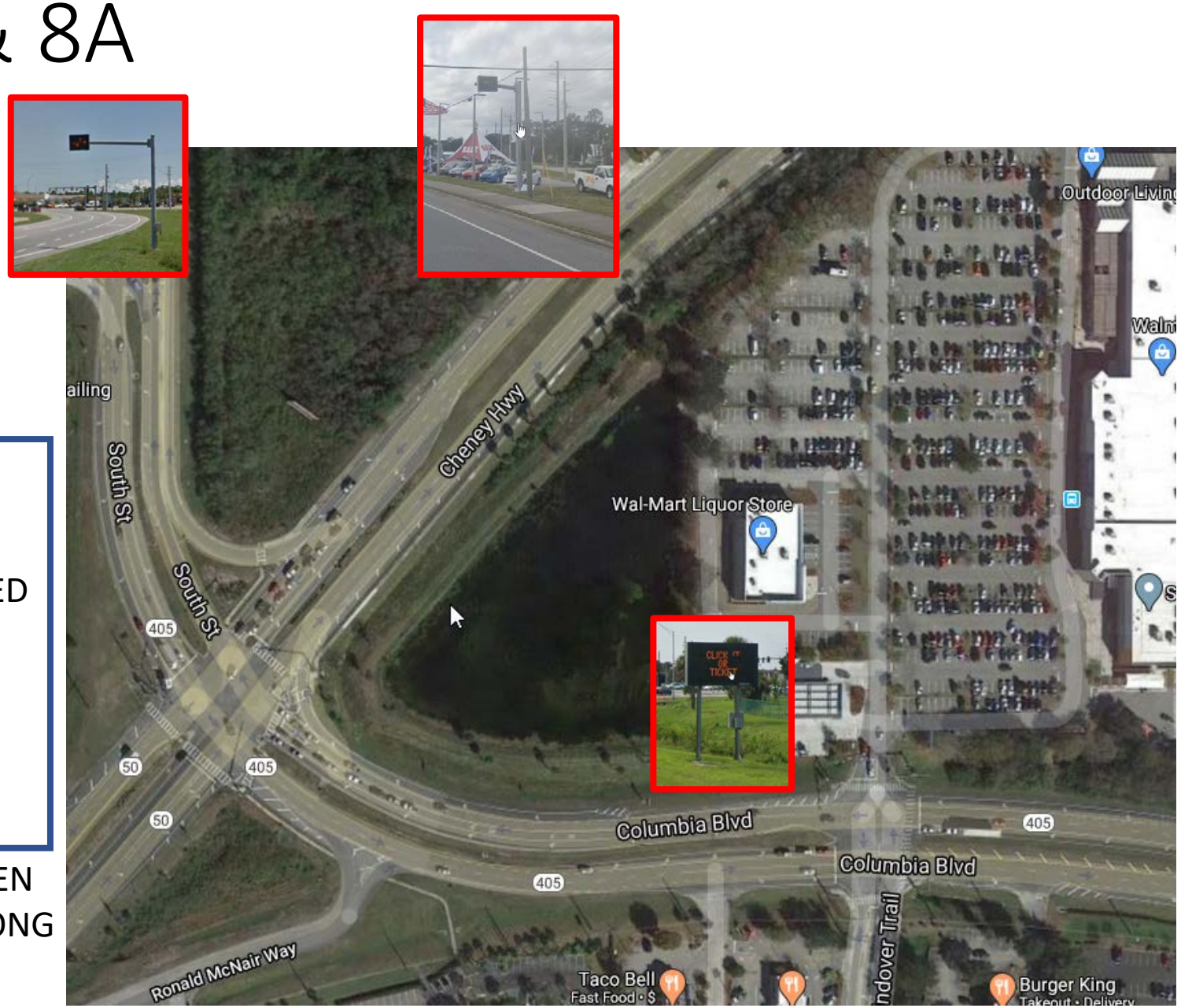
Messages
SR 407
TO SR 528
CLOSED

SR 528
CONGESTED
USE SR 50

SR 407 Closed

Messages
SR 528
CONGESTED
USE SR 50

SR 407 OPEN
& SR 50 CONG



Predefined Plan: *Launch SR-407 Open/SR-528 Congested OUTBOUND*

Device Details	Message Details
DMS **I-95 SB @ MM 212.9** [District 5]	SR-528 CONGESTED USE SR-520 Until Canceled 20
DMS **SR-405 NB S of SR-50** [District 5]	SR-528 CONGESTED USE SR-50 Until Canceled 20
DMS **SR-405 SB N of SR-50** [District 5]	SR-528 CONGESTED USE SR-50 Until Canceled 20
DMS **SR-50 WB E of I-95** [District 5]	SR-528 CONGESTED USE SR-50 Until Canceled 20
DMS **US-1 NB S of SR-405** [District 5]	TO I-95 USE 405 RT LANE TO I-95 USE SR-50 STRAIGHT Until Canceled 20
DMS **US-1 SB N of SR-528** [District 5]	SR-528 TO I-95 LEFT LANE SR-520 TO SR-528 STRAIGHT Until Canceled 20

Predefined Plan: *Launch SR-407 Closed OUTBOUND*

Device Details	Message Details		
DMS **I-95 NB @ MM 210.6** [District 5]	SR-407 TO SR-528 CLOSED		Until Canceled 20
DMS **I-95 SB @ MM 212.9** [District 5]	SR-407 TO SR-528 CLOSED	SR-528 CONGESTED USE SR-520	Until Canceled 20
DMS **I-95 SB @ MM 217.4** [District 5]	SR-407 TO SR-528 CLOSED	SR-528 WB CONGESTED USE SR-50 AS ALT	Until Canceled 20
DMS **SR-405 EB W of SR-407** [District 5]	SR-407 TO I-95 ONLY	TO SR-528 CLOSED USE 520	Until Canceled 20
DMS **SR-405 NB S of SR-50** [District 5]	SR-407 TO SR-528 CLOSED	SR-528 CONGESTED USE SR-50	Until Canceled 20
DMS **SR-405 SB N of SR-50** [District 5]	SR-407 TO SR-528 CLOSED	SR-528 CONGESTED USE SR-50	Until Canceled 20
DMS **SR-50 WB E of I-95** [District 5]	SR-407 TO SR-528 CLOSED	SR-528 CONGESTED USE SR-50	Until Canceled 20
DMS **US-1 NB S of SR-405** [District 5]	TO I-95 USE 405 RT LANE	TO I-95 USE SR-50 STRAIGHT	Until Canceled 20
DMS **US-1 SB N of SR-528** [District 5]	SR-528 TO I-95 LEFT LANE	SR-520 TO SR-528 STRAIGHT	Until Canceled 20

Location 1

SR 405 east of SR 407

Portable Changeable Message Sign

Facing Westbound

Placed by: Traffic Ops

Message:

STRAIGHT TO I-95/SR 50 ALT ROUTE	SR 407 TO I-95 ONLY	SR 407 CLOSED STAY STRAIGHT
	USE SR 50 AS ALT ROUTE	USE I-95/SR50 AS ALT ROUTE
(Everything open)	(407 closed @ 95)	(407 closed)

Location 3

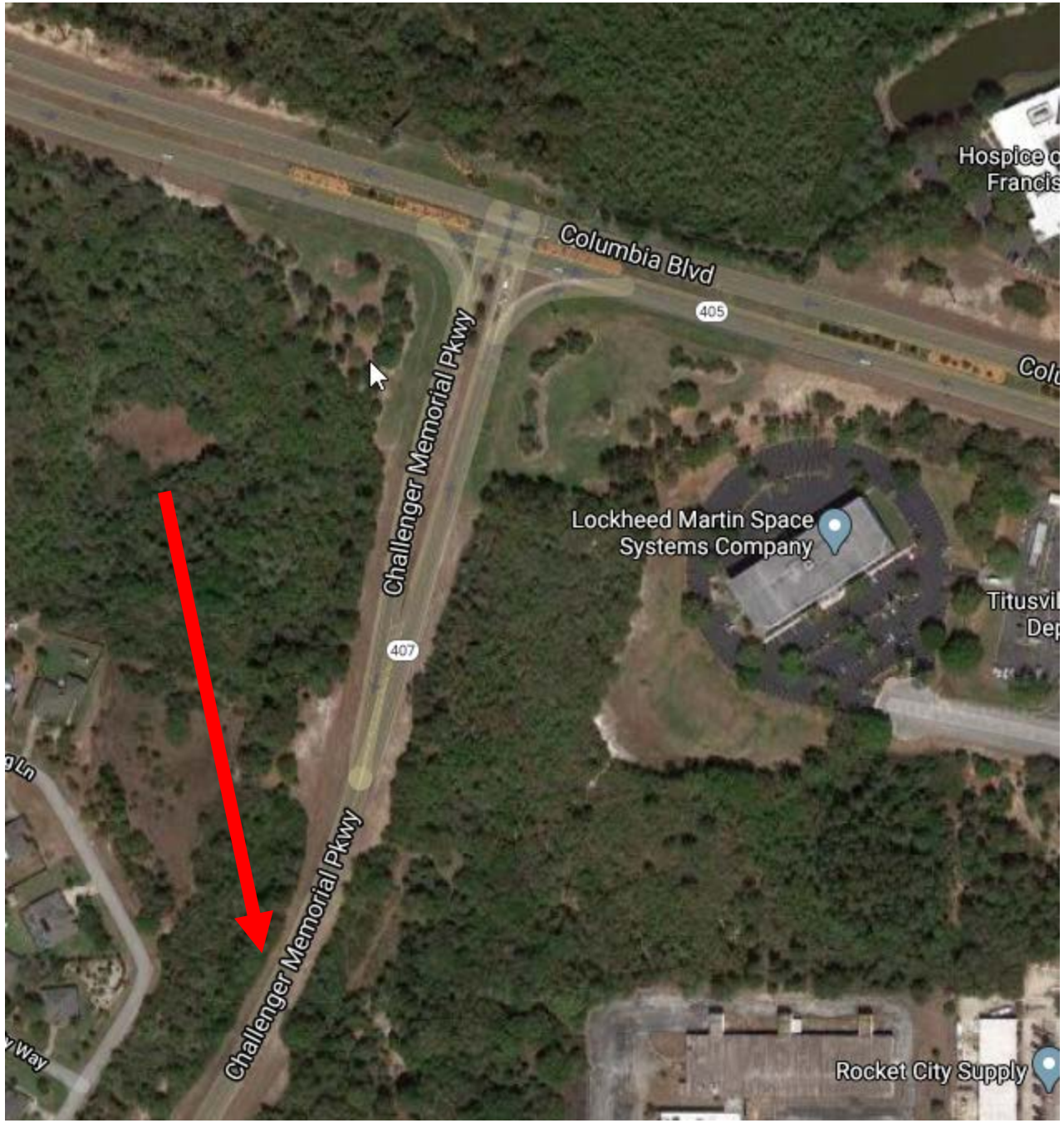
SR 407 south of SR405
Portable Message Sign
Facing Southbound Traffic

Placed by FDOT Maintenance

Messages

IF CLOSED
USE I-95 SB

TO SR 528
OR SR 520



Location 3A

SR 405 and SR407
Arterial Dynamic Message Sign
Facing Southbound Traffic

Placed by: N/A Currently Installed

Messages

(Campaign Message)

SR 407 Open

Messages
SR 407
TO I-95
ONLY

TO 528
CLOSED
USE SR 520

SR 407 Closed

SR 407 at I-95 SB

- Cone forcing 407 SB onto I-95 SB
- RR for Arrow Board ONLY DURING CLOSED

Location 9

I-95 SB at MM 212.9
Dynamic Message Sign
Facing Southbound
Placed by: N/A in place

Messages
SR 407
TO SR 528
CLOSED

SR 528 WB
CONGESTED
USE SR 520

Location 19

I-95 NB MM 210.6
Dynamic Message Sign
Facing Southbound
Placed by: N/A

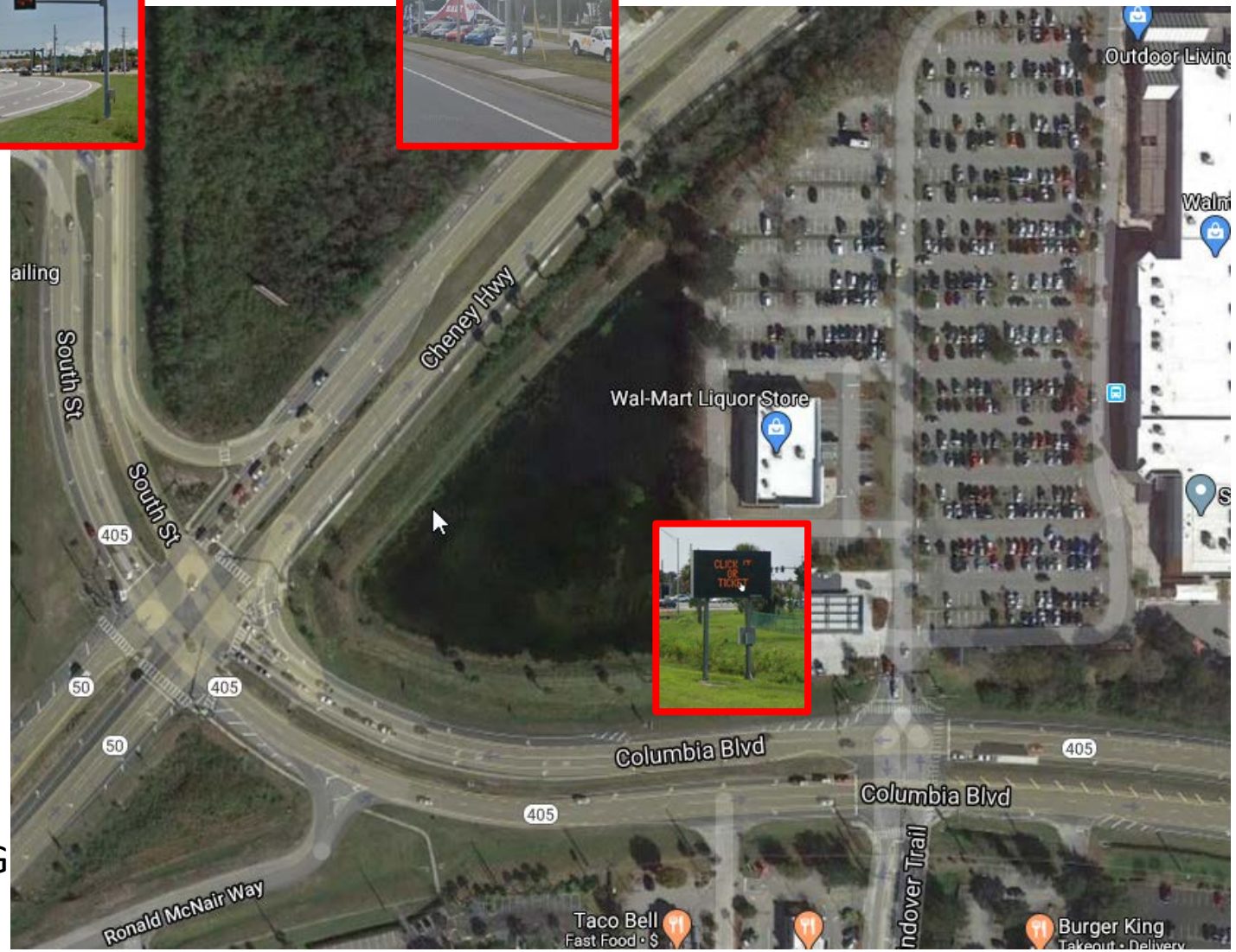
Messages
SR 407 TO
SB 528
CLOSED

MERGE TT

Locations 7 & 8 & 8A

North, South and East of SR 50 and SR 405
Arterial Dynamic Message Sign
Facing Northbound, Southbound, and
Westbound Traffic

Placed by: N/A in place



Messages
USE SR 50
AS ALT

Messages
SR 407
TO SR 528
CLOSED

SR 528
CONGESTED
USE SR 50

Messages
SR 528
CONGESTED
USE SR 50

SR 407 Open

SR 407 Closed

SR 407 OPEN
& SR 50 CONG

Location 2

US-1 and SR 405
Portable Changeable Message Sign
Facing Northbound Traffic

Placed by FDOT Traffic Ops

Messages
TO I-95
TURN RIGHT

OR

TO I-95
STRAIGHT
AHEAD

Location 4

US-1 south of SR 405
Arterial Dynamic Message Sign
Facing Northbound Traffic

Placed by: N/A in place

Messages
TO I-95
USE SR 405
RIGHT LANE or RT LANE (space)

TO I-95
USE SR 50
STRAIGHT

Location 5

SR 528 east of US1

Portable Changeable Message Sign

Facing Westbound

Placed by: Traffic Ops

Message:

528 TO I-95
LEFT LANE

or

US1 NORTH TO
I-95/SR 50
AS ALT ROUTE

USE SR 520 WB
AS ALT ROUTE

Signal Timing Needs

- Reduce/Omit WBL Green at SR 405 and SR 407; Increase Green WBT
- Increase NBL at SR 50 and US-1
- Increase NBL and WBT at SR 405 and SR 50
- Increase SBL at SR 528 and George King

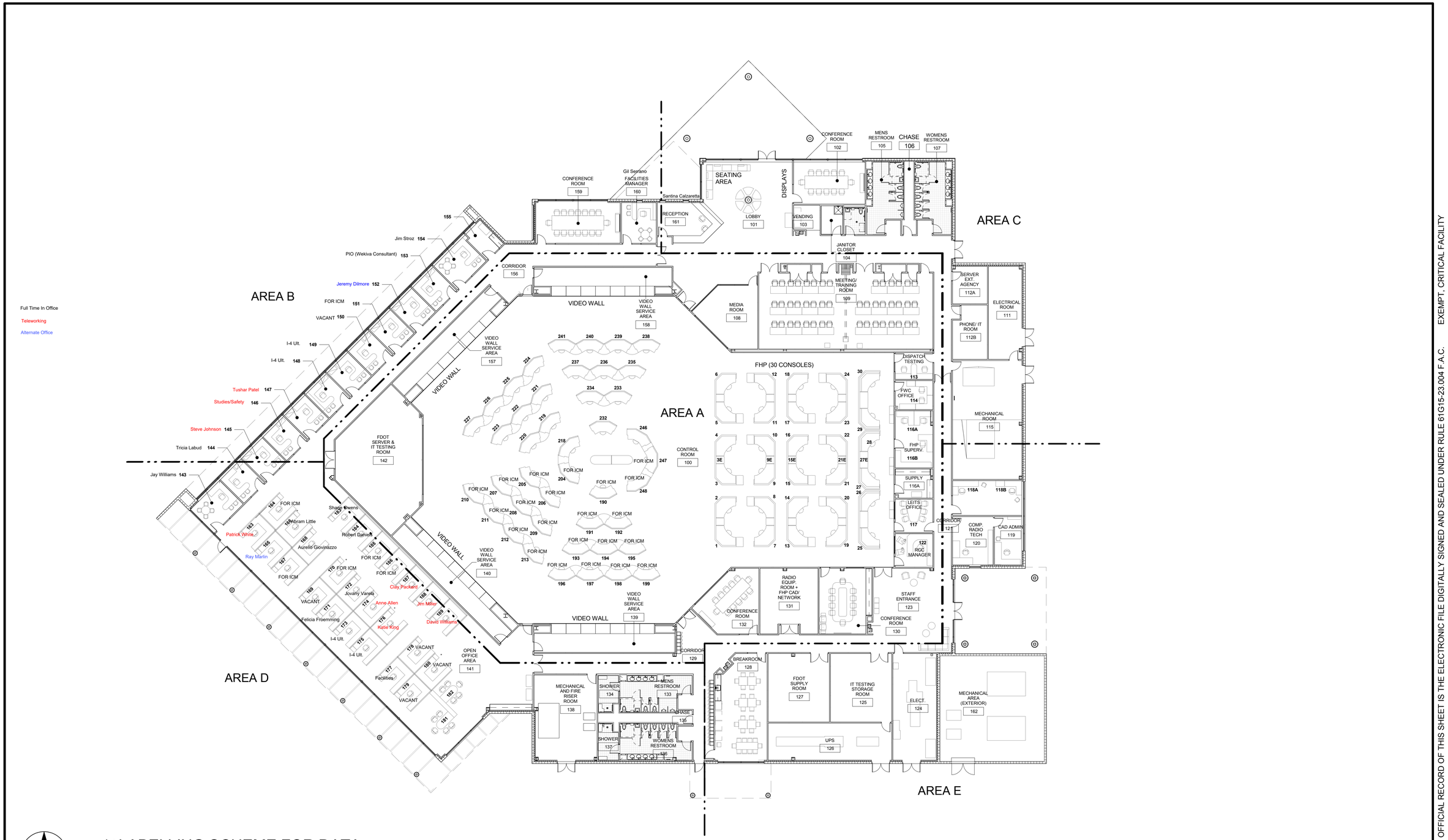
Corridor Flush

- Reduce/Omit WBL Green at SR 405 and SR 407; Increase Green WBT
- Increase NBL at SR 50 and US-1
- Increase NBL and WBT at SR 405 and SR 50

Appendix X

District 5
RTMC Layout with ICM Spaces Labelled

FOR ICM



1 LABELLING SCHEME FOR DATA

AT-509

SCALE: 1/16" = 1'-0"

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004 F.A.C. EXEMPT, CRITICAL FACILITY

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
04/25/19	LN	NEW SHEET			

AECOM TECHNICAL SERVICES, INC.

7650 CORPORATE CENTER DRIVE, SUITE 400
MIAMI, FL 33126-1220
TEL: (305) 262-7466

ARCHITECT BUSINESS LICENSE NO. AA26000687
ETHAN M. LOUBRIEL, R.A. NO. 15343

DRAWN BY: LLN
CHECKED BY: KAR
DESIGNED BY: EML
CHECKED BY: KAR

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N / A	SEMINOLE	437100-1-52-01

SHEET TITLE: LABELLING SCHEME FOR DATA

PROJECT NAME: REGIONAL TRANSPORTATION MANAGEMENT CENTER

REF. DWG. NO. AT-509

SHEET NO. OF 249

8/19/2019 3:05:04 PM C:\Users\NuhL\Documents\ARCH-60437051-MOD_R15_Liliana.Nuh@aecom.com.rvt

Appendix Y

District 5
Example External Quarterly Report

INSIDE THIS EDITION...

- ***EXECUTIVE SUMMARY***
- ***ICM Spotlight***
- ***FREEWAY REPORT***
  - Travel Time Reliability
  - Throughput Volume
  - Traffic Incident Mgmt.
- ***ARTERIAL REPORT***
  - Travel Time Reliability
  - Arterial Issues
  - Arterial Equipment Status
  - Preemption/TSP
  - Throughput Volume

DISTRICT FIVE ICM

FDOT District 5
Integrated Corridor Management (ICM)
Quarterly Report

Q1-2021

SUNGUIDE®
Florida's Intelligent Transportation System

FDOT

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Incident Duration/Open Roads *32-34*
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Secondary Crashes *37-38*
Road Rangers *39-40*
Rapid Incident Scene Clearance (RISC) *41-42*
Arterial Segments *43-83*

FDOT
DISTRICT 5

TSM&O Strategic Plan Guideline	Performance Metric	Performance Goal	Target Goal		Data Requirement
			Baseline	Strategy	Data Source
Mobility	TTI (Avg) (AM)	+/- 2% Margin of 12-Month Average	12-month Average	1	SunGuide
	TTI (Avg) (PM)	+/- 2% Margin of 12-Month Average	12-month Average	1	SunGuide
	PTI (Avg) (AM)	+/- 2% Margin of 12-Month Average	12-month Average	1	SunGuide
	PTI (Avg) (PM)	+/- 2% Margin of 12-Month Average	12-month Average	1	SunGuide
	Freeway Vol. (Avg) (AM)	+/- 2% Margin of 12-Month Average	12-month Average	2	SunGuide
	Freeway Vol. (Avg) (PM)	+/- 2% Margin of 12-Month Average	12-month Average	2	SunGuide
Safety	Roadway fatalities	Vision Zero- Drive Down Fatalities	Zero	3	SunGuide
	Secondary Crashes	Vision Zero- Drive Down Secondary Crashes	Zero	4 & 5	SunGuide
	Roadway Clearance Time	≤ Contractually required reponse time	60 min	4 & 5	SunGuide
	Open Roads	≤ Open Roads Policy goal	60 min	4 & 5	SunGuide
	Road Ranger Response	≤ Contractually required reponse time	30 min	4 & 5	SunGuide
	RISC Clearance	≤ Contractually required reponse time	90 min	4 & 5	SunGuide
Infrastructure	Device Uptime	≥ 95% Device (CCTV, DMS, TSS) Availability	95%	6	MIMS
	Network Uptime	≥ 99% Network Uptime	99%	6	Solarwinds
	Systems Uptime	≥ 95% System's Availability	95%	6	Activu/SunGuide/RRMA

1. Improve Agency Management, Organization, and Resources allocation, Information Collection and Dissemination, Incident Management and infrastructure and Demand Optimization.
2. Quantify the capacity benefits, provide information and tools to analyze operational improvements as an alternative to traditional construction and develop guidelines for sustained service rates to be used in planning networks for limited access highways.
3. Follow the Departments strategy and principles of the Strategic Highway Safety Plan which include the following items: collaboration for roadway safety, safer behaviors, safer vehicles, safer roadways.
4. Through the efforts of the Traffic Incident Management Program, improve coordination/communication, develop relationships, and provide on-going training to emergency responders within D5.
5. Routine evaluation of resources provided within current contracts and efficient dispatching.
6. Prompt notification through hourly system checks and response from ITS maintenance based off of contracted performance measures.

****The arterial quarterly goal is to maintain the travel time reliability and improve if possible. Trailing Twelve Month (TTM) measures are illustrated on the individual corridor pages. Systematic improvements to lower the quarterly TTI below the twelve month trailing average would only be achieveable with impacts to side streets or a reduction in throughput.*

TSM&O Strategic Plan Guideline	Performance Metric	Performance Goal	Target Goal			
			12-month Avg.	Target	Q1 Avg.	Met Target
Mobility	TTI (Avg) (AM) FMS	+/- 2% Margin of 12-Month Average	1.03	1.00-1.05	1.01	✓
	TTI (Avg) (PM) FMS	+/- 2% Margin of 12-Month Average	1.13	1.00-1.15	1.04	✓
	PTI (Avg) (AM) FMS	+/- 2% Margin of 12-Month Average	1.16	1.00-1.18	1.04	✓
	PTI (Avg) (PM) FMS	+/- 2% Margin of 12-Month Average	1.33	1.00-1.35	1.18	✓
	TTI (Avg) (AM) AMS	+/- 2% Margin of 12-Month Average	1.39	1.00-1.42	1.34	✓
	TTI (Avg) (PM) AMS	+/- 2% Margin of 12-Month Average	1.66	1.00-1.69	1.55	✓
	PTI (Avg) (AM) AMS	+/- 2% Margin of 12-Month Average	1.73	1.00-2.08	1.58	✓
	PTI (Avg) (PM) AMS	+/- 2% Margin of 12-Month Average	2.14	1.00-2.18	1.92	✓
	FMS Vol. (Avg) (AM)	+/- 2% Margin of 12-Month Average	7,130	6987-7,273	5,778	☒
	FMS Vol. (Avg) (PM)	+/- 2% Margin of 12-Month Average	6,649	6516-6781	7,289	✓
TSM&O Strategic Plan Guideline	Performance Metric	Performance Goal	Target Goal			
			12-month Total	Target	Q1 Total	Met Target
Safety	All D5 Roadway fatalities	Vision Zero- Drive Down Fatalities	605	0	130	☒
	Secondary Crashes	Vision Zero- Drive Down Secondary Crashes	600	0	217	☒
	Roadway Clearance Time	≤ Open Roads Policy goal	41.2	60 min	40	✓
	Open Roads	≤ Open Roads Policy goal	34.8	60 min	34.5	✓
	Road Ranger Response	≤ Contractually required reponse time	18.5	30 min	17.6	✓
	RISC Clearance	≤ Contractually required reponse time	56.8	90 min	82	✓
TSM&O Strategic Plan Guideline	Performance Metric	Performance Goal	Target Goal			
			12-month Avg.	Target	Q Avg.	Met Target
Infrastructure	Device Uptime	≥ 95% Device (CCTV, DMS, TSS) Availability	98%	95%	98%	✓
	Network Uptime	≥ 99% Network Uptime	99%	99%	99%	✓
	Systems Uptime	≥ 95% System's Availability	99%	95%	99%	✓

***Due to the ongoing global pandemic regarding the COVID-19 virus, mobility continues to be impacted in Q1 of FY21.

- The ICM operators worked 27,884 total events for Q1 of Fiscal Year 2021, which is higher than the Q1 of Fiscal Year 2020 of 27,142.
- The ICM operators worked 4,014 events with lane blockage for Q1 of Fiscal Year 2021**,** which is up 288 events from Q1 of Fiscal Year 2020.
- Secondary crashes on CFX roads for Q1 2021 is showing a downward trend as it compares to the Q1 2020 data (reference page 38).
- Secondary crashes on FDOT roads for Q1 2021 is showing an upward trend as it compares to the Q1 2020 date (reference page 37).
- ICM Traffic Signal Engineers implemented 31 diversion routes during Q1 of 2021. This is down from the current 12-month trailing quarterly average of 35 diversion routes.
- The ICM operators worked 14 RISC events during Q1 of 2021, which was higher than the current 12-month trailing quarterly average of 11 RISC events.
- The ICM operators worked 25 Central Office Incident Notifications (COIN) events during Q1 of 2021, which is higher than the current 12-month trailing quarterly average of 20 COIN events.
- District 5 Road Rangers assisted on 18,201 events during Q1 of 2021, which is lower than the Q1 of Fiscal Year 2020 of 19,474.
- The Open Roads Duration for Q1 of 2021 is on par with the current 12-month trailing quarterly average of 34 minutes.
- The RTMC operators assisted on 1,619 Construction Events during Q1 of 2021, which is higher than the Q1 of Fiscal Year 2020 of 1,400.
- The Q1 2021 Average Roadway Clearance Time is 40 minutes, which is in line with the current 12-month trailing quarterly average of 39 minutes.
- ITS field equipment uptime availability for Q4 of 2020 is 98%, which is on par with the current 12-month trailing quarterly average of 98%.
- ITS communication infrastructure and network uptime availability for Q4 of 2020 is 99%.
- The average freeway travel time index for Q1, of fiscal year 2021, is 1.02. This is lower than the trailing 12-month average of 1.07.
- The average arterial travel time index for Q1, of fiscal year 2021, is 1.47. This is lower than the trailing 12-month average of 1.58.

ICM Spotlight #1: Semi-Truck Rollover and Fire Fully Shuts Down I-4 WB

Before Integrated Corridor Management (ICM) was implemented in Central Florida, a semi-truck rollover resulting in a fire on I-4 WB during Monday morning peak hours might have critically crippled traffic in a region for a large portion of the day. However, thanks to the continuous efforts of the District 5 Regional Transportation Management Center (RTMC), that wasn't the case. In mid-July, ICM Operators were notified by Volusia County Fire Rescue of the incident near MM 111 before Saxon Blvd and were able to immediately verify the incident on CCTV moments later. The semi-truck had veered off the road and ended up in the tree line, resulting in the vehicle and trailer catching fire and producing large amounts of smoke visible from the highway. FHP was already at the scene of the incident, blocking the right lane. A Road Ranger arrived shortly after and through careful coordination, all lanes were blocked on I-4 WB so fire rescue could reach the semi-truck.

ICM Operators immediately posted FL-511 alerts and multiple Dynamic Message Sign (DMS) warnings leading up to the incident so motorists could potentially avoid the incident, thereby reducing congestion in the area. A detour was also implemented at Exit 114/SR-472 and ICM Operators coordinated with DBi Maintenance to establish long-term Maintenance of Traffic (MOT). Rapid Incident Scene Clearance (RISC) was activated, and the Traffic Incident Management (TIM) Manager, RTMC Manager, and Arterial Corridor Manager were notified of the activation.

Throughout the entirety of the event, ICM Operators maintained a constant visual of the scene and provided constant, accurate information to all contributing maintaining agencies. This ensured those on location could operate both safely and efficiently until the scene was fully cleared.

ICM Spotlight #2: Major Crash Involving Two Semi-Trucks and a Tanker Shuts Down I-95 NB in Brevard

In late July, a morning crash forced the shutdown of I-95 for more than six hours, but the negative impact of the incident was greatly reduced thanks to the efforts of District 5 ICM Staff.

The RTMC was informed of the incident at MM 229 by FHP, and ICM Operators quickly located the incident on CCTV and identified blockage in both the center and the right lanes. After all lanes were blocked by the Brevard County Sheriff's Office, ICM Operators then coordinated with them to establish a detour at Exit 223 to divert traffic around the incident entirely.

ICM Operators then provided real-time information while observing the scene so two medivac helicopters could safely land on the highway and transport two injured motorists to nearby medical facilities. RISC was then activated and multiple DMS and FL-511 alerts were activated to warn all traffic approaching the incident. ICM Operators continued to monitor area traffic and removed the detour once congestion levels returned to normal.

ICM Spotlight #3: Multi-Vehicle Crash on SR-528 WB at MM 42 Shuts Down All NB Lanes

A goal of the District 5 ICM Program is to increase safety and travel time reliability by keeping roadways clear of incidents as much as possible so traffic can flow smoothly. This focus was demonstrated in late August on SR-528 WB at MM 42/I-95 in Brevard County when a truck pulling a car hauler overturned on the highway, blocking all lanes and the left shoulder.

ICM Operators were notified of the incident by a Road Ranger in the field and quickly located the incident on CCTV, noting that traffic was utilizing the right shoulder to get around the disabled vehicle. The Road Ranger and local law enforcement arrived at the scene shortly after and coordinated with ICM Operators to establish a detour at Exit 42B once fire rescue arrived and blocked all SR-528 WB lanes. ICM Operators then communicated with DBi Maintenance as they closed the entrance ramp from I-95 NB to SR-528 WB to ensure crews on the ground could clear the scene as safely and efficiently as possible.

Thanks to efficient communication and the District 5 RTMC's ability to act as a central coordination hub, this event was cleared in a short amount of time and its impact on traffic in the area was greatly minimized.

ICM Spotlight #4: Possible Pedestrian Jumper on Overpass Shuts Down Both Directions of I-4 in Volusia

The District 5 RTMC is ready to handle all manner of incident that occur on Central Florida's major roadways, including extremely sensitive situations involving pedestrians in crisis.

An evening incident in late August was brought to the attention of ICM Operators by FHP regarding a potential suicide jumper on an I-4 overpass near MM 109/Enterprise Rd. ICM Operators assisted local law enforcement with coordinating the closure of both directions of I-4 near the incident and DMS signs and FL-511 alerts were immediately posted to assist motorists with avoiding the area. ICM Supervisors and Operators also maintained constant communication with TIM and DBi Maintenance to ensure all participating agencies were ready for all possible outcomes.

ICM Spotlight #5: Crash Involving Jack-Knifed Semi-Truck and Pedestrian Shuts Down I-95 SB

Getting injured motorists necessary medical attention in a safe, secure environment is always a primary focus of ICM Supervisors and Operators, and these efforts were put on display during a crash resulting in major injuries in mid-September on I-95 SB in Volusia County.

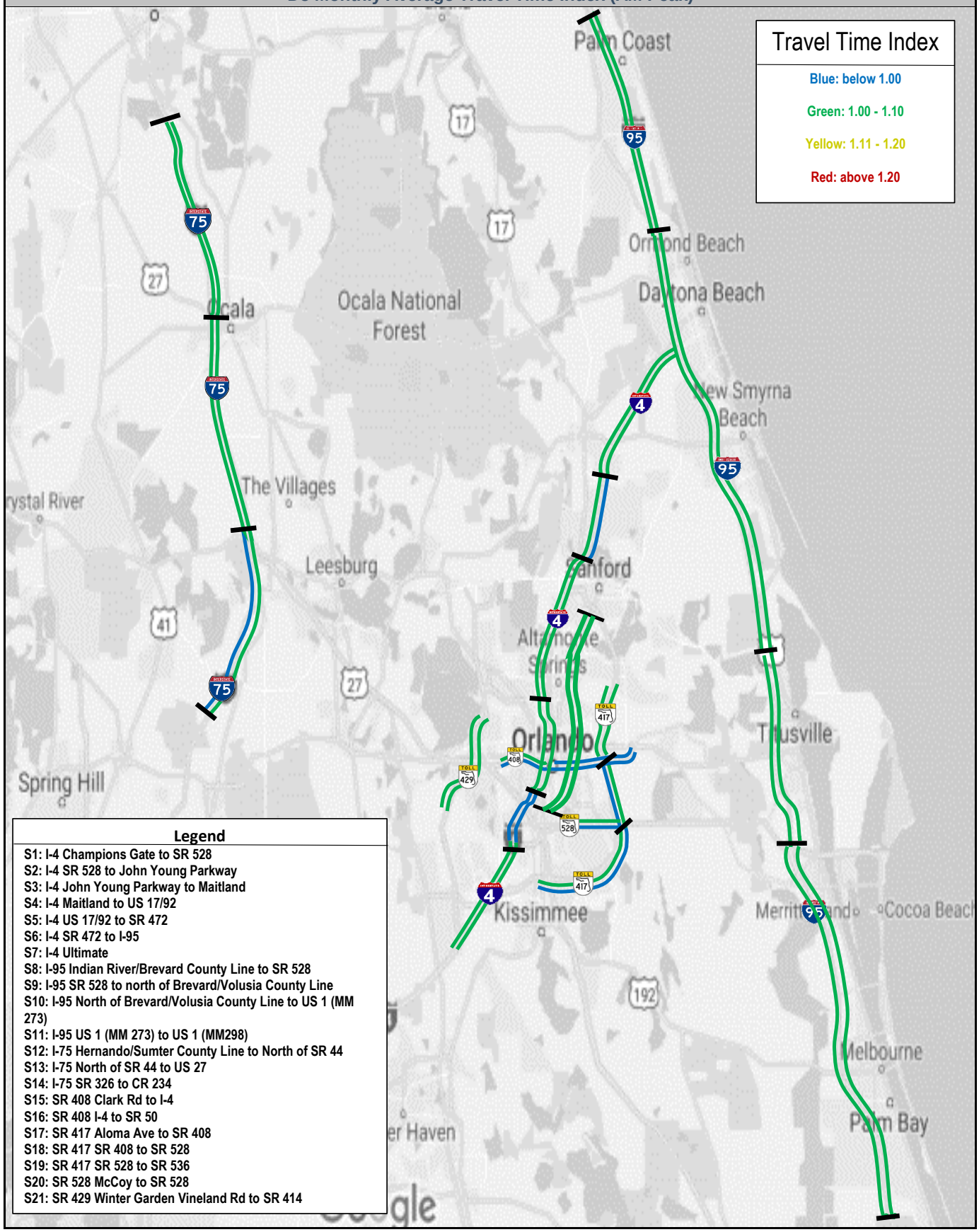
ICM Operators were made aware of the situation by FHP and the incident was immediately located on camera, showing a right lane and right shoulder blockage. Fire rescue arrived on scene shortly after and proceeded to block all I-95 SB lanes. A medivac helicopter was called in and quickly transported the injured party to the nearest medical facility. ICM Operators then coordinated with DBi Maintenance to establish a detour at Exit 278. ICM Operators then posted FL-511 alerts and DMS, ensuring approaching motorists were aware of the incident and instructed on how to circumvent it.

ICM Spotlight #6: Rollover Resulting in Fatality Shuts Down SR-429 NB in Orange County

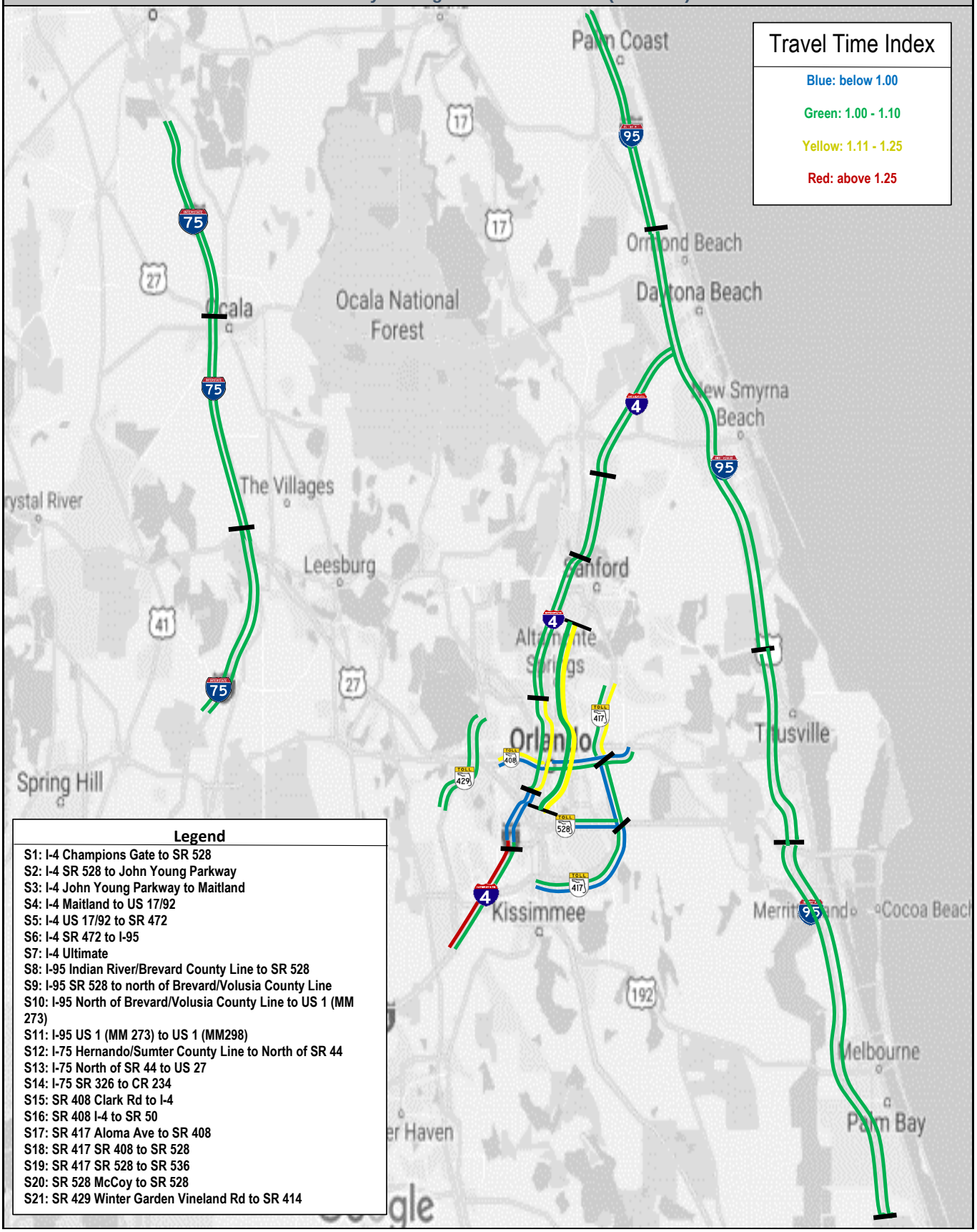
A major crash in early September involving a rolled over SUV on SR-429 NB at MM 15 resulted in a fatality and all lanes being blocked in preparation for the medivac. ICM Operators were notified of the incident by Turnpike TMC and immediately located it on CCTV. Local law enforcement was already on scene, blocking the right lane and right shoulder. As congestion began to mount, ICM Operators quickly posted FL-511 and DMS alerts. Upon receiving word that a medivac helicopter was on the way, ICM Operators then coordinated with local law enforcement and fire rescue to fully block all lanes.

ICM Operators coordinated closely with Turnpike TMC to update DMS in the area with timely information as a detour was established at Exit 15. ICM Operators also simultaneously maintained communication with the TIM Manager, wreckers, Road Rangers, and FHP. These efforts ensured all maintaining agencies were on the same page and resources were being diverted to where they were needed in real time.

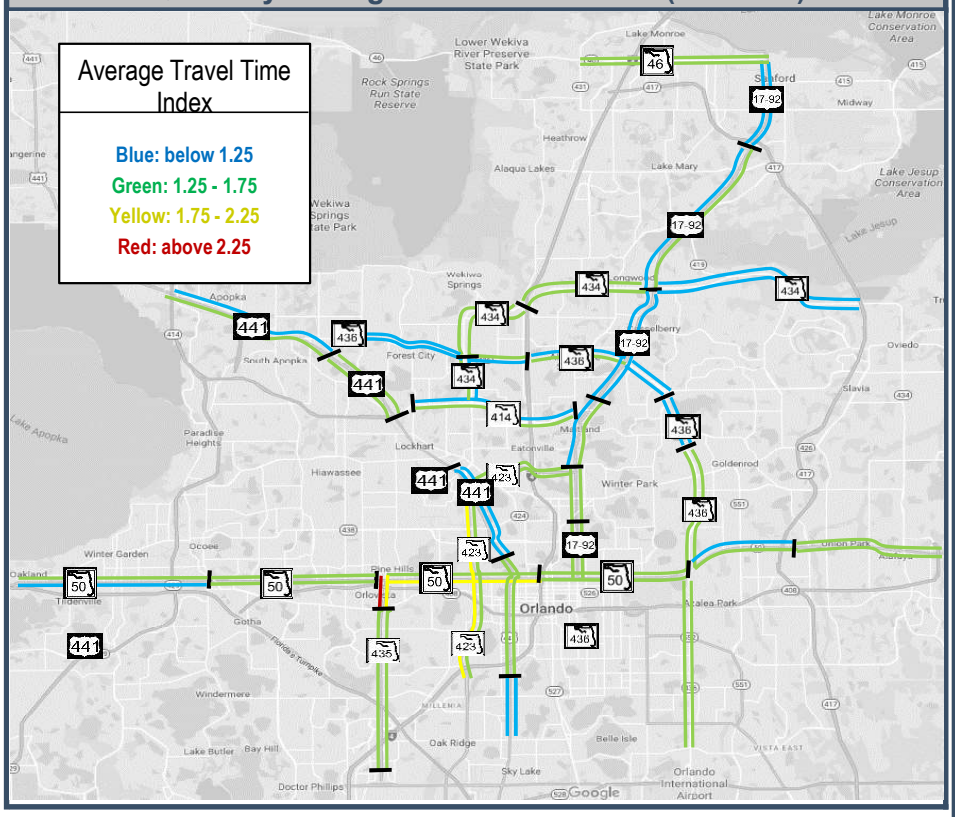
D5 Monthly Average Travel Time Index (AM Peak)



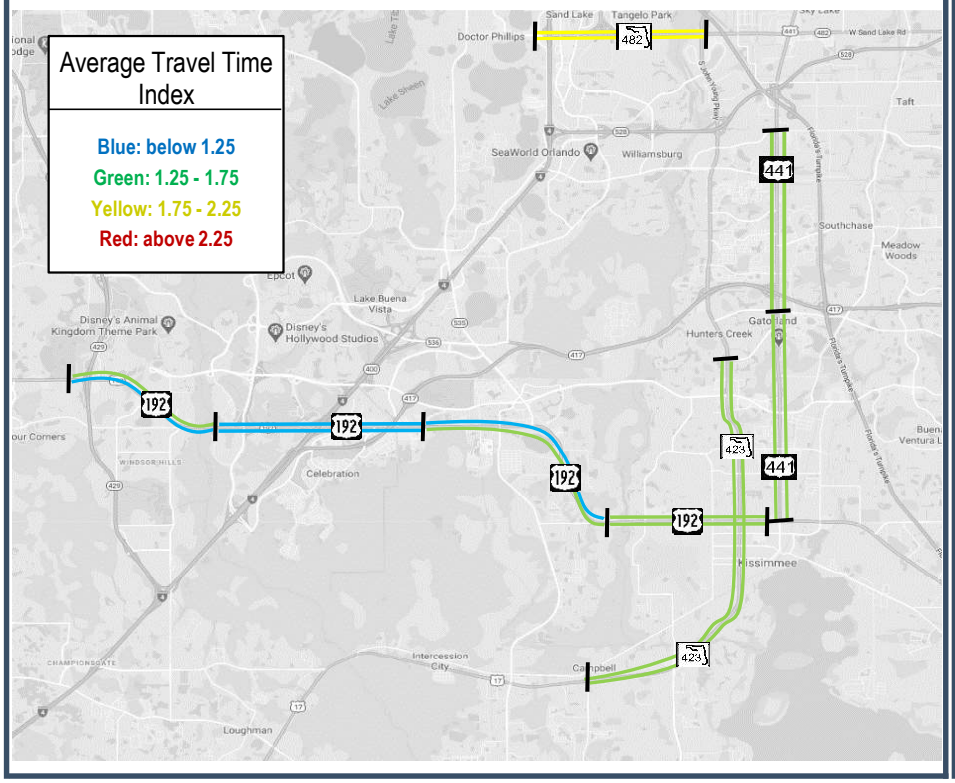
D5 Monthly Average Travel Time Index (PM Peak)



Quarterly Average Travel Time Index (AM Peak)



Quarterly Average Travel Time Index (AM Peak)



ICM Corridors

US 17/92 (9 Signals)
Airport Boulevard ↔ SR 46 (1st Street) (3.0 miles)

US 17/92 (24 Signals)
Airport Boulevard ↔ Spartan Drive (10.1 miles)

US 17/92 (22 Signals)
Mayo Avenue ↔ SR 50 (Colonial Drive) (6.1 miles)

SR 46 (12 Signals)
CR 431 (Orange Boulevard) ↔ US 17-92 (5.4 miles)

SR 50 (West Colonial Drive) (27 Signals)
Hastings Street ↔ Maguire Road (5 miles)
Maguire Road ↔ Oakland Avenue (6.7 miles)

SR 50 (Colonial Drive) (35 Signals)
SR 435 (Kirkman Road) ↔ I-4 (4.6 miles)
I-4 ↔ SR 436 (Semoran Boulevard) (6.7 miles)

SR 50 (East Colonial Drive) (18 Signals)
SR 436 (Semoran Boulevard) ↔ Constantine Street (3.0 miles)
Constantine Street ↔ Bonneville Drive (4.5 miles)

SR 414 (Maitland Boulevard (5 Signals)
Bear Lake Road/Rose Avenue ↔ CR 427 (Maitland Avenue) (5.6 miles)

SR 423/CR 423 (JYP/Lee Road) (30 Signals)
Wymore Road ↔ 36th Street (9.5 miles)

East SR 434 (16 Signals)
US 17/92 ↔ SR 417 (6.6 miles)

West SR 434 (Forest City Road) (26 Signals)
SR 414 ↔ SR 436 (1.8 miles)
SR 436 ↔ I-4 (3.3 miles)
I-4 ↔ US 17-92 (3.9 miles)

SR 435 (Kirkman Road) (18 Signals)
SR 50 (Colonial Drive) ↔ Old Winter Garden Road (1.0 miles)
Old Winter Garden Road ↔ Carrier Drive (5.7 miles)

SR 436 North (10 Signals)
SR 434 ↔ Line Drive (2.6 miles)

SR 436 (23 Signals)
SR 434 ↔ I-4 (1.8 miles)
I-4 ↔ US 17-92 (3.0 miles)

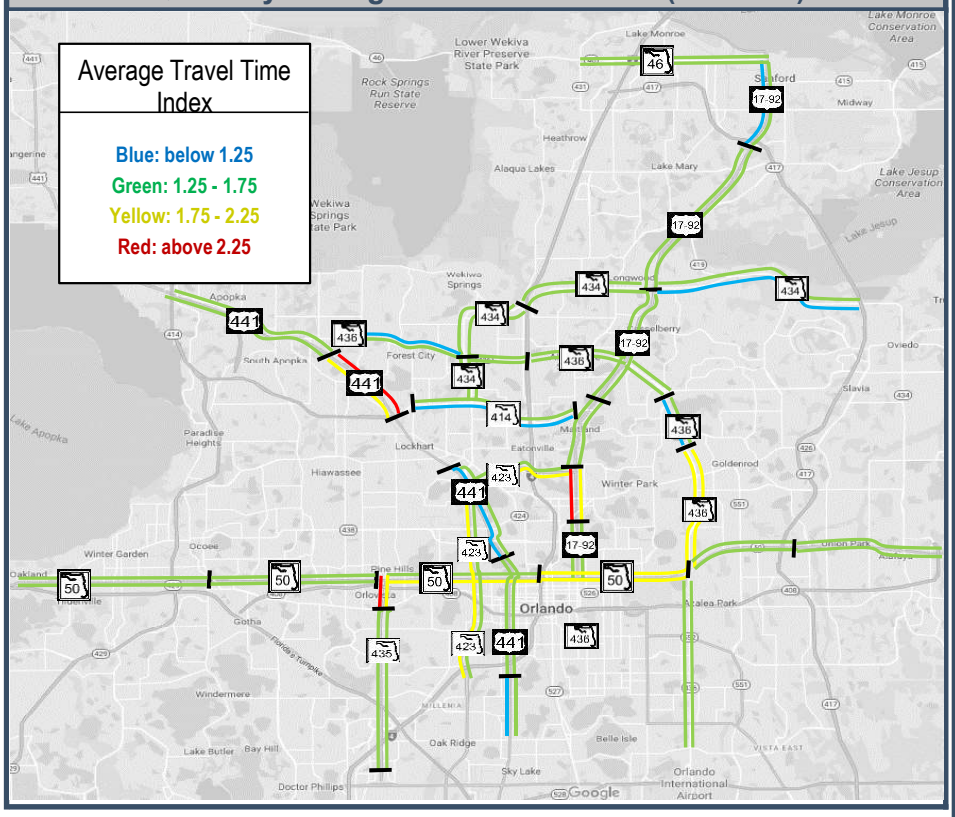
SR 436 (14 Signals)
US 17-92 ↔ Red Bug Lake Road (1.5 miles)
Red Bug Lake Road ↔ Casselton Drive (2.6 miles)

SR 436 South (28 Signals)
Casselton Drive ↔ Colonial Drive (4.3 miles)
Colonial Drive ↔ TG Lee Boulevard (6.3 miles)

US 441 (North Orange Blossom Trail) (12 Signals)
SR 429 ↔ Roger Williams Road (3.1 miles)
Roger Williams Road ↔ SR 414 (3.0 miles)

US 441 (North Orange Blossom Trail) (5 Signals)
Country Club Drive ↔ All American Boulevard (4.0 miles)

Quarterly Average Travel Time Index (PM Peak)



ICM Corridors

US 441 (North Orange Blossom Trail)(18 Signals)
Country Club Drive ↔ 35th Street (3.6 miles)
35th Street ↔ Americana Boulevard (1.8 miles)

US 441 (South Orange Blossom Trail)(10 Signals)
taft Vineland Road ↔ Town Center Boulevard (4.1 miles)

US 441 (South Orange Blossom Trail)(9 Signals)
Town Center Boulevard ↔ US 192 (4.3 miles)

SR 482 (Sand Lake Road/McCoy Road) (8 Signals)
Turkey Lake Road ↔ CR 423 (John Young Parkway) (3.5 miles)

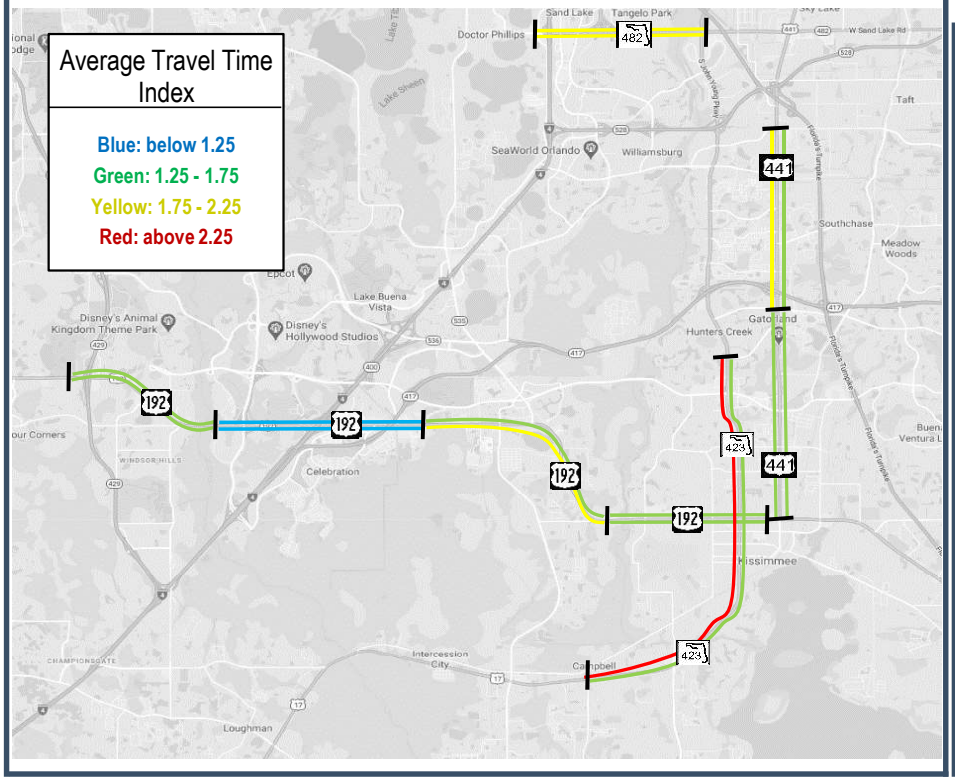
SR 423 (South JYP) (14 Signals)
CenterView Boulevard ↔ Ham Brown Road (7.5 miles)

US 192 (West Irlo Bronson Highway) (10 Signals)
Orange Lake Boulevard ↔ Griffin Road (3.2 miles)

US 192 (West Irlo Bronson Highway) (6 Signals)
Griffin Road ↔ Serelago Boulevard (4.0 miles)

US 192 (East Irlo Bronson Highway) (15 Signals)
Serelago Boulevard ↔ Old Vineland Road (4.6 miles)
Old Vineland Road ↔ Central Avenue (3.0 miles)

Quarterly Average Travel Time Index (PM Peak)



Quarterly Observations

Our quarterly goal is to maintain the travel time reliability and improve if possible. Trailing Twelve Month (TTM) measures are illustrated on the individual corridor pages. Systematic improvements to lower the quarterly TTI below the twelve month trailing average would only be achievable with impacts to side streets or a reduction in throughput.

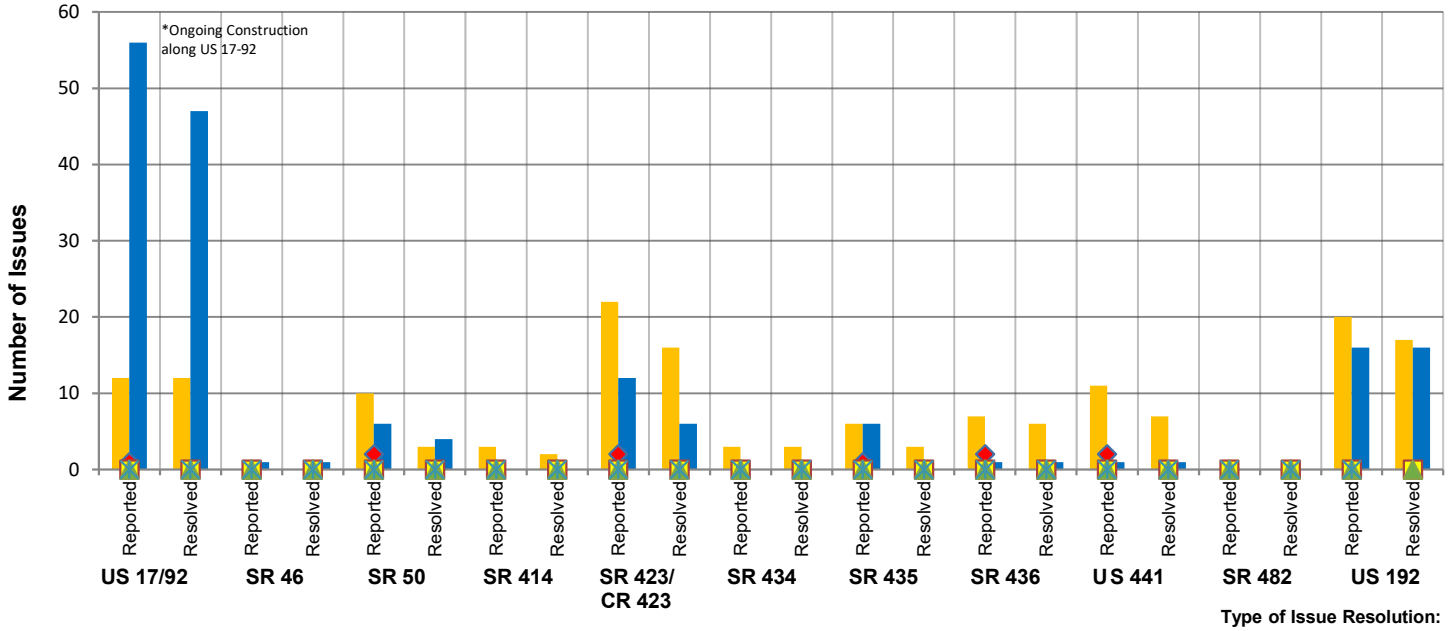
The average arterial travel time index for quarter 1 of fiscal year 2021 is 1.47. This is lower than the trailing 12-month average of 1.58.

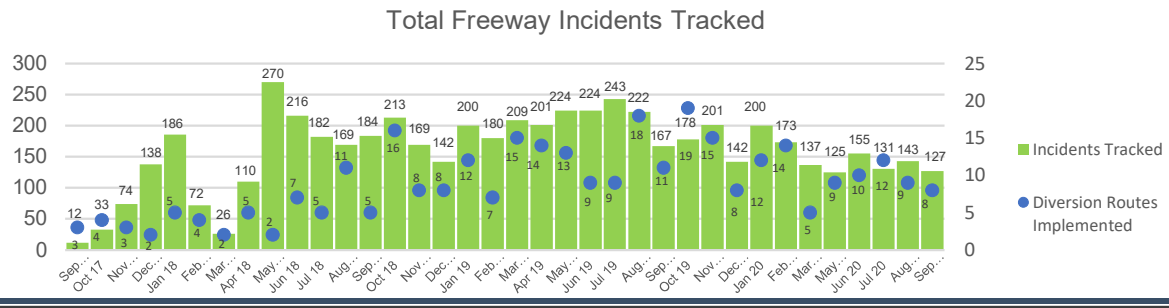
Performance measures indicate that average travel times and traffic volumes started to increase during this quarter. Peak hour profiles and traffic patterns are impacted by travel conditions due to the pandemic related restrictions.

Note: Crash data were obtained from Signal 4 Analytics for Year 2016 through Year 2019. Crash type listed as "Other" include off-road, animal, head-on, rollover and any other unfiltered crash types.

All travel time and volume summaries throughout report are based on Monday through Friday data when available (Weekends not included).

Arterial Issues Reported and Resolved





Type of Issue Resolution:

- Detection Issues
- Unresolved Detection Issues from Previous Month
- Equipment Issues
- Timing Issues
- Programming Issues
- Request for Assistance

Arterial Field Equipment Status

*Orange County detection issues can only be monitored for 103 out of 126 ICM intersections and 172 out of 211 state road intersections.

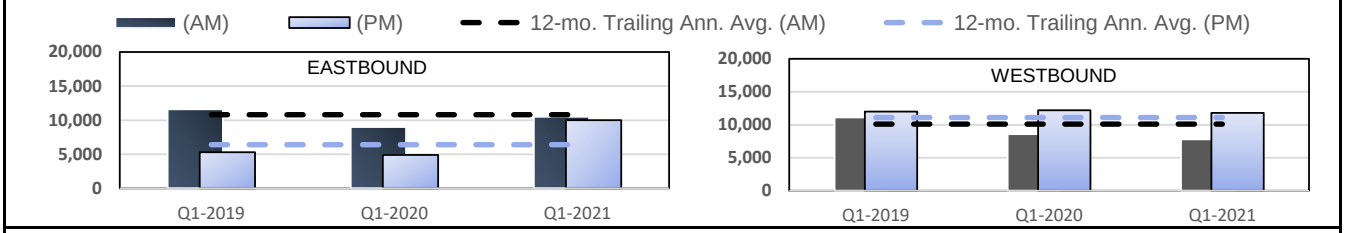
>5% Failure

Maintaining Agency	ATMS Connection				Critical Detector Performance (Left Turn, Side street vehicle/pedestrian movement)						Bluetooth Readers		GTT-Opticom Phase Selectors		Wavetronix Throughput Detectors	
	State Road (SR) Signals	Connection Online %	ICM Signals	Connection Online %	% SR Signals with Critical Detection Issues	% ICM Signals with Critical Detection Issues	SR Vehicle Critical Detectors	SR Vehicle Critical Detector % Operational	SR Pedestrian Detectors	SR Pedestrian Detector % Operational	Number of Devices	% Operational	TSP Number of Devices	TSP % Operational	Number of Devices	% Operational
City of Orlando	181	97.5%	110	97.7%	7.1%	6.0%	889	98.4%	296	99.4%	-	-	42	63.7%	-	-
Seminole County	184	99.7%	133	99.5%	2.6%	2.6%	1,278	99.6%	313	100.0%	127	98.6%	69	90.0%	-	-
Orange County	211	89.1%	126	89.6%	3.2%	5.4%	1,266	99.0%	418	100.0%	-	-	69	95.2%	-	-
City of Winter Park	10	100.0%	10	100.0%	0.3%	0.3%	60	100.0%	20	100.0%	-	-	4	100.0%	-	-
City of Maitland	10	97.3%	10	97.3%	3.3%	3.3%	60	99.5%	20	99.9%	-	-	6	100.0%	-	-
Osceola County	72	96.2%	72	96.2%	3.0%	3.0%	384	99.1%	128	99.4%	-	-	-	-	-	-
FDOT	-	-	-	-	-	-	-	-	-	-	176	93.0%	-	-	34	63.7%

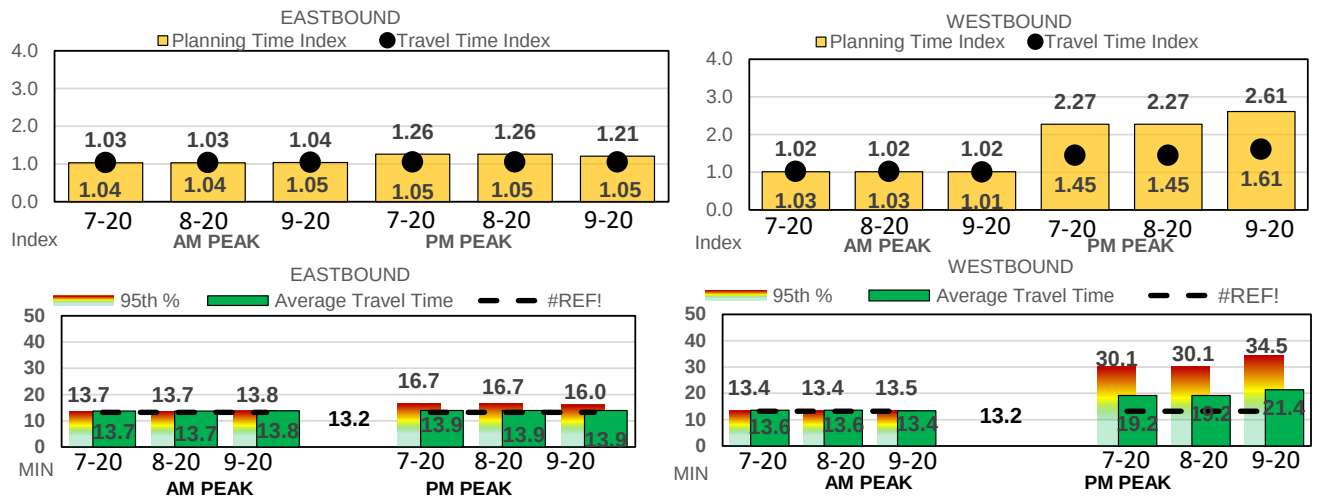
APPENDIX

Segment 1: SR 400 (I-4), CR 532 (Champions Gate Blvd) to SR 528 (Beachline), 14 miles in length, 24 TSS Detectors

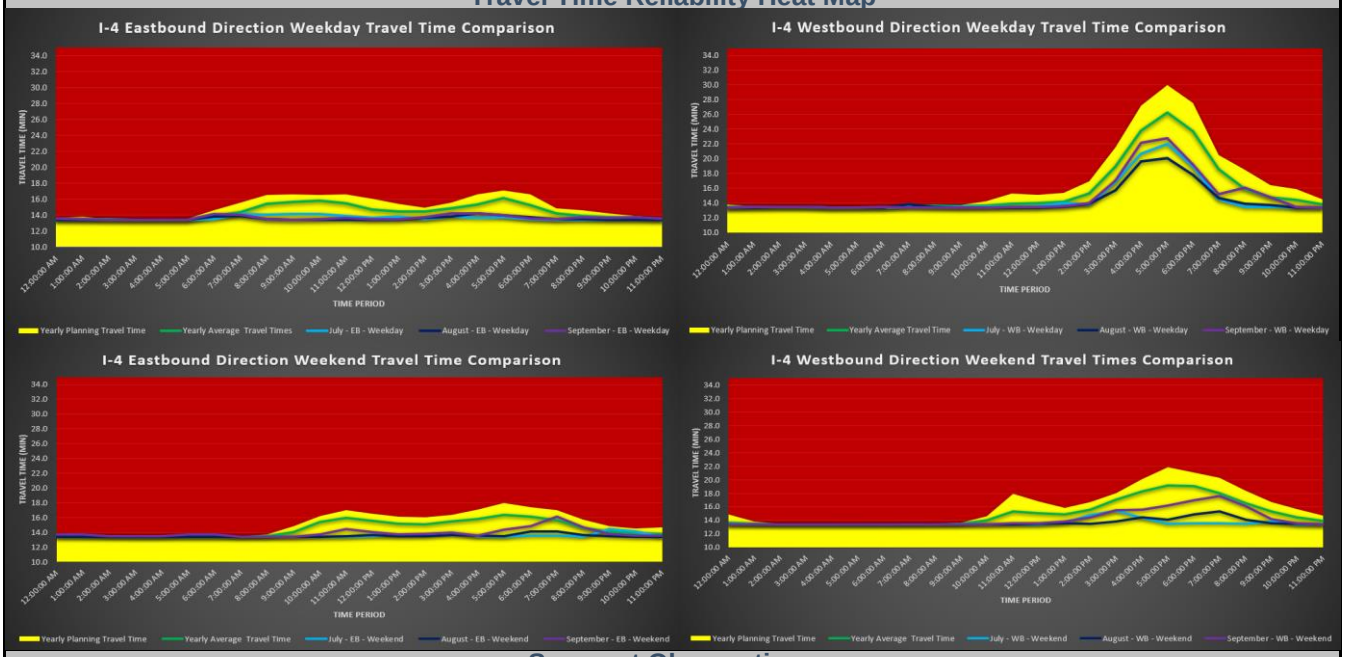
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.04 for the morning peak eastbound. This is lower than the trailing 12-month average of 1.18.

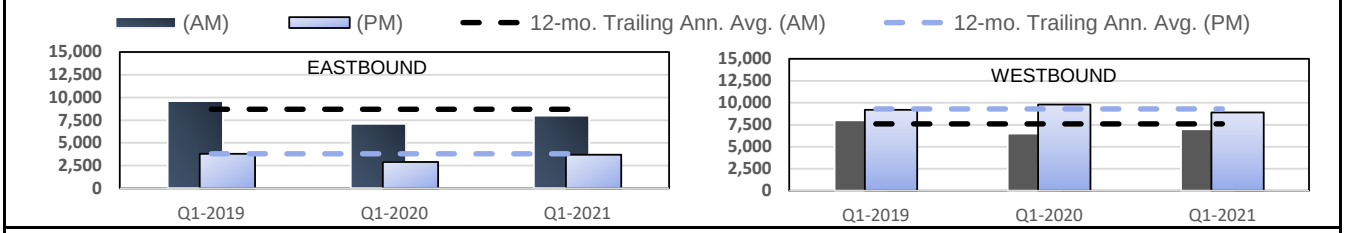
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the morning peak westbound. This is higher than the trailing 12-month average of 0.98.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.05 for the evening peak eastbound. This is lower than the trailing 12-month average of 1.31.

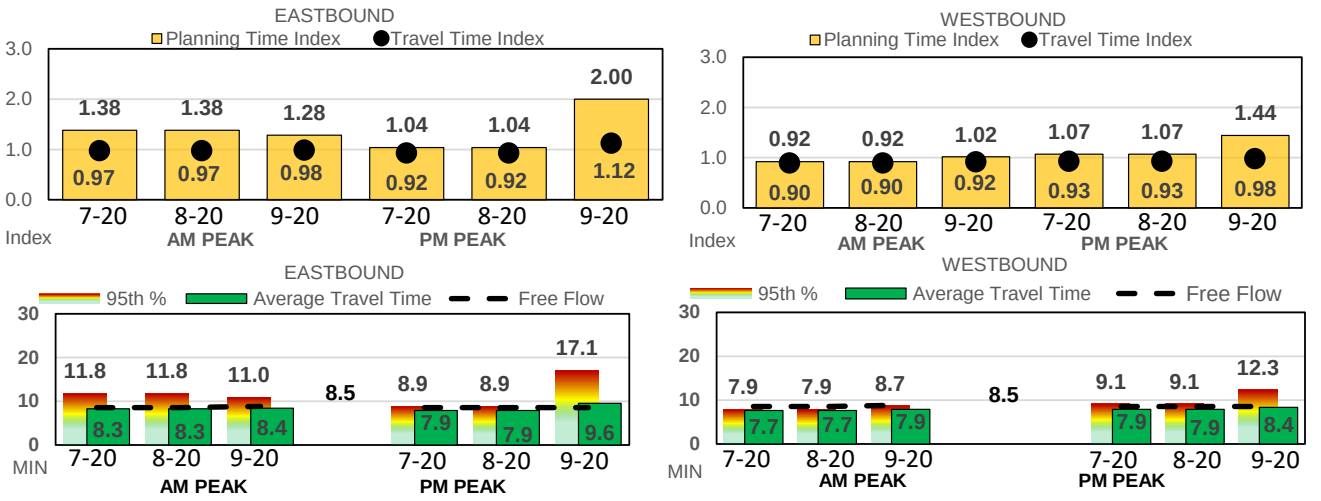
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.50 for the evening peak westbound. This is higher than the trailing 12-month average of 1.45.

Segment 2: SR 400 (I-4), SR 528 (Beachline) to CR 423 (John Young Parkway), 8 miles length, 12 TSS

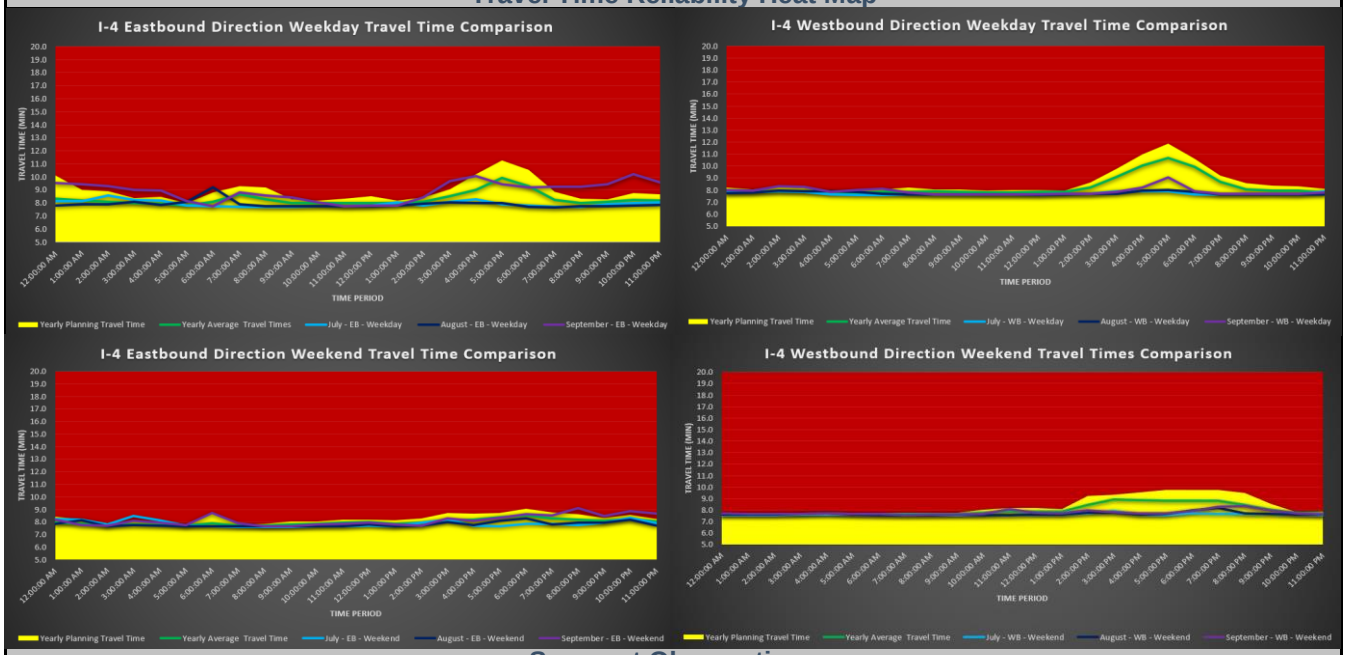
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.90 for the morning peak westbound. This is lower than the trailing 12-month average of 0.98.

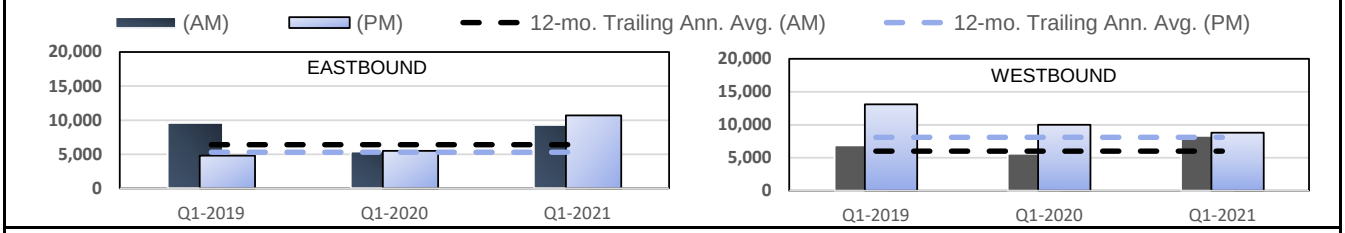
The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.99 for the evening peak eastbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.94 for the evening peak westbound. This is lower than the trailing 12-month average of 1.45.

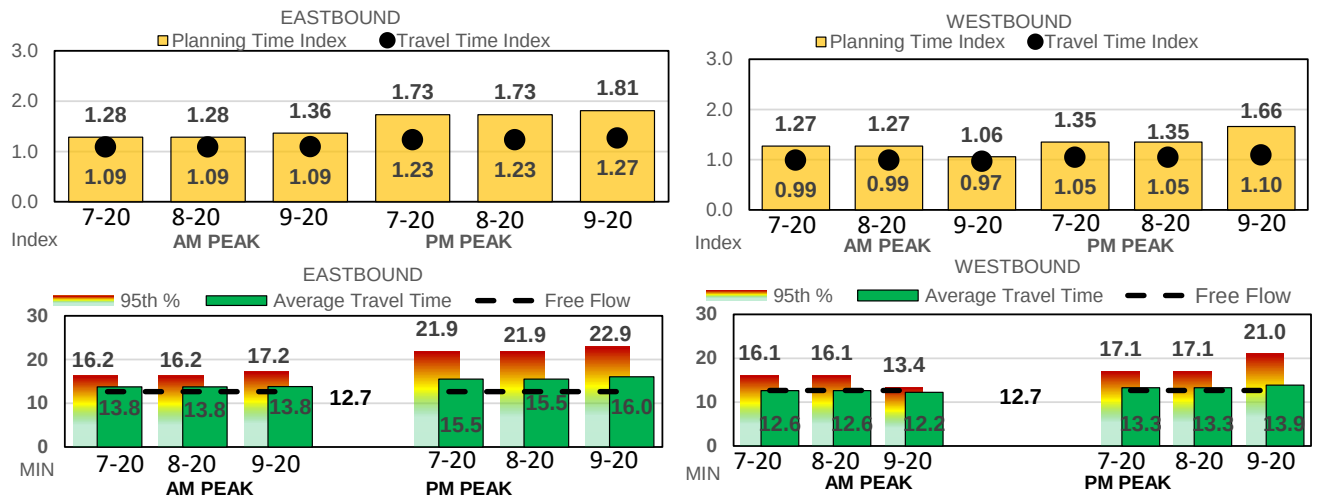
On September 16 we saw an all lanes blocked due to a crash at SR 528. This is way we are seeing a increase in the TTI during the morning hours. On September 1 we observed a six-vehicle crash resulting in an all lanes blocked at John Young Parkway during PM Peak. This caused traffic to back up for several miles. This event's duration lasted 2.5 hours. During the month of September 2020, we observed an increase in planned construction events within this segment between Grand National to John Young Parkway on I-4 eastbound. In every case, the planned construction resulted in lane reductions which at times created unexpected delays.

Segment 3: SR 400 (I-4), CR 423 (John Young Parkway) to SR 414 (Maitland Blvd) 11 miles length, 20 TSS Detectors

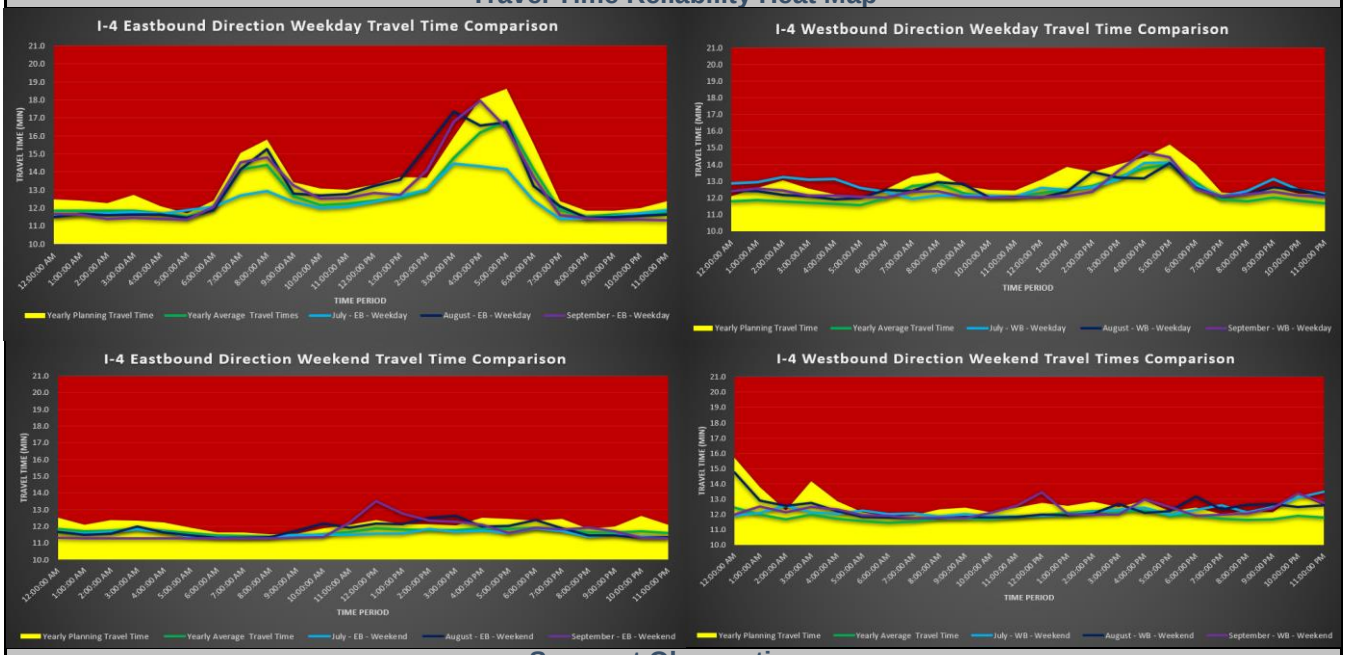
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.09 for the morning peak eastbound. This is lower than the trailing 12-month average of 1.10.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.99 for the morning peak westbound. This is higher than the trailing 12-month average of 0.98.

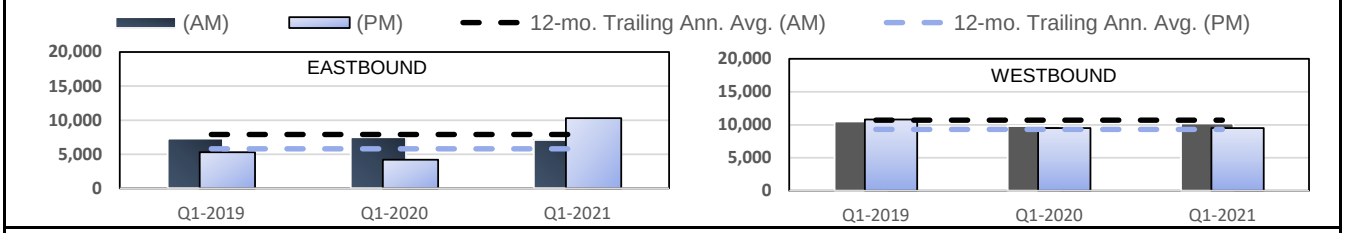
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.24 for the evening peak eastbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.07 for the evening peak westbound. This is lower than the trailing 12-month average of 1.45.

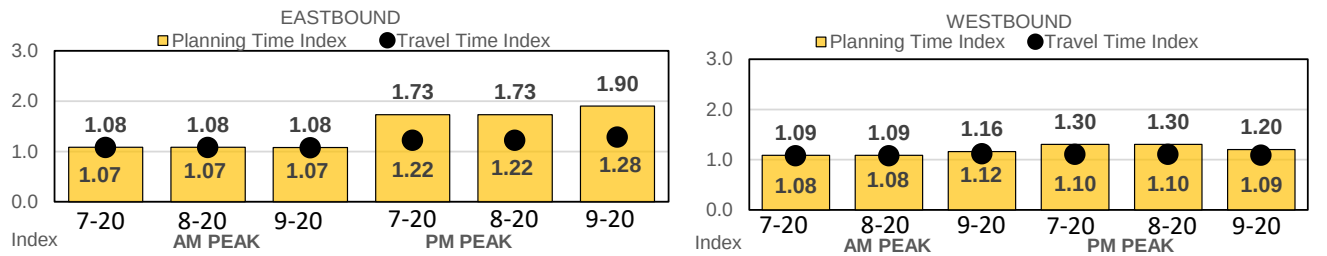
On September 8th, the RTMC observed SGL conducting an emergency roadwork repair at SR 50 which had the interstate with a lane reduction for five and a half hours. This in turn impacted our PM peak TTI and PTI for the month of September. In the month of September, the RTMC experienced an increase in events with lane blockage as compared to the yearly trailing average. As a result, this increased the TTI and PTI eastbound on I-4 between John Young Parkway and Maitland. In July 2020, the RTMC observed 3 major incidents during the PM peak that impacted the TTI and PTI due to lane reductions. This resulted in an increase as it compares to the yearly trailing average. During the month of July 2020, we observed an increase in planned construction events within this segment between Maitland Blvd and John Young Parkway on I-4 westbound. In every case, the planned construction resulted in lane reductions which at times created unexpected delays.

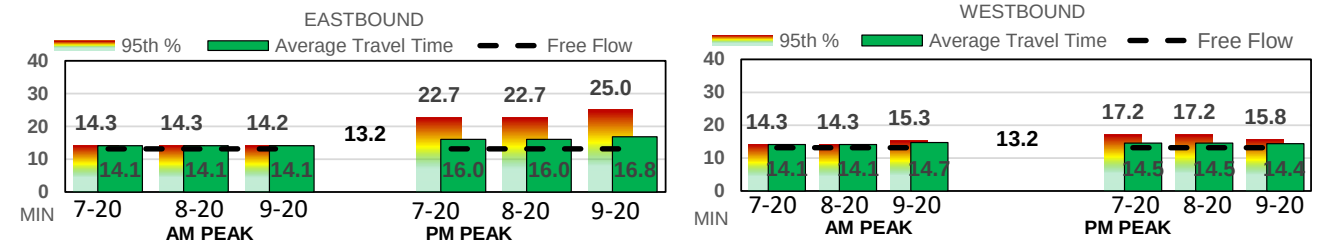
Segment 4: SR 400 (I-4), SR 414 (Maitland Blvd) to US 17/92 14 miles length, 28 TSS Detectors

Throughput Volumes

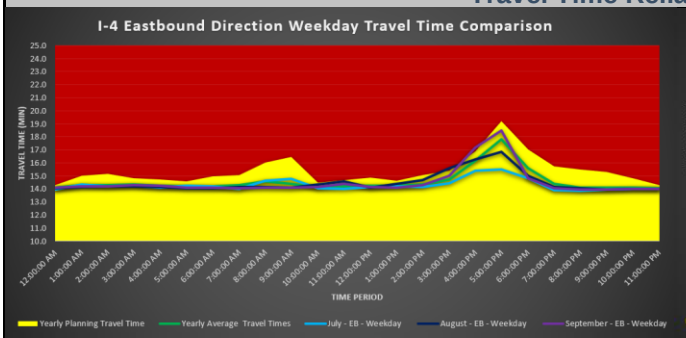


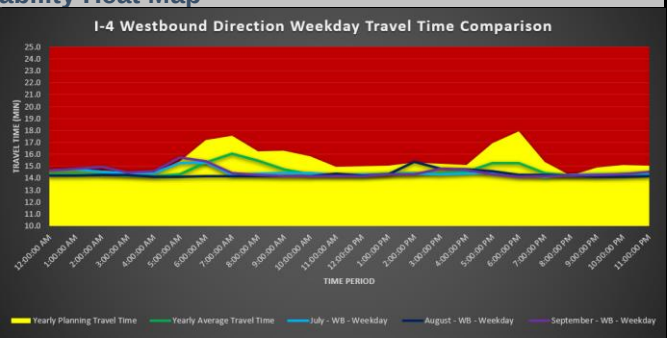
Travel Time Reliability

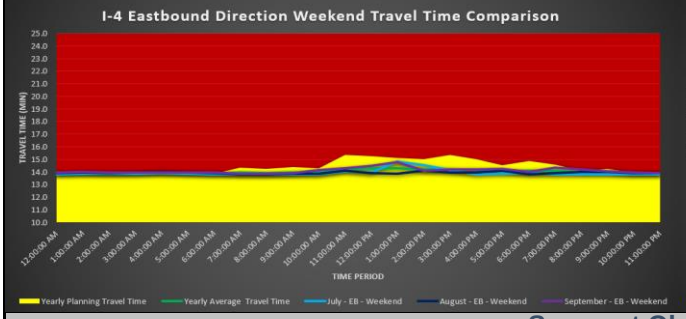


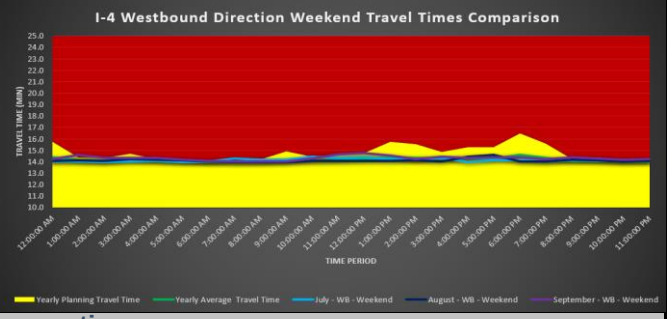


Travel Time Reliability Heat Map







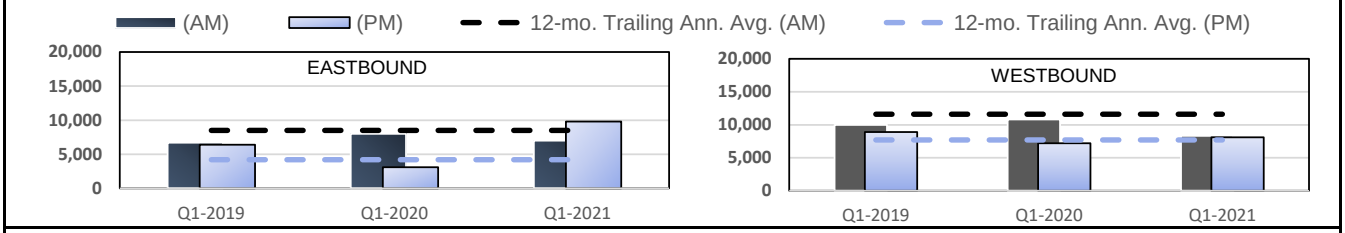


Segment Observations

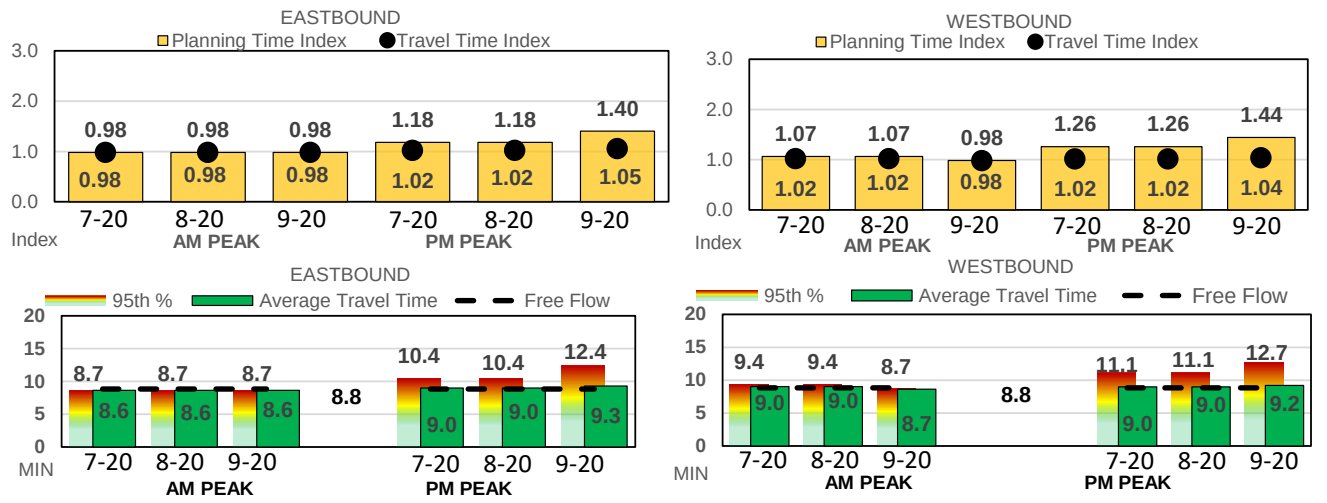
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.07 for the morning peak eastbound. This is lower than the trailing 12-month average of 1.09.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.09 for the morning peak westbound. This is higher than the trailing 12-month average of 0.98.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.24 for the evening peak eastbound. This is lower than the trailing 12-month average of 1.31.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.10 for the evening peak westbound. This is lower than the trailing 12-month average of 1.45.

Segment 5: SR 400 (I-4), US 17/92 to SR 472 10 miles length, 17 TSS Detectors

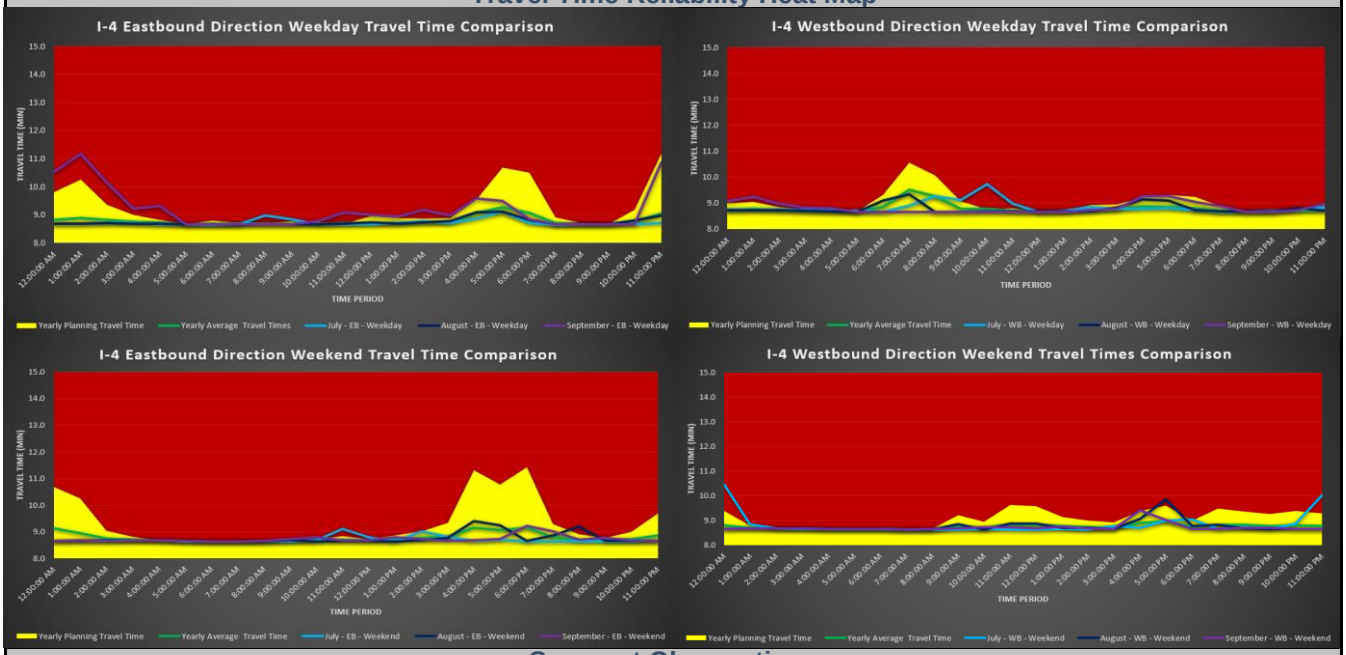
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.98 for the morning peak eastbound. This is lower than the trailing 12-month average of 0.99.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the morning peak westbound. This is higher than the trailing 12-month average of 0.98.

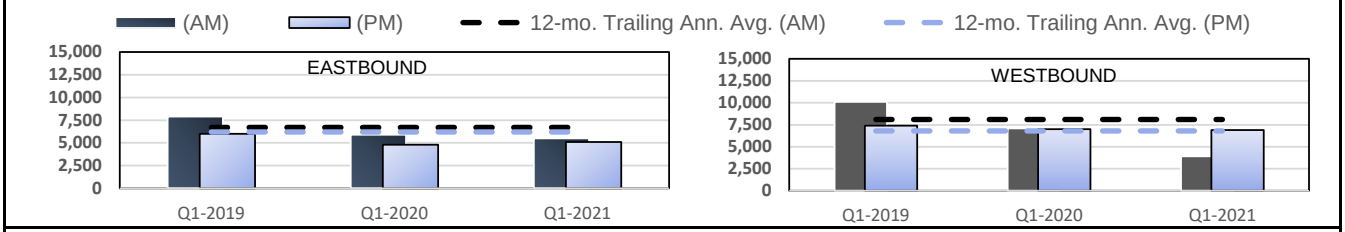
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.03 for the evening peak eastbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the evening peak westbound. This is lower than the trailing 12-month average of 1.45.

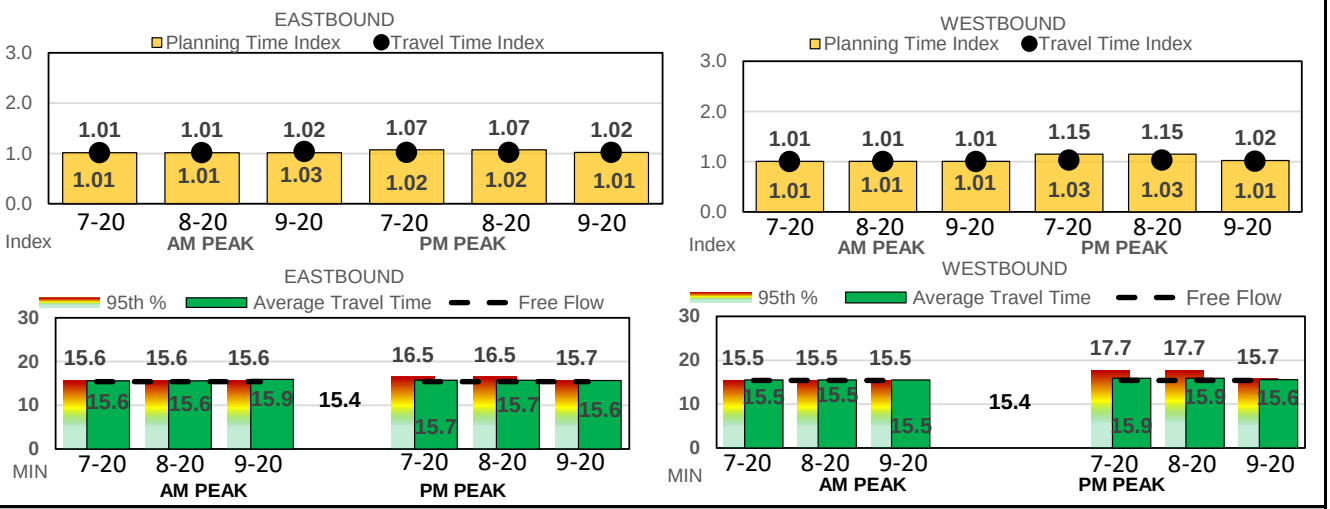
A few crashes resulted in an abnormal increase in the PTI and TTI during the AM peak in the non-heavier movement within this quarter It was also observed to have inclement weather within the area of the crashes. There was a multi-vehicle crash which increased the indexes during this time. This had multiple lanes blocked for approximately an hour which impacted traffic. An all lanes blocked involving a crash with injuries resulted in congestion for 5 miles. Congestion subsided approximately 1 hour after the crash began and once all lanes were open. In September 2020, the EB weekend saw an increase in travel times due to non-reoccurring congestion. Multiple weekend crashes with lane reduction exceeded 2 hours causing several mile of traffic congestion. As a result, this increased the PTI within the area.

Segment 6: SR 400 (I-4), SR 472 to I-95 20 miles length, 22 TSS Detectors EB/ 22 TSS Detectors WB

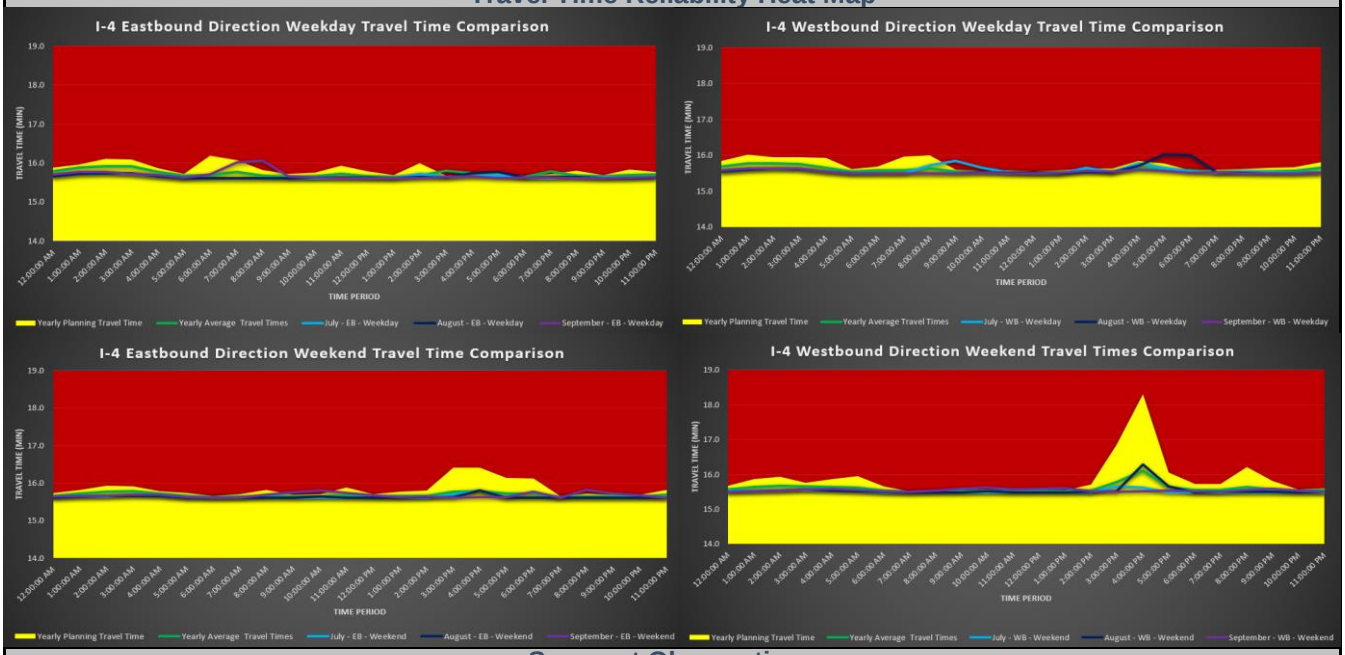
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the morning peak eastbound. This is lower than the trailing 12-month average of 1.08.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the morning peak westbound. This is higher than the trailing 12-month average of 0.98.

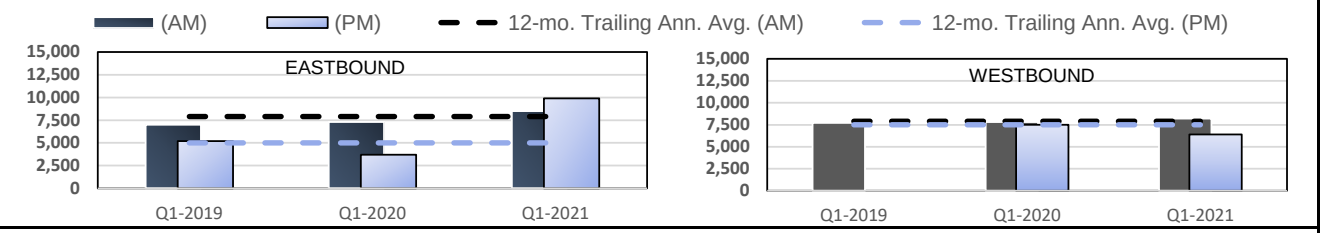
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the evening peak eastbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.03 for the evening peak westbound. This is lower than the trailing 12-month average of 1.45.

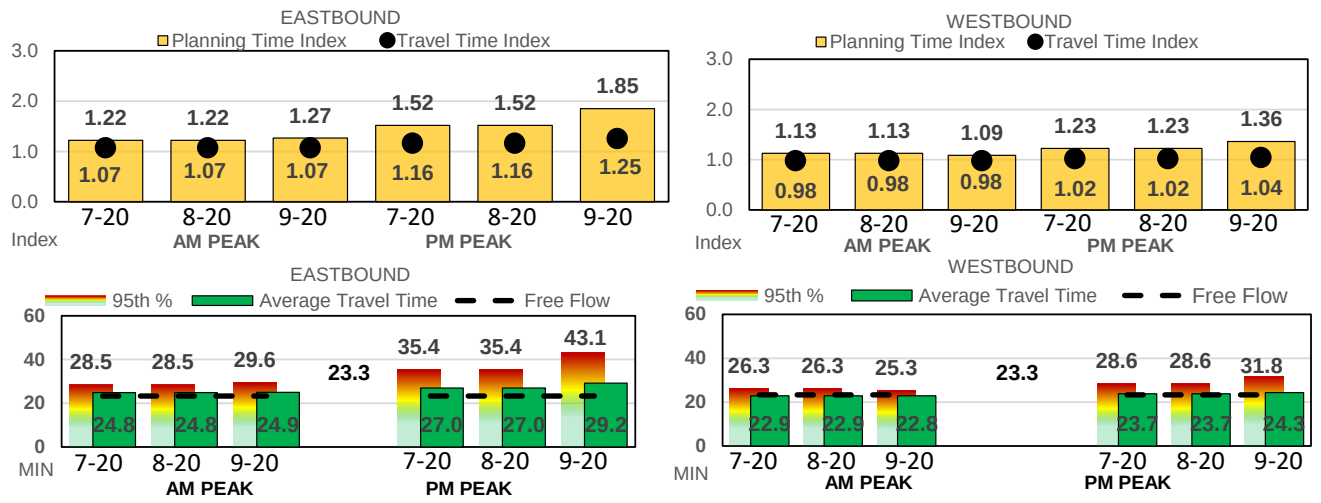
In September 2020, the EB weekday saw an increase in travel times due to a crash at MM 121 with RISC activation involving a large truck and semi that blocked 2 right lanes and caused damage to the roadway. In August 2020, the WB weekday saw an increase in travel times due to a crash at MM 120 involving a vehicle into the trees that blocked 2 left lanes.

Segment 7: SR 400 (I-4), Kirkman to EE Williamson 20 miles length

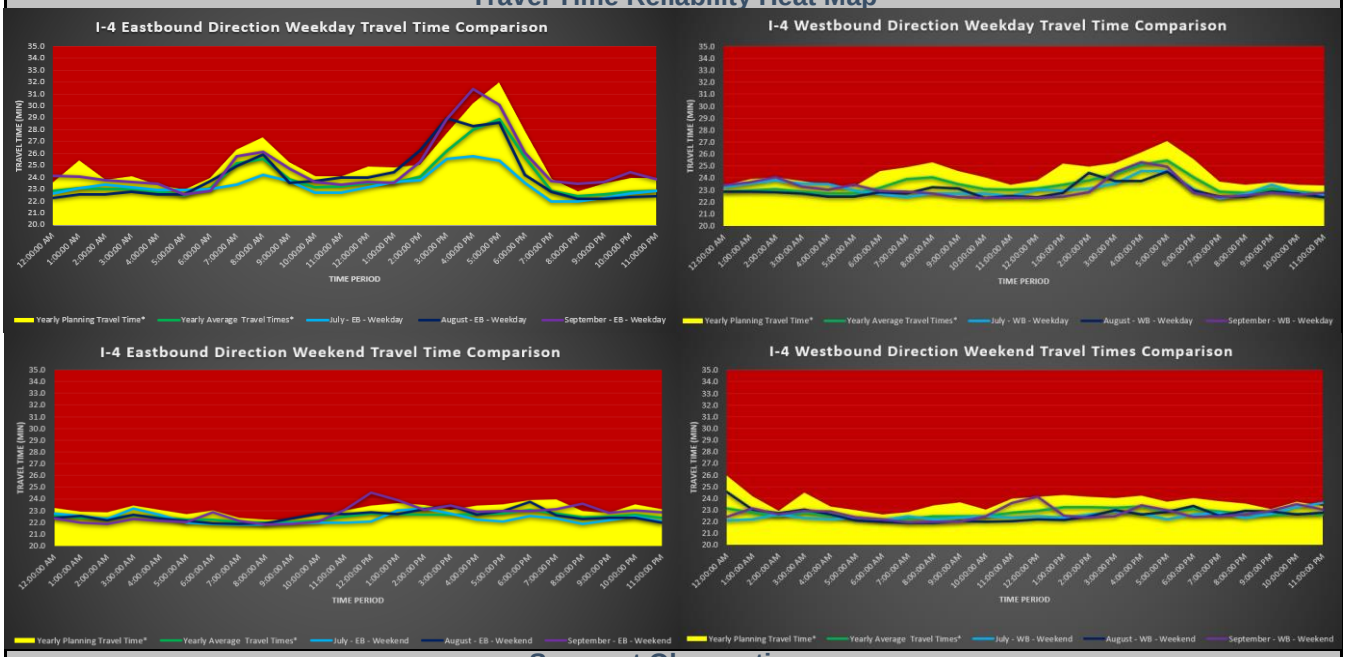
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.07 for the morning peak eastbound. This is lower than the trailing 12-month average of 1.12.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.98 for the morning peak westbound. This is higher than the trailing 12-month average of 0.98.

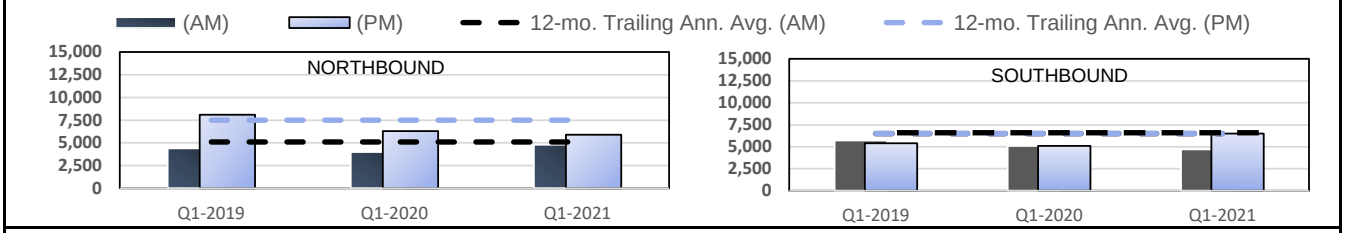
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.19 for the evening peak eastbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.03 for the evening peak westbound. This is lower than the trailing 12-month average of 1.45.

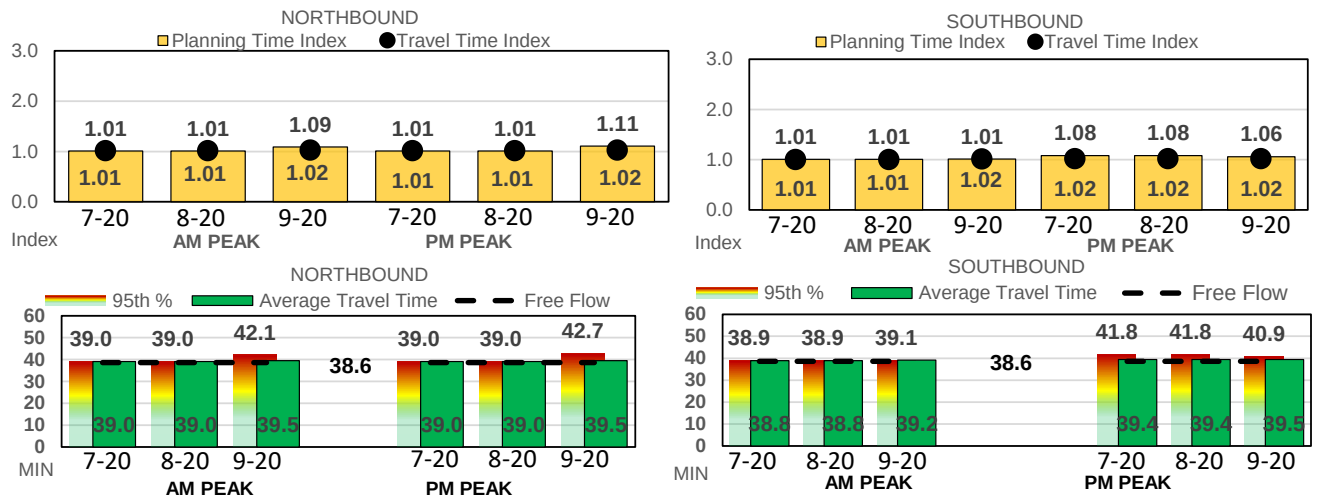
In September 2020, the EB weekday saw an increase in travel times due to non-reoccurring congestion. During the month of September 2020, it was observed to have an increase in vehicle crashes within the hours of 7pm and 11pm. This is why we are seeing an increase in the TTI and PTI during these non-reoccurring congestion times.

Segment 8: SR 9 (I-95), Indian River/Brevard County Line to SR 528

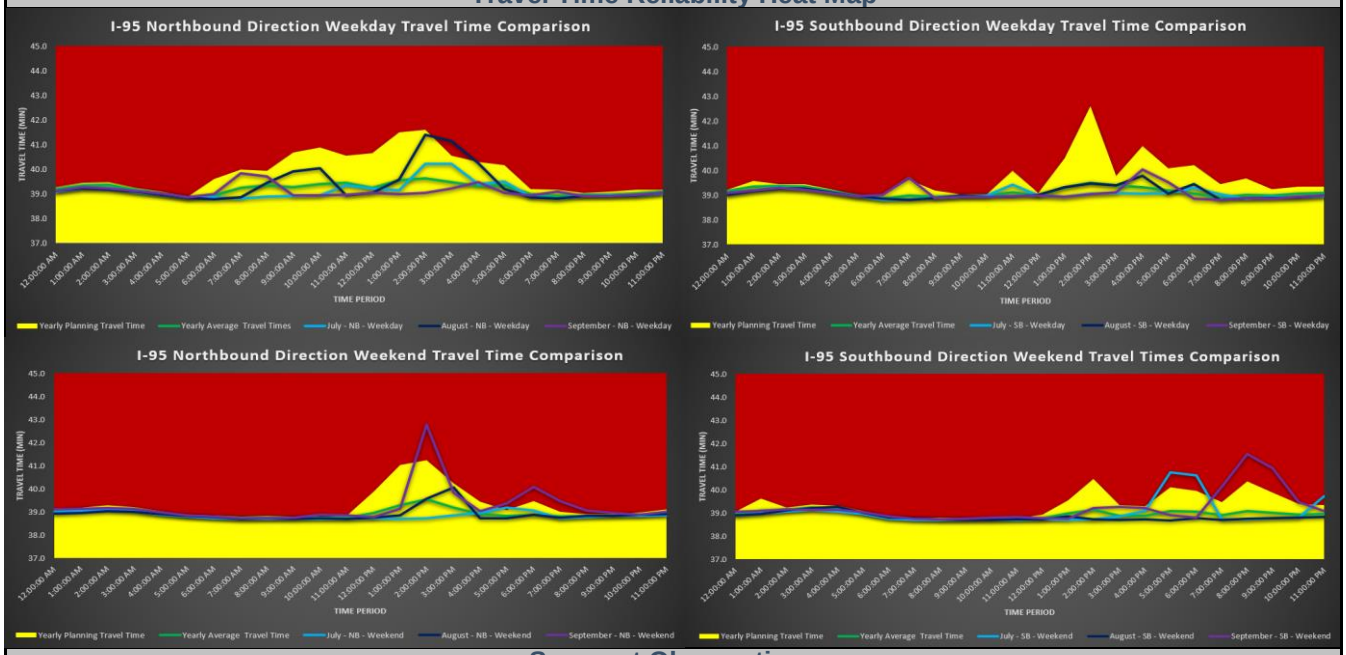
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the morning peak northbound. This is lower than the trailing 12-month average of 1.03.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the morning peak southbound. This is higher than the trailing 12-month average of 0.98.

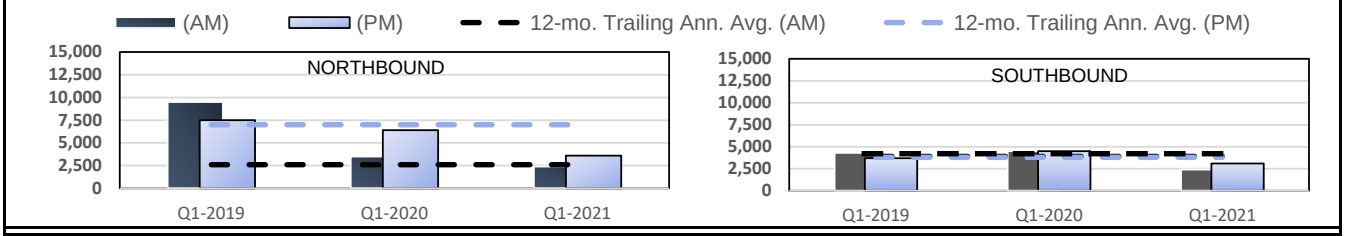
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

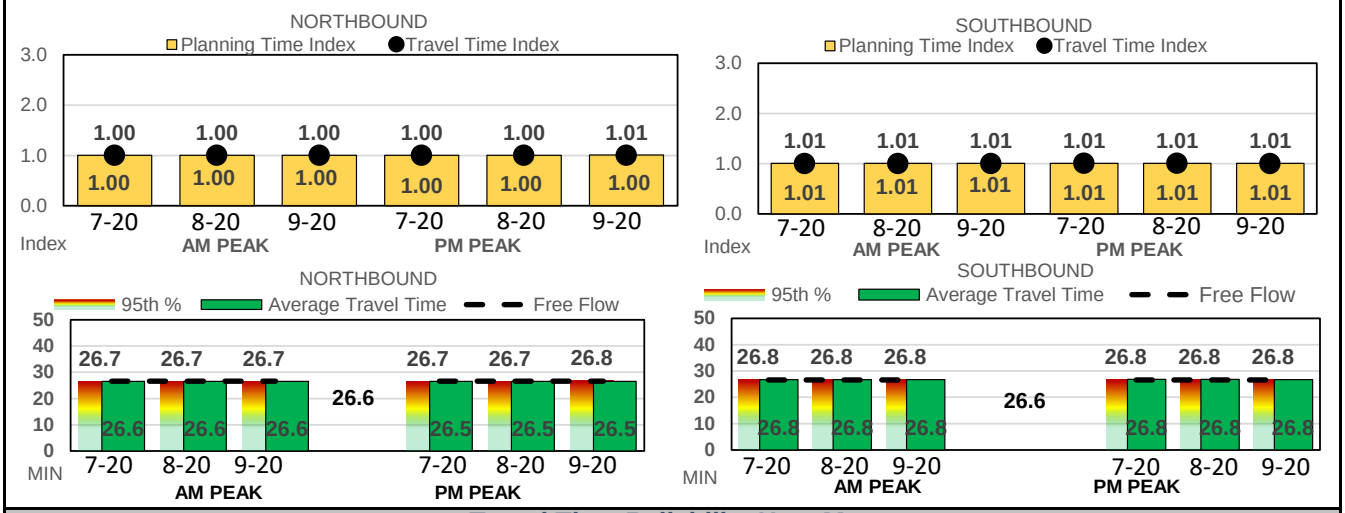
In July 2020, the SB weekend saw an increase in travel times due to a crash that required all lanes to be blocked for a medivac helicopter to land at MM 192. In August 2020, the NB weekday saw an increase in travel times due to a crash involving a jackknifed semi and overturned bucket truck at MM 199 that blocked 2 left lanes. In September 2020, the NB weekend saw an increase in travel times due to a crash that required all lanes to be closed for a medivac helicopter to land at MM 199. In September 2020, the SB weekend saw an increase in travel times due to police activity which caused all lanes to be blocked SB at MM 178. The incident involved a police chase which ended in the suspect committing suicide in their vehicle on the interstate.

Segment 9: SR 9 (I-95), SR 528 to North of Brevard/Volusia County Line

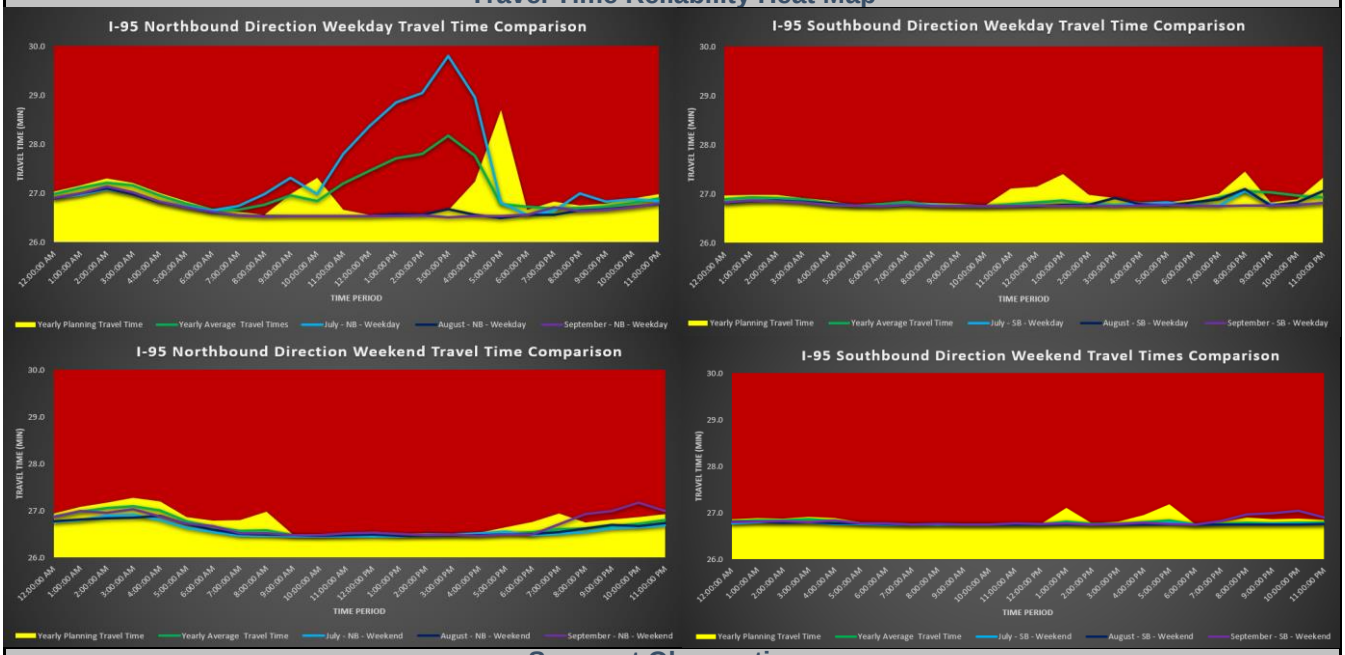
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.00 for the morning peak northbound. This is lower than the trailing 12-month average of 1.00.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the morning peak southbound. This is higher than the trailing 12-month average of 0.98.

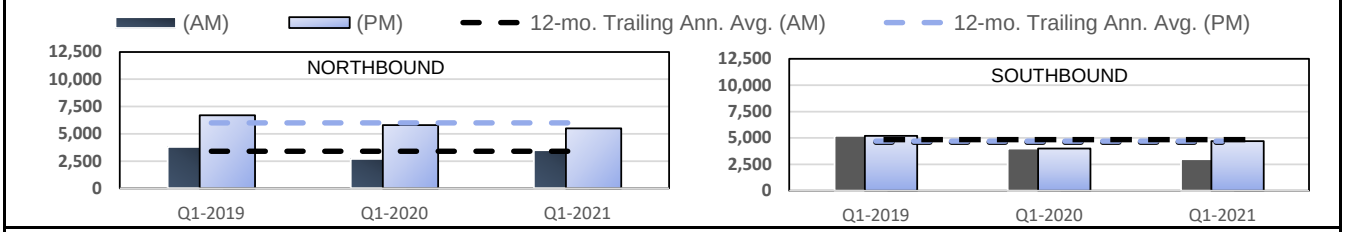
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.00 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

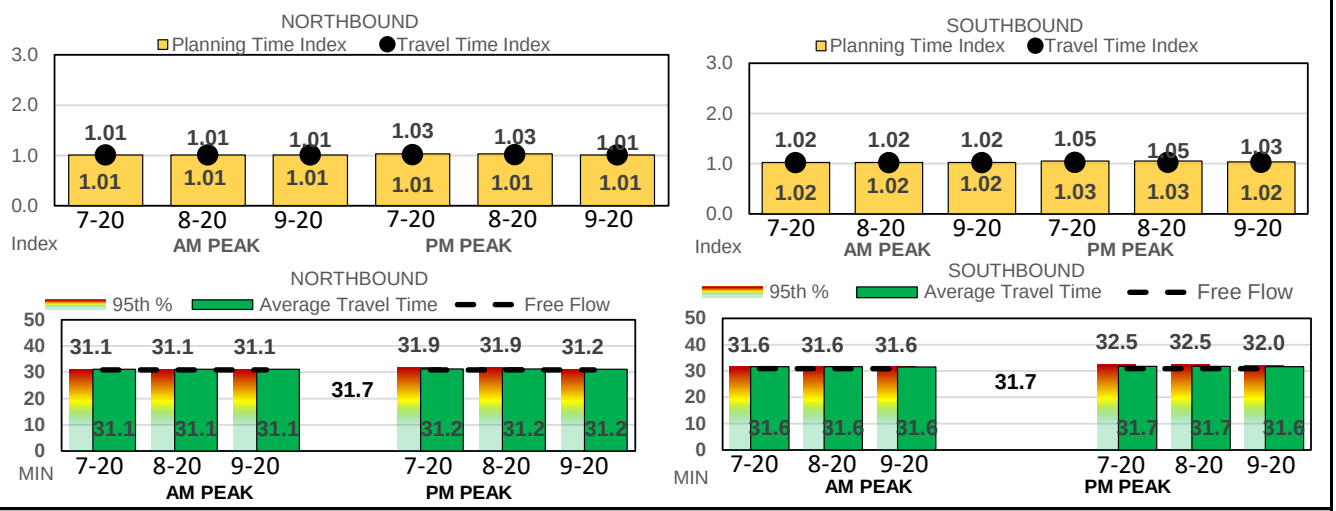
In July 2020, the NB weekday saw an increase in travel times due to a motorcycle fatality NB at MM 232 which caused all lanes to be blocked and a detour to be established at Exit 231/CR-5A. As that scene was clearing, a RISC event occurred involving two semis at MM 229 which caused all lanes to be blocked and a detour to be established at Exit 223/SR-46. In September 2020, the NB weekend saw an increase in travel times due to non-reoccurring congestion.

Segment 10: SR 9 (I-95), North of Brevard/Volusia County Line to US 1 (MM 273)

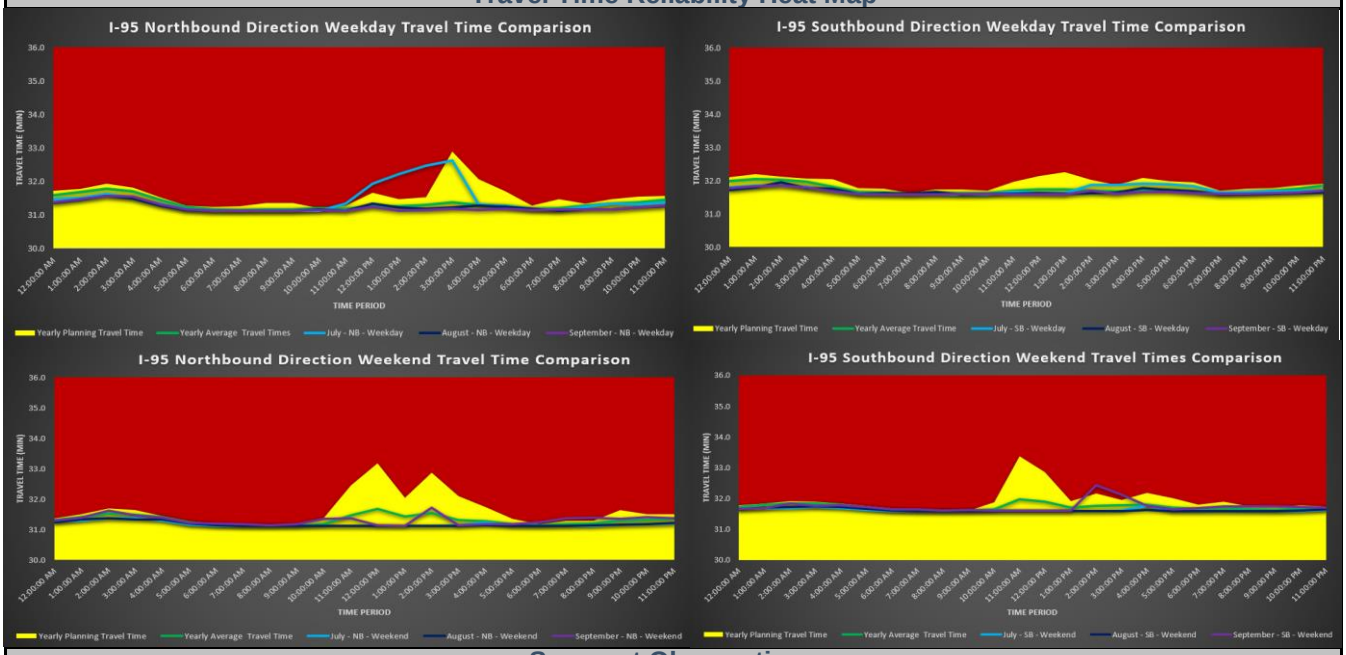
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the morning peak northbound. This is higher than the trailing 12-month average of 0.98.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the morning peak southbound. This is higher than the trailing 12-month average of 0.98.

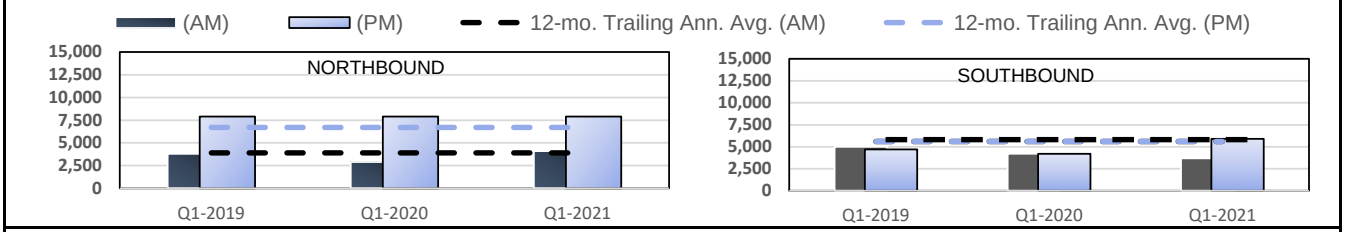
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.03 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

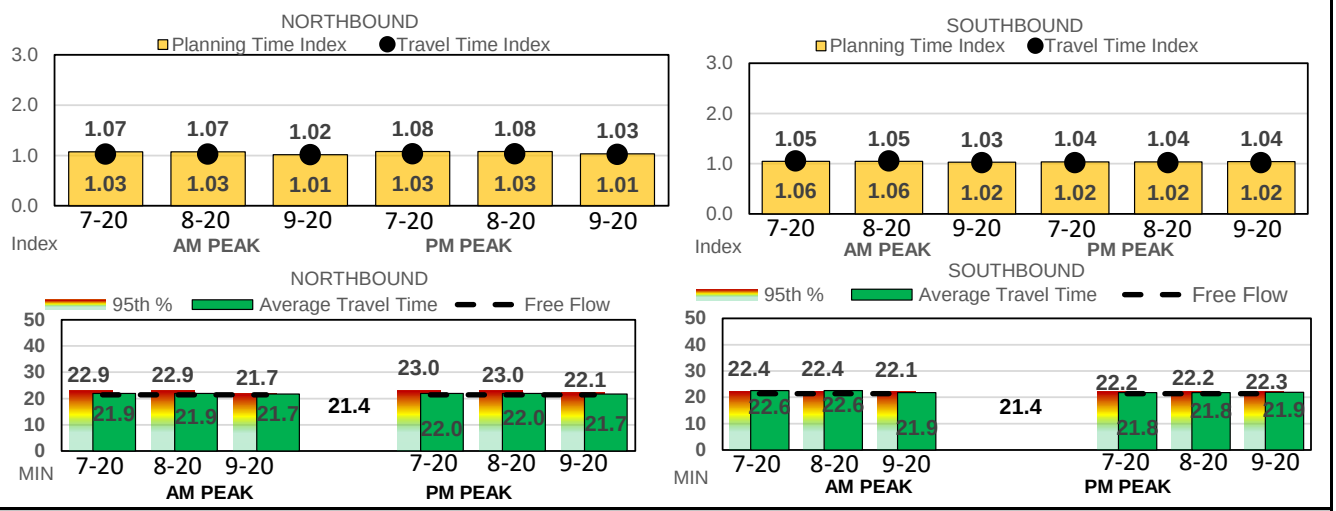
In July 2020, the NB weekday saw an increase in travel times due to a fatality crash that required all lanes to be blocked at MM 273/US-1. Traffic was diverted off onto US-1 as an alternate route. In September 2020, the SB weekend saw an increase in travel times due to a crash that required all lanes to be blocked for a medivac helicopter to land at MM 246.

Segment 11: SR 9 (I-95), US 1 (MM 273) to US 1 (MM 298)

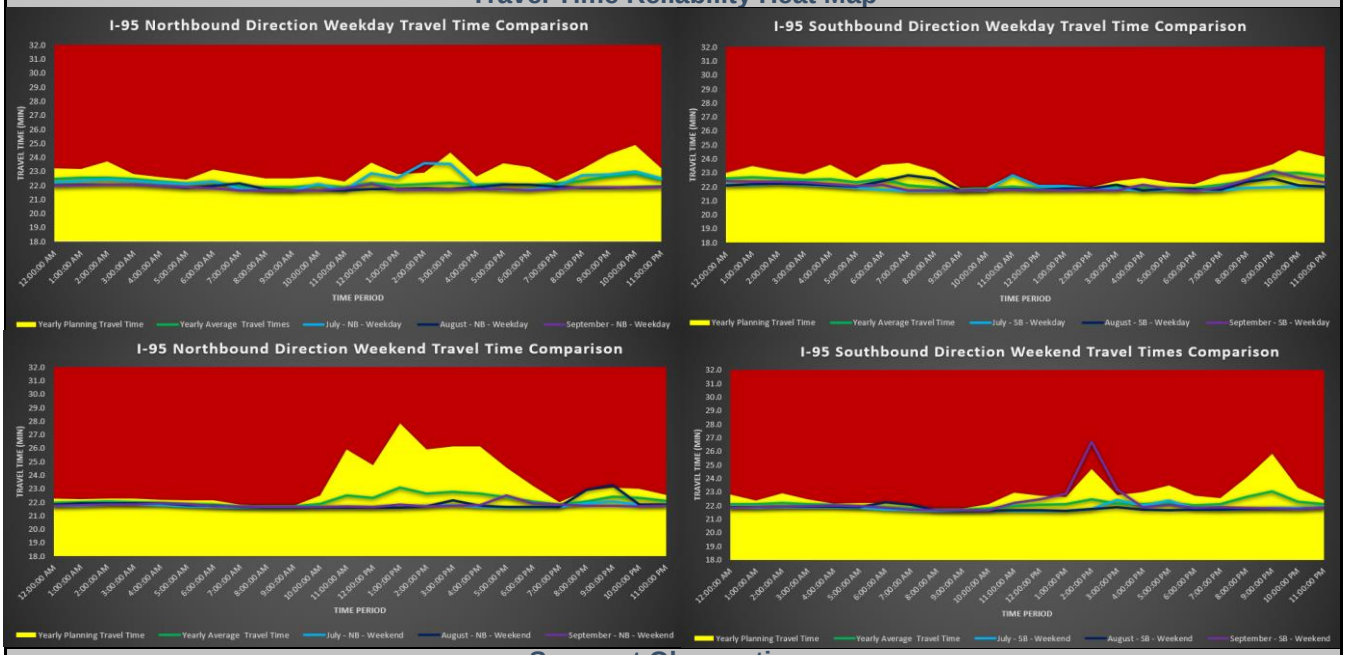
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the morning peak northbound. This is lower than the trailing 12-month average of 1.03.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.04 for the morning peak southbound. This is higher than the trailing 12-month average of 0.98.

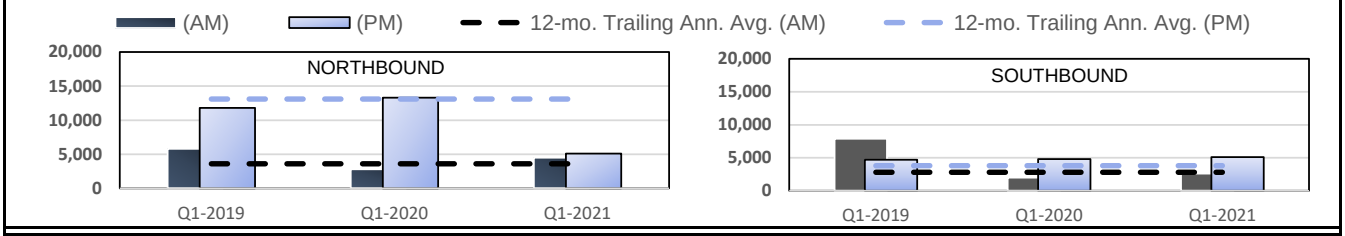
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

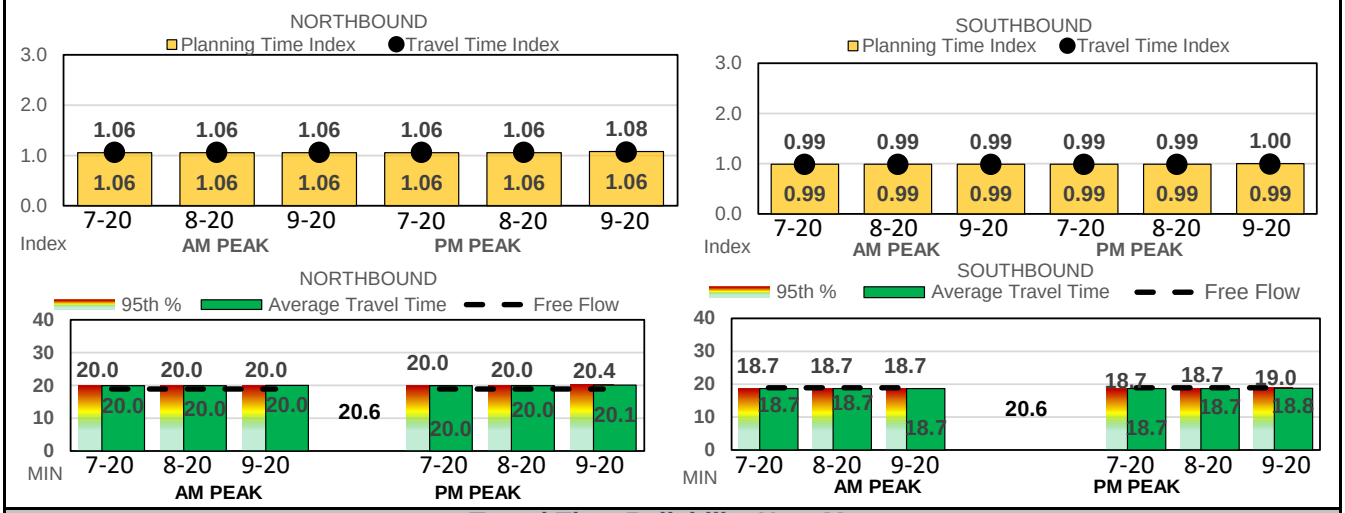
In July 2020, the NB weekday saw an increase in travel times due to a jackknifed semi blocking all lanes at MM 289. In September 2020, the SB weekend saw an increase in travel times due to a crash involving a vehicle rollover at MM 285.

Segment 12: SR 93 (I-75), MM 306 to MM 330 10 miles length, 52 TSS Detectors

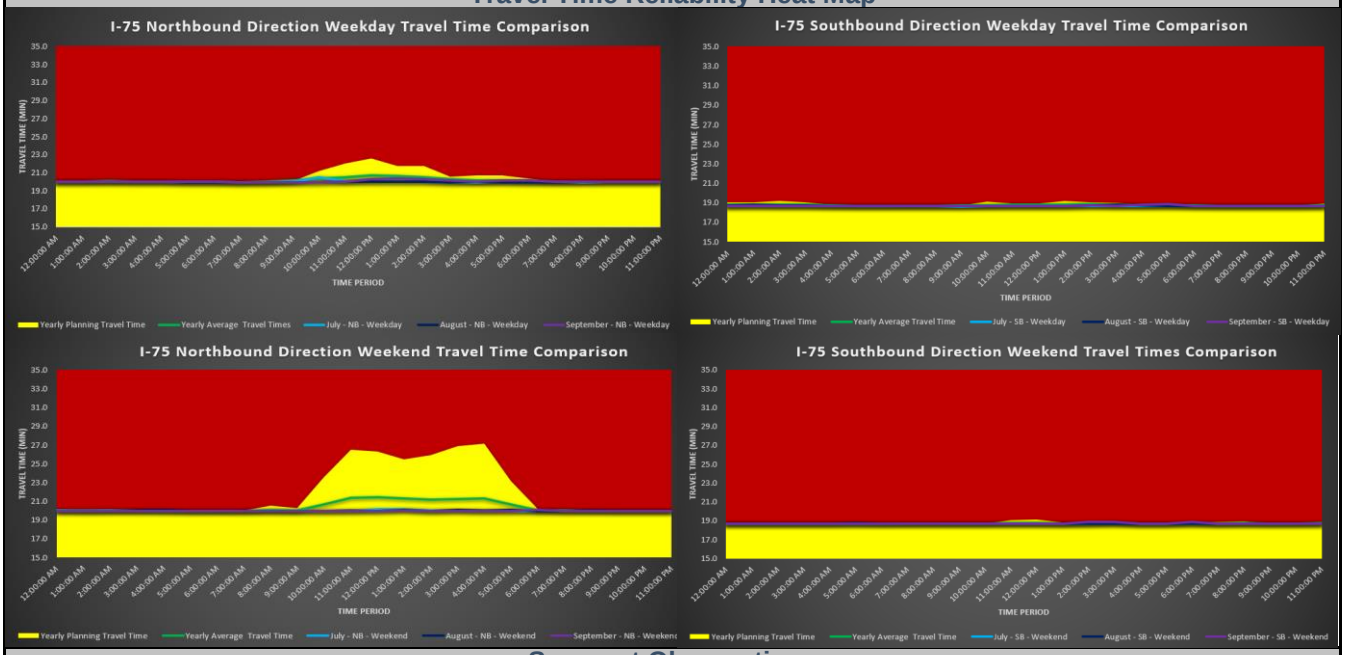
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.06 for the morning peak northbound. This is lower than the trailing 12-month average of 1.06.

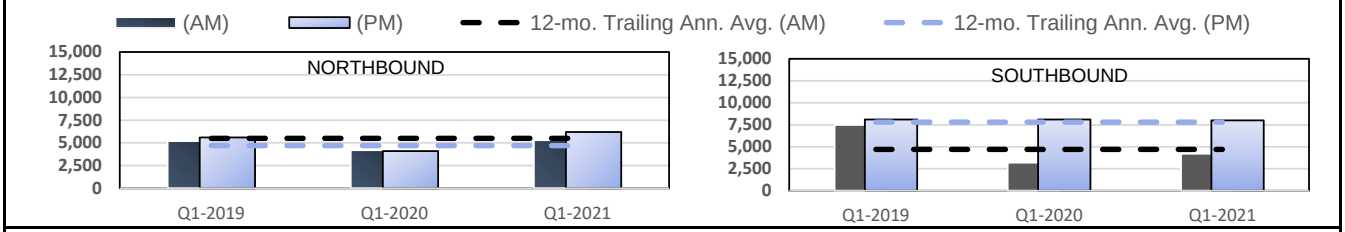
The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.99 for the morning peak southbound. This is higher than the trailing 12-month average of 0.98.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.06 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.

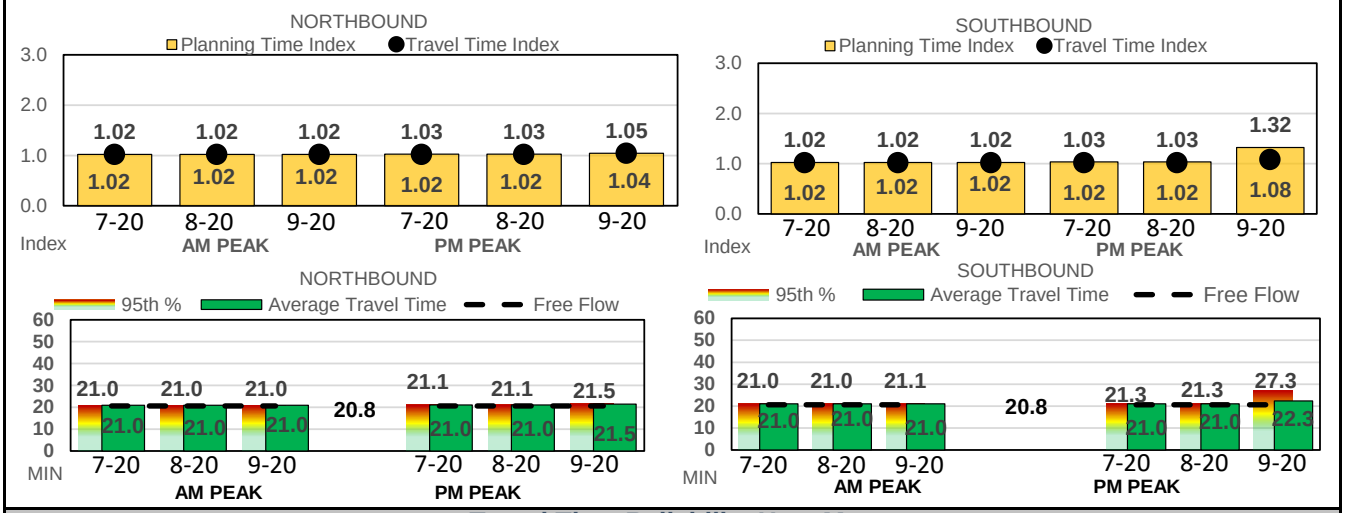
The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.99 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

Segment 13: SR 93 (I-75), US 27 to SR 44 24 miles length, 47 TSS Detectors

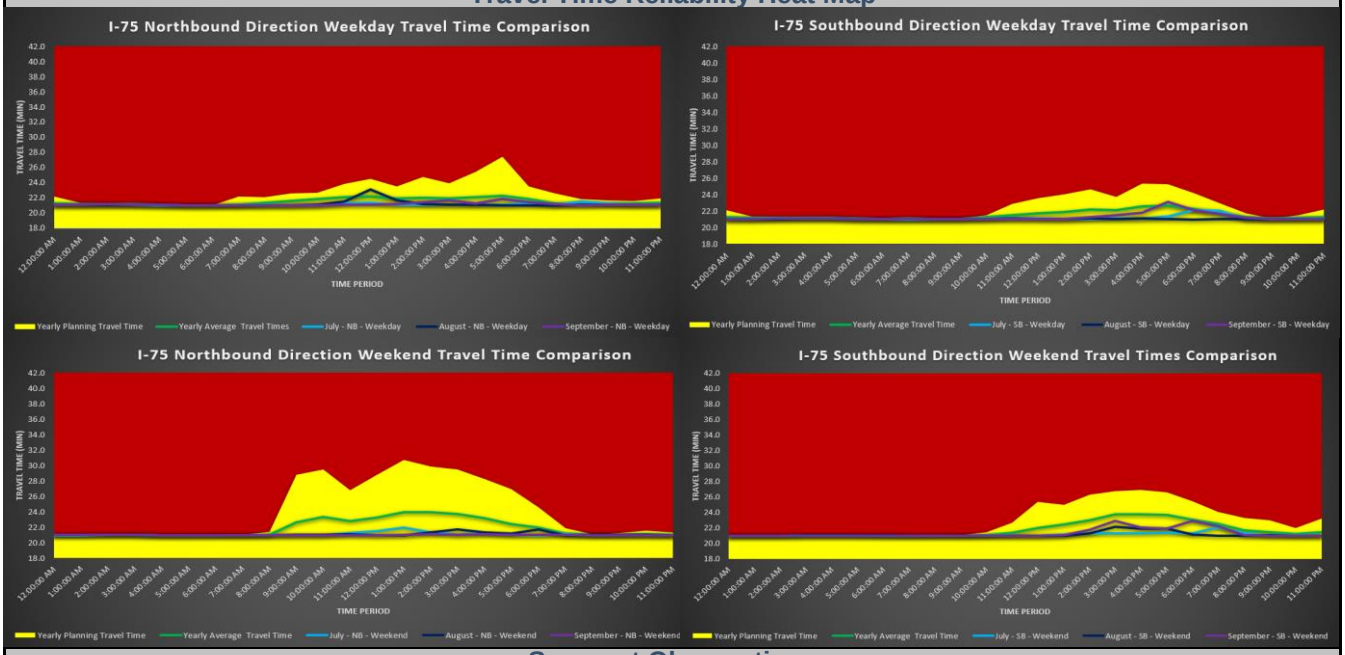
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map

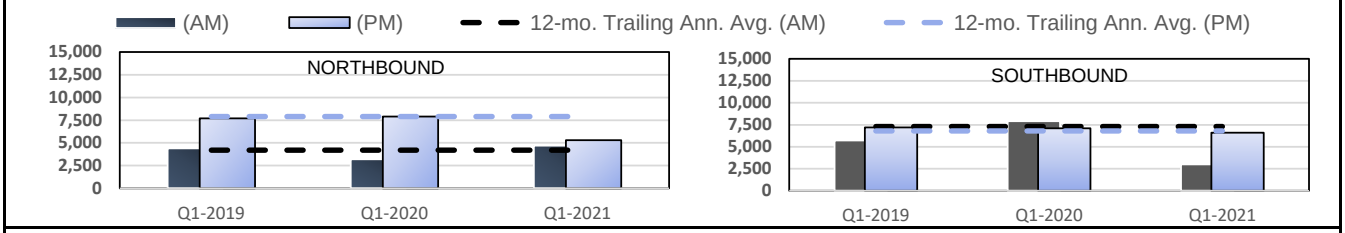


Segment Observations

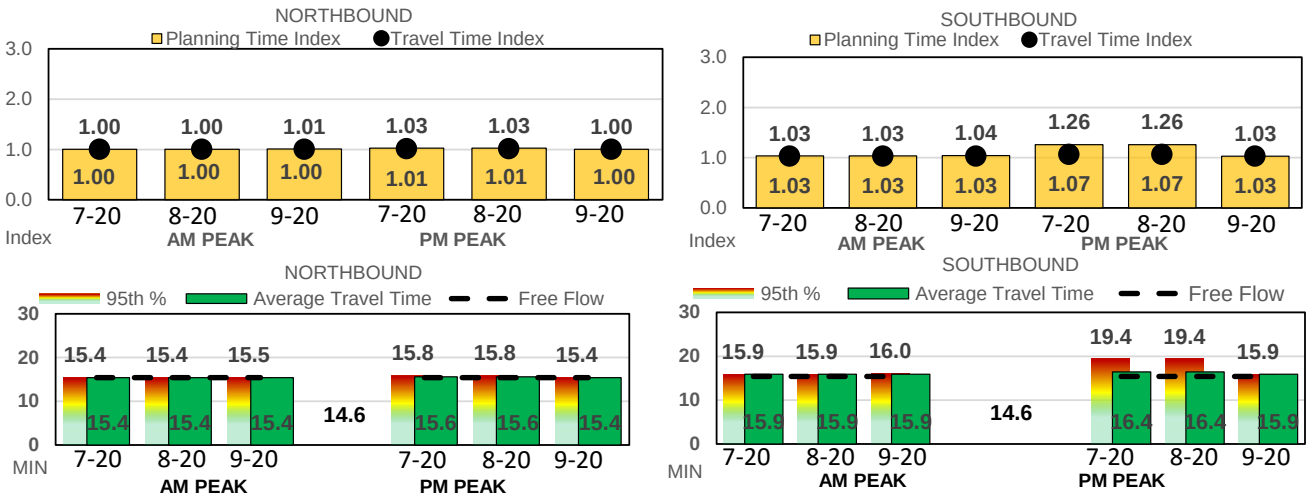
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the morning peak northbound. This is lower than the trailing 12-month average of 1.03.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.02 for the morning peak southbound. This is higher than the trailing 12-month average of 0.98.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.03 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.04 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

Segment 14: SR 93 (I-75), SR 326 to CR 234; 18 miles length, 36 TSS Detectors

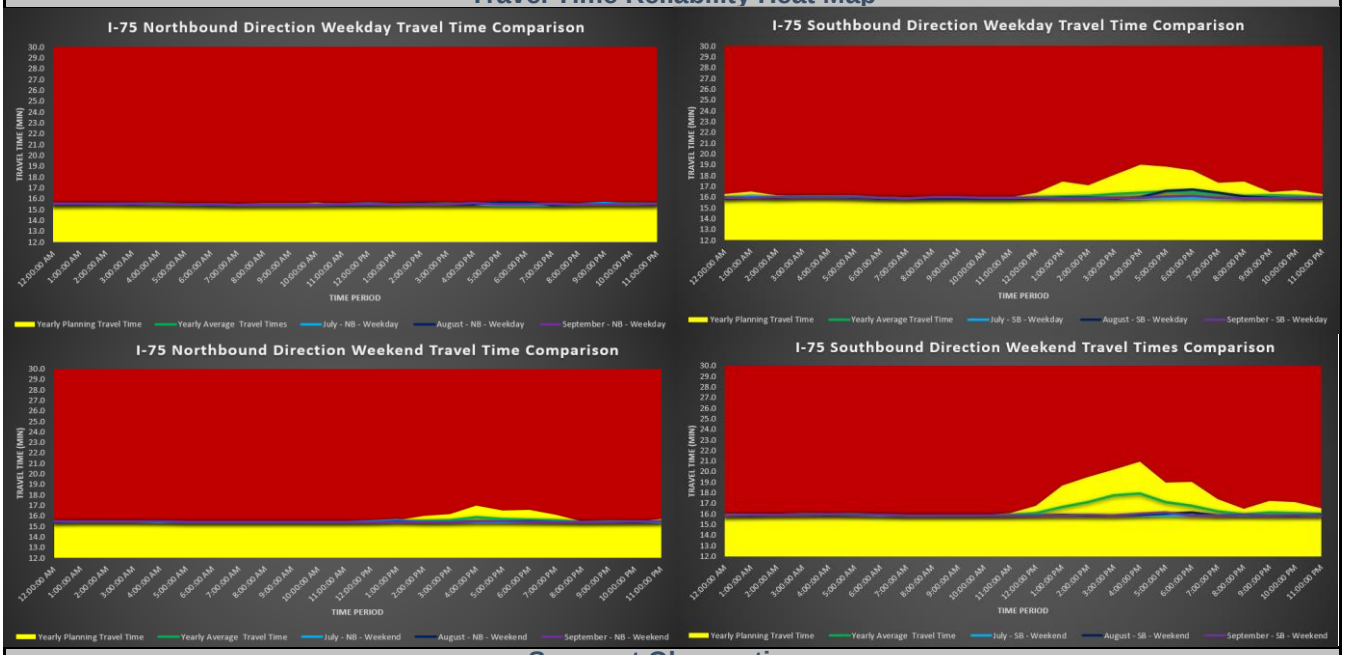
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map

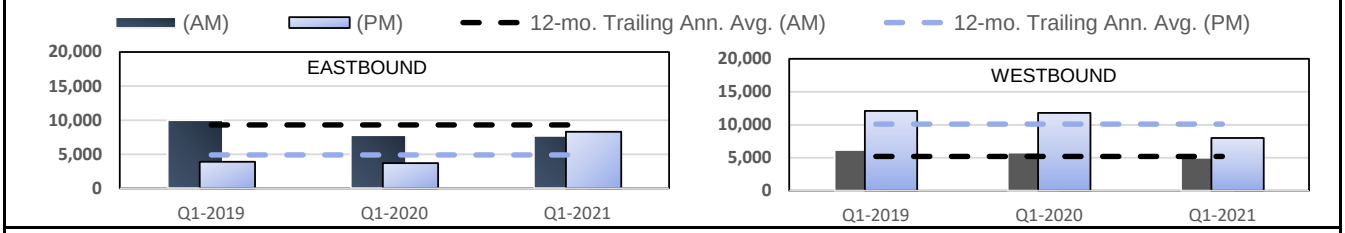


Segment Observations

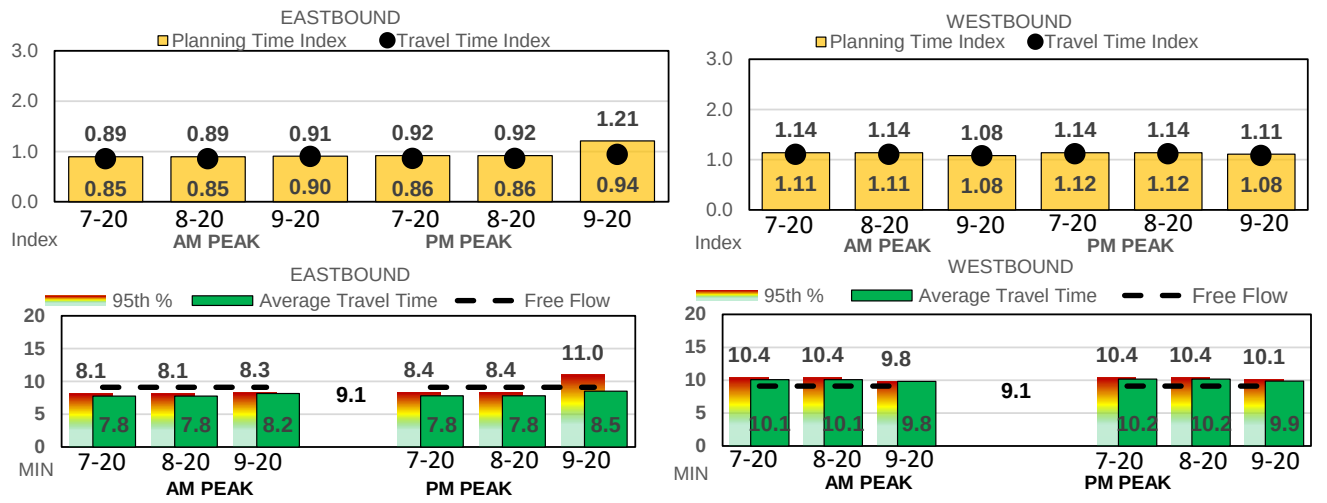
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.00 for the morning peak northbound. This is higher than the trailing 12-month average of 0.98.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.03 for the morning peak southbound. This is higher than the trailing 12-month average of 0.98.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.05 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

Segment 15: SR 408, Clarke Road to I-4 10 miles length, 24 TSS Detectors EB; 22 TSS Detectors WB

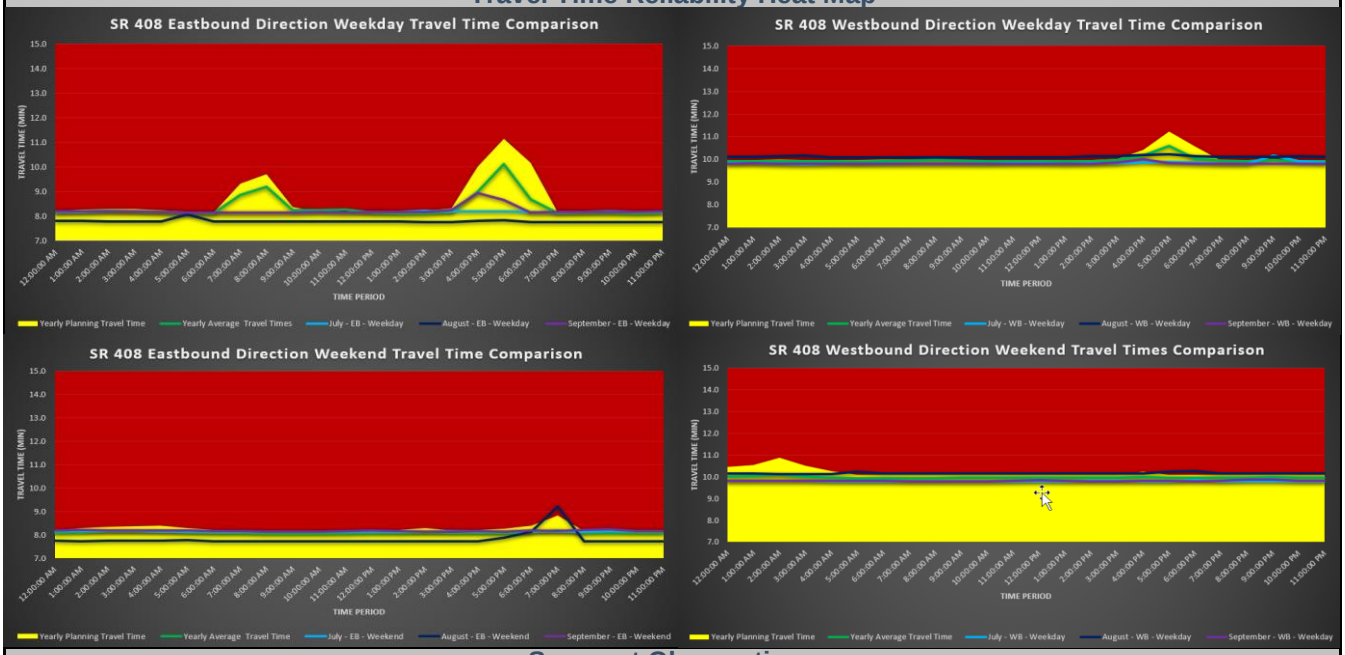
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map

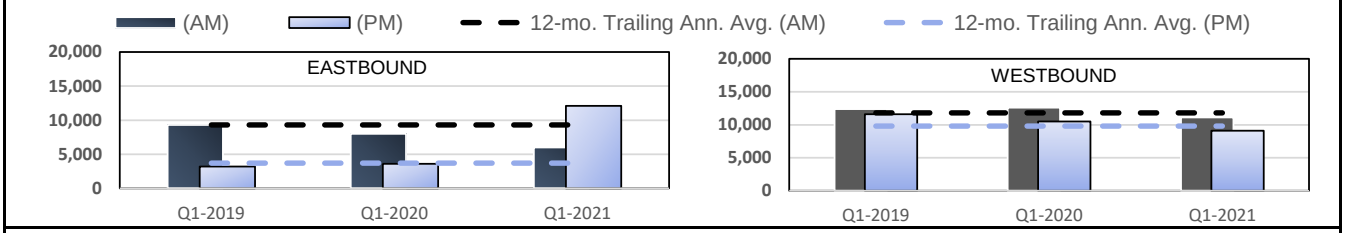


Segment Observations

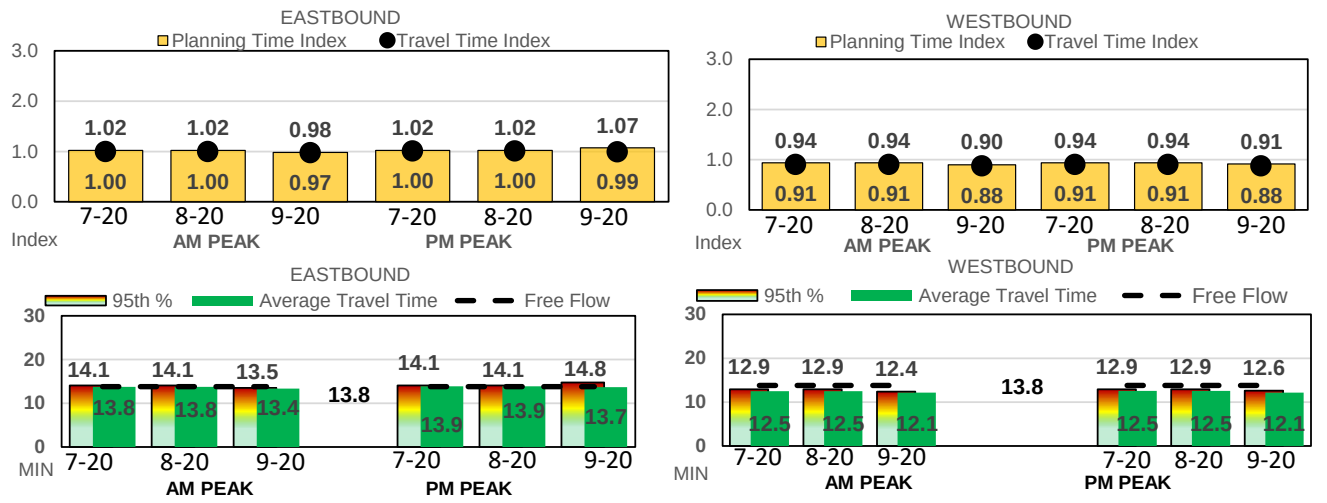
The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.87 for the morning peak eastbound. This is higher than the trailing 12-month average of 0.76.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.10 for the morning peak westbound. This is higher than the trailing 12-month average of 0.98.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.88 for the evening peak eastbound. This is lower than the trailing 12-month average of 1.31.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.11 for the evening peak westbound. This is lower than the trailing 12-month average of 1.45.
In August 2020, the EB weekend saw an increase in travel times due to a crash involving all lanes blocked at MM 10/I-4. As a result, a detour was established at Exit 8A/John Young Pkwy.

Segment 16: SR 408, I-4 to SR 50 13 miles length, 25 TSS Detectors eastbound; 33 TSS Detectors westbound

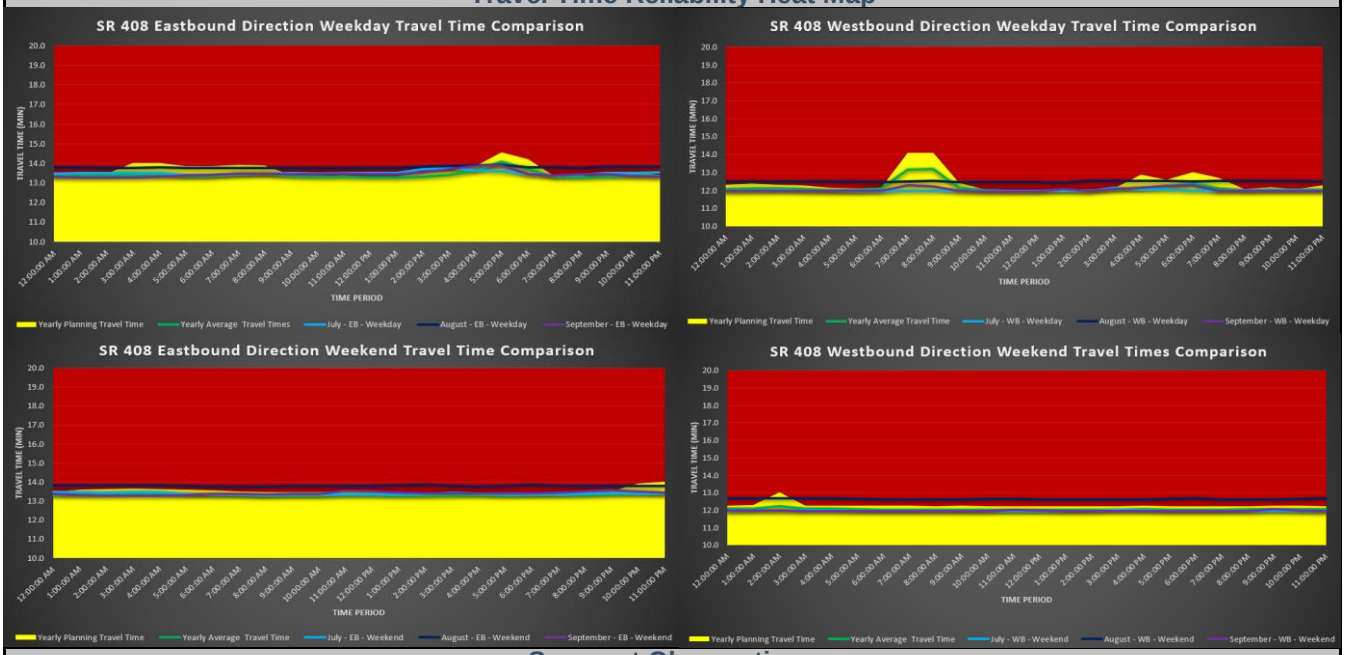
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.99 for the morning peak eastbound. This is higher than the trailing 12-month average of 0.77.

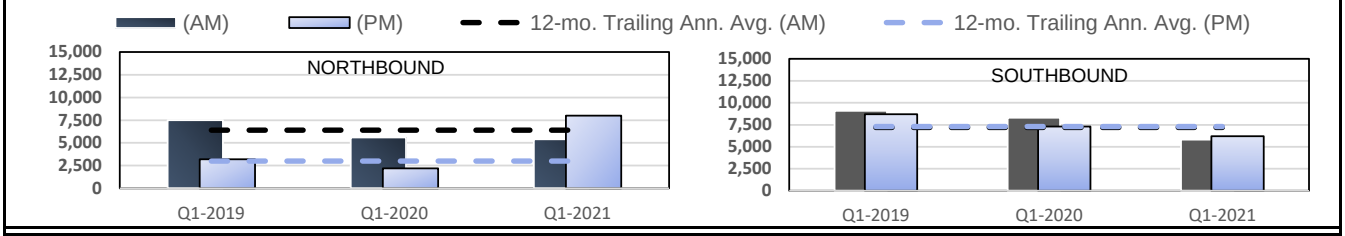
The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.90 for the morning peak westbound. This is lower than the trailing 12-month average of 0.98.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.00 for the evening peak eastbound. This is lower than the trailing 12-month average of 1.31.

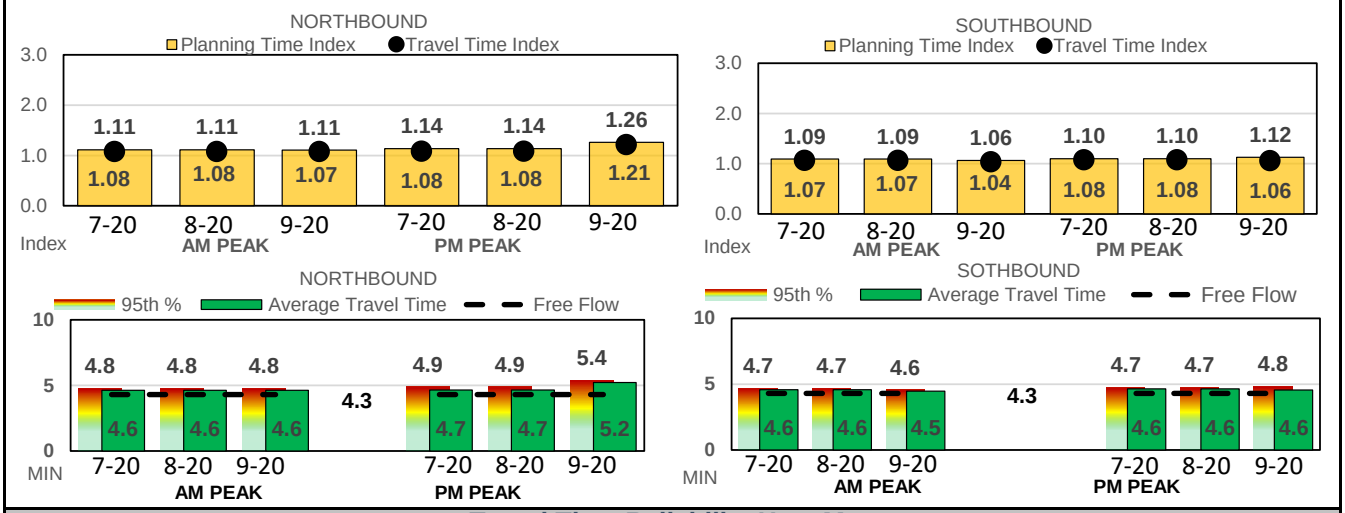
The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.90 for the evening peak westbound. This is lower than the trailing 12-month average of 1.45.

Segment 17: SR 417, Aloma to SR 408 5 miles length, 11 TSS Detectors Northbound; 13 TSS Detectors Southbound

Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map

Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.07 for the morning peak northbound. This is higher than the trailing 12-month average of 0.76.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.06 for the morning peak southbound. This is higher than the trailing 12-month average of 0.98.

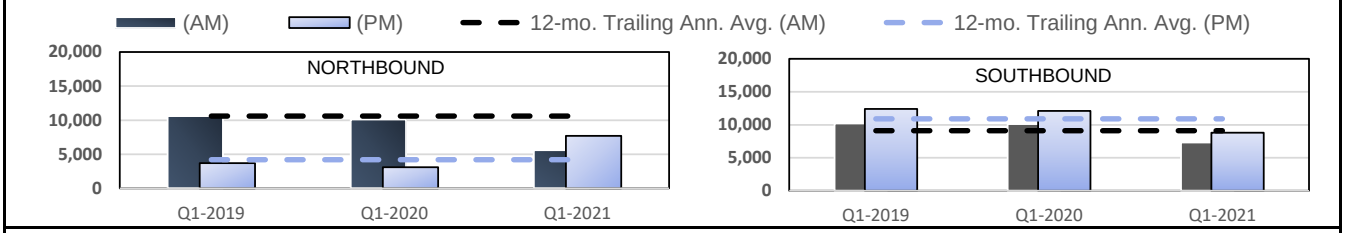
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.13 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.07 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

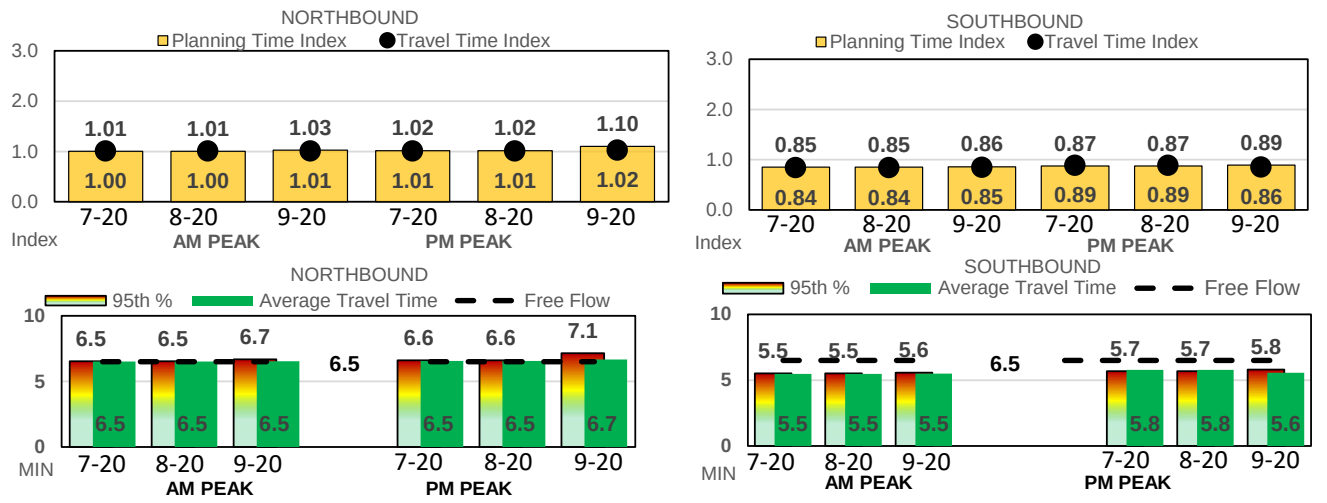
In September 2020, the NB weekday saw an increase in travel times due to non-reoccurring congestion.

Segment 18: SR 417, SR 408 to SR 528 7 miles length, 12 TSS Detectors Northbound; 12 TSS Detectors Southbound

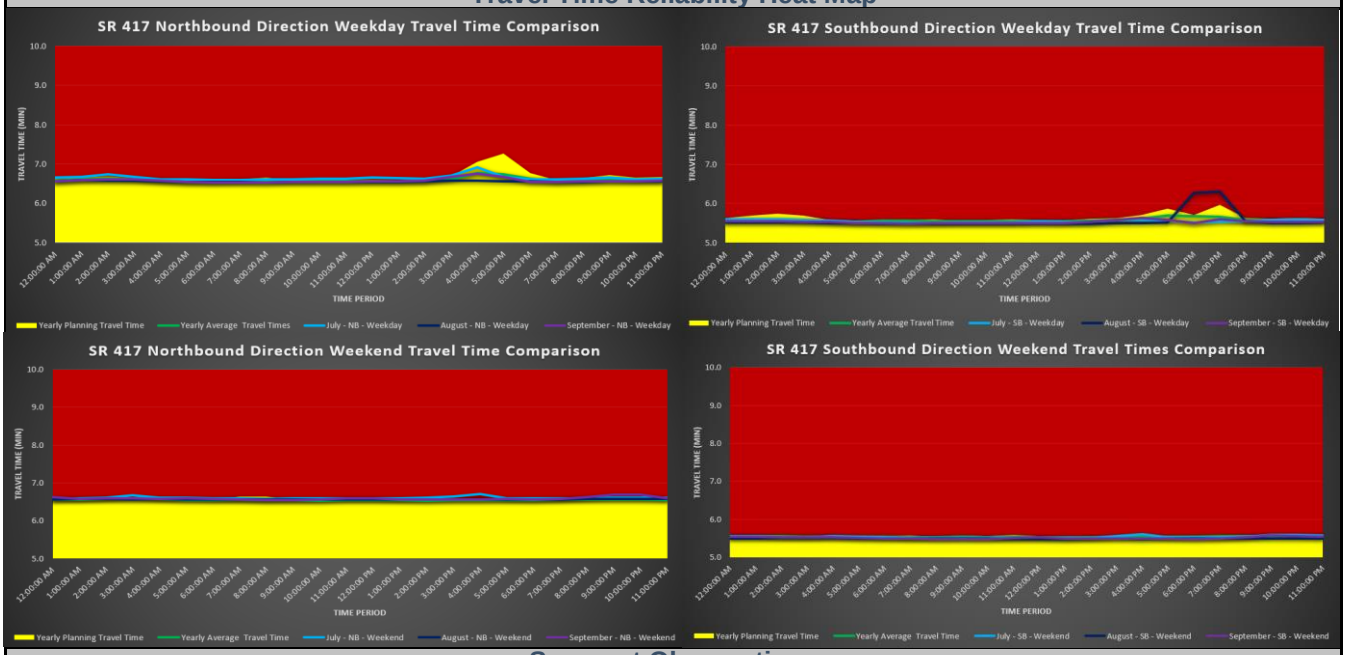
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.00 for the morning peak northbound. This is higher than the trailing 12-month average of 0.88.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.84 for the morning peak southbound. This is lower than the trailing 12-month average of 0.98.

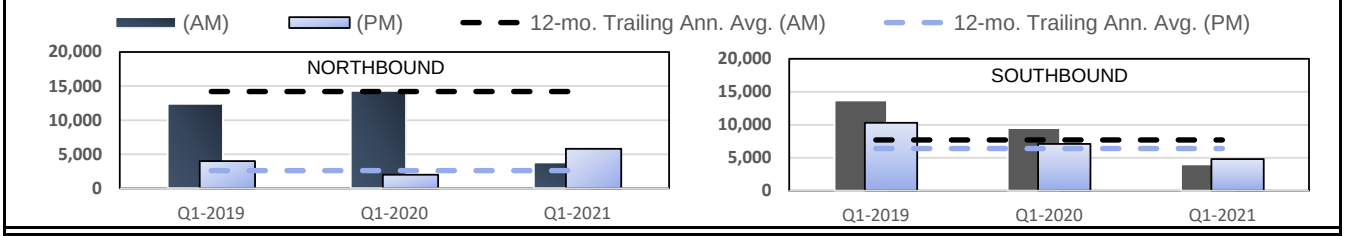
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.88 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

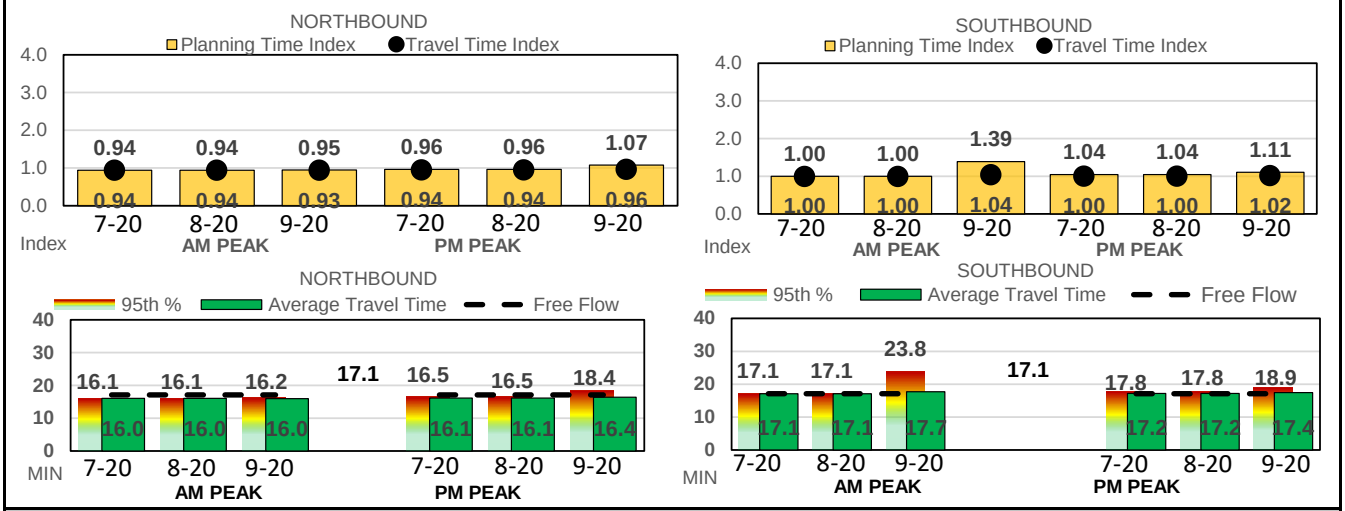
In August 2020, the SB weekday saw an increase in travel times due to a crash on 8/7 with 2 left lanes blocked at MM 30/Curry Ford Rd. Another crash occurred on 8/10 with all lanes blocked for a medivac helicopter to land at MM 27/Lee Vista Blvd.

Segment 19: SR 417, SR 528 to SR 536 20 miles length, 32 TSS Northbound; 32 TSS Southbound

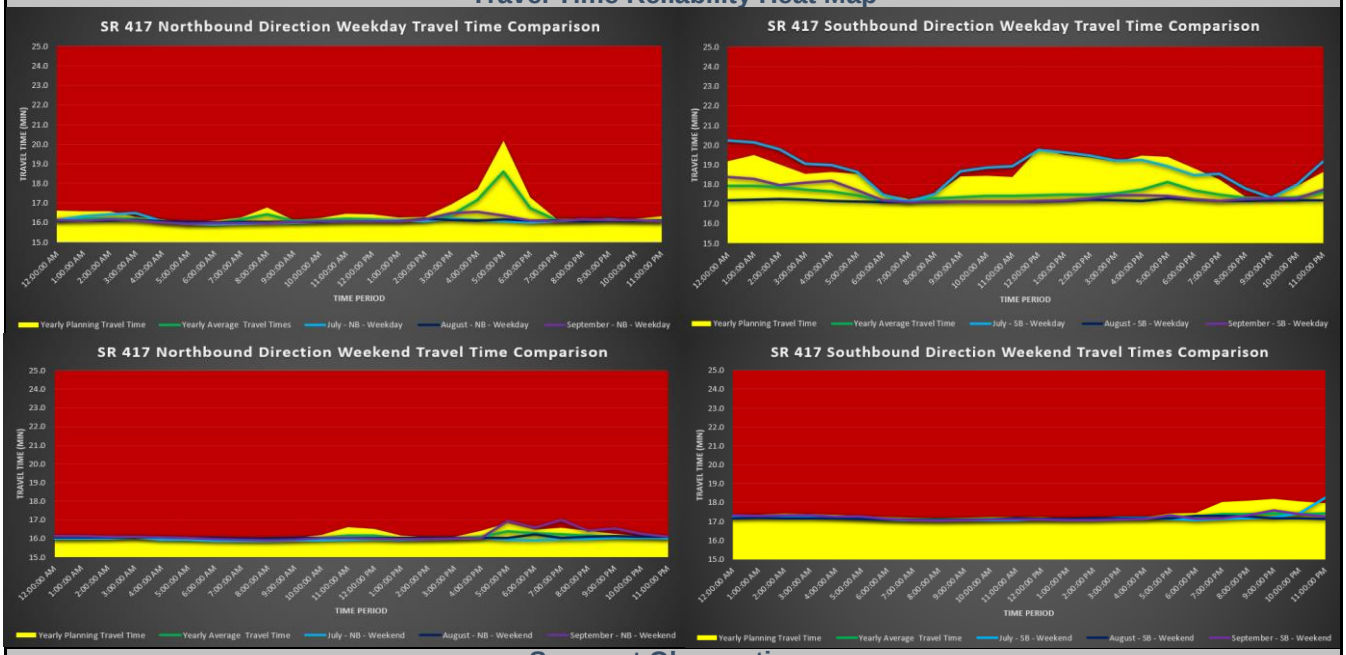
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.94 for the morning peak northbound. This is lower than the trailing 12-month average of 0.94.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the morning peak southbound. This is higher than the trailing 12-month average of 0.98.

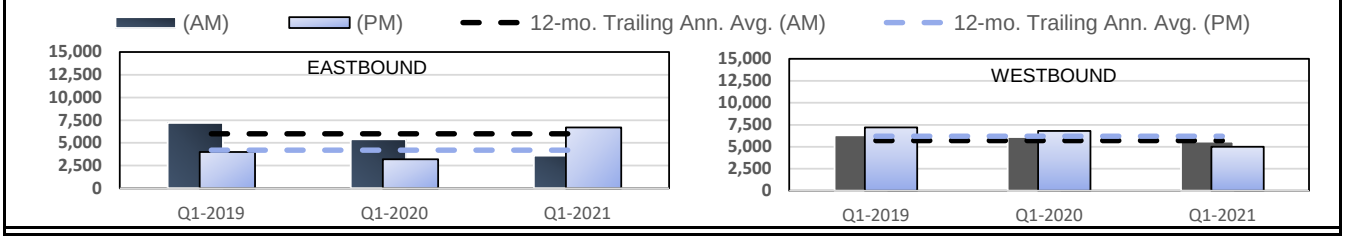
The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.95 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

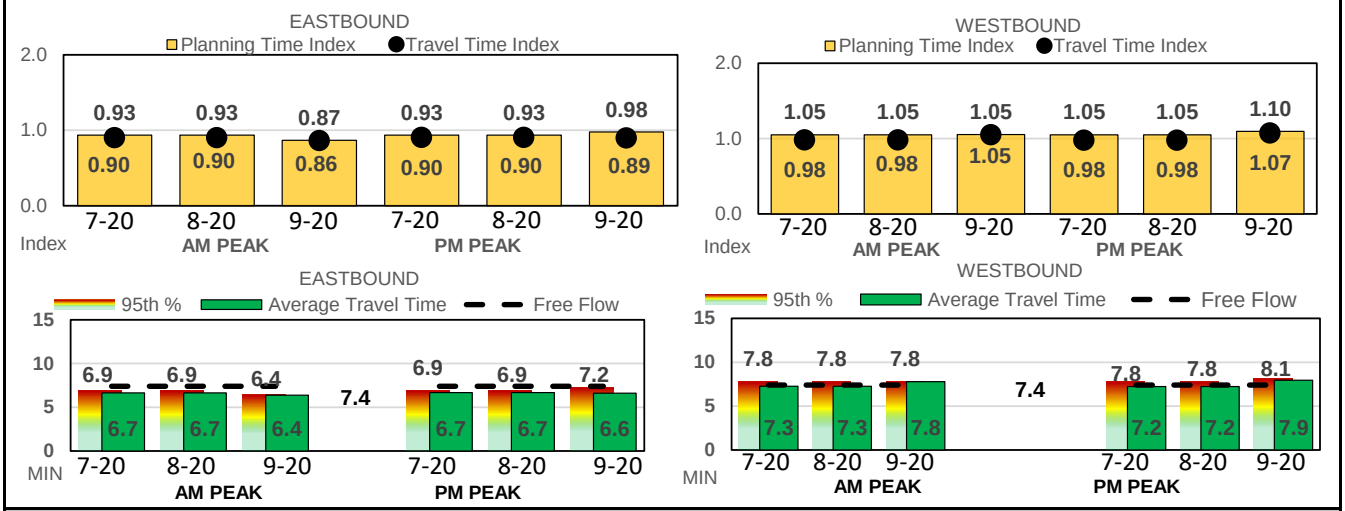
In September 2020, the NB weekend saw an increase in travel times due to three crashes involving lane blockage. One occurred on 9/5 at MM 24/Innovation Way that blocked 2 right lanes. Another occurred on 9/6 at MM 21 involving a vehicle into a pond that blocked the right lane. The last one occurred on 9/12 at MM 12/Florida's Turnpike involving 2 right lanes blocked. In July 2020, the SB weekday saw an increase in travel times due to scheduled road work that closed all lanes at MM 14/Landstar Blvd on 7/1, 7/19-22, and 7/31. There was also a crash that blocked 2 left lanes at MM 17/Boggy Creek on 7/3.

Segment 20: SR 528, McCoy to SR 417 8 miles length, 14 TSS Eastbound; 16 TSS Westbound

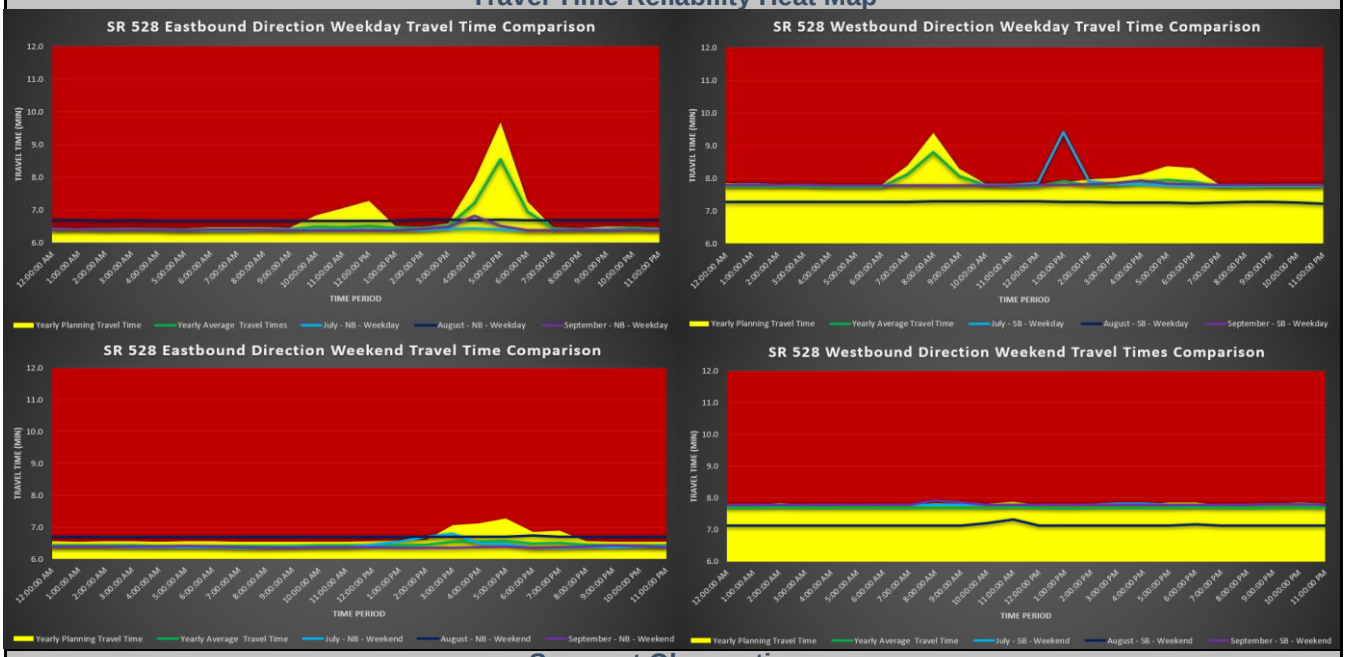
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



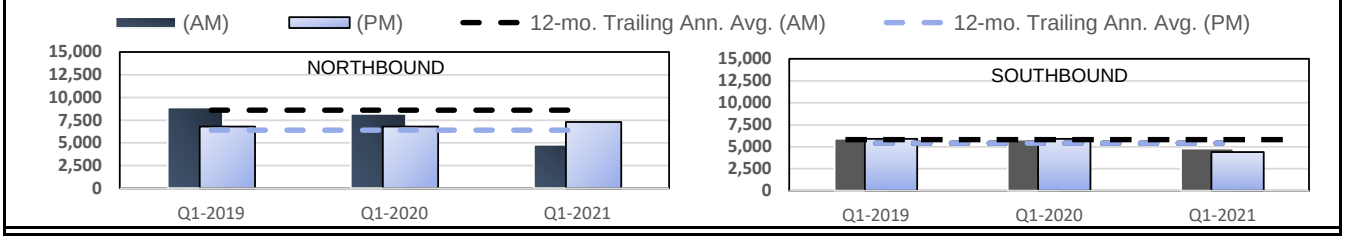
Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.89 for the morning peak eastbound. This is lower than the trailing 12-month average of 0.99.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the morning peak westbound. This is higher than the trailing 12-month average of 0.98.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 0.90 for the evening peak eastbound. This is lower than the trailing 12-month average of 1.31.
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.01 for the evening peak westbound. This is lower than the trailing 12-month average of 1.45.

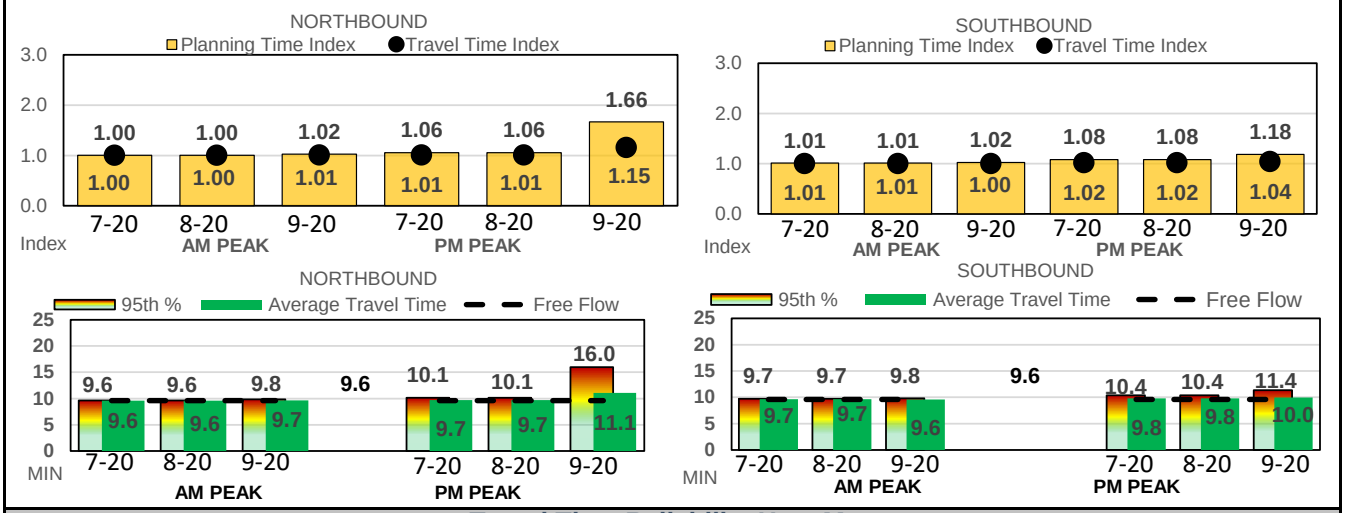
In July 2020, the WB weekday saw an increase in travel time due to a crash blocking 2 left lanes at MM 10.

Segment 21: SR 429, SR 414 to Winter Garden Vineland Rd 8 miles length, 17 TSS NB; 17 TSS SB

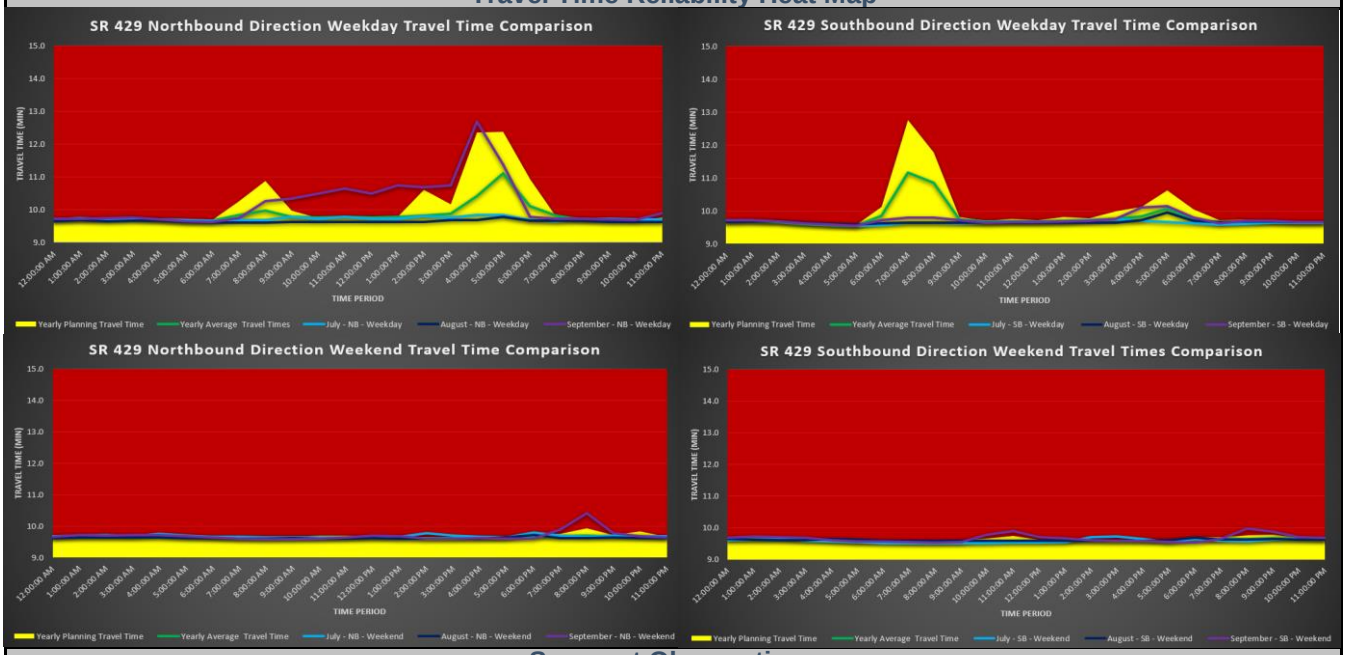
Throughput Volumes



Travel Time Reliability



Travel Time Reliability Heat Map



Segment Observations

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.00 for the morning peak northbound. This is lower than the trailing 12-month average of 1.17.

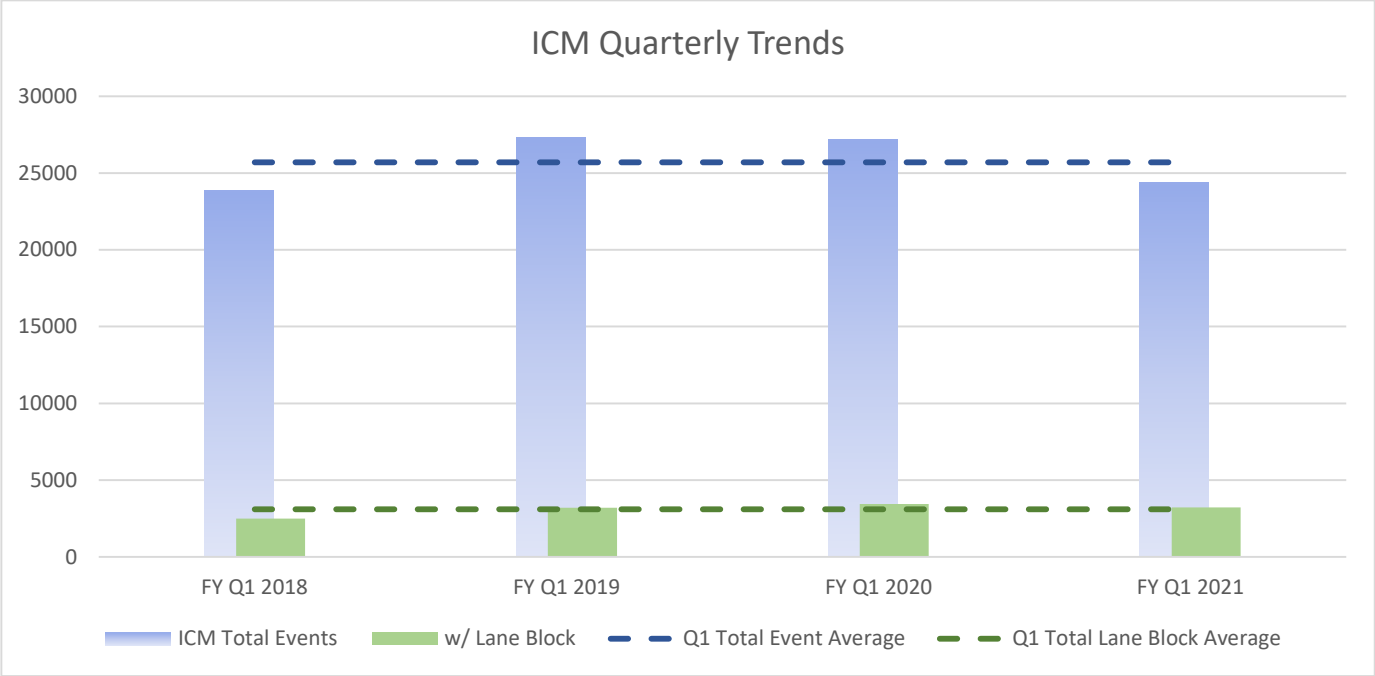
The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.00 for the morning peak southbound. This is higher than the trailing 12-month average of 0.98.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.06 for the evening peak northbound. This is lower than the trailing 12-month average of 1.31.

The average freeway travel time index for quarter 1, of fiscal year 2021 is 1.03 for the evening peak southbound. This is lower than the trailing 12-month average of 1.45.

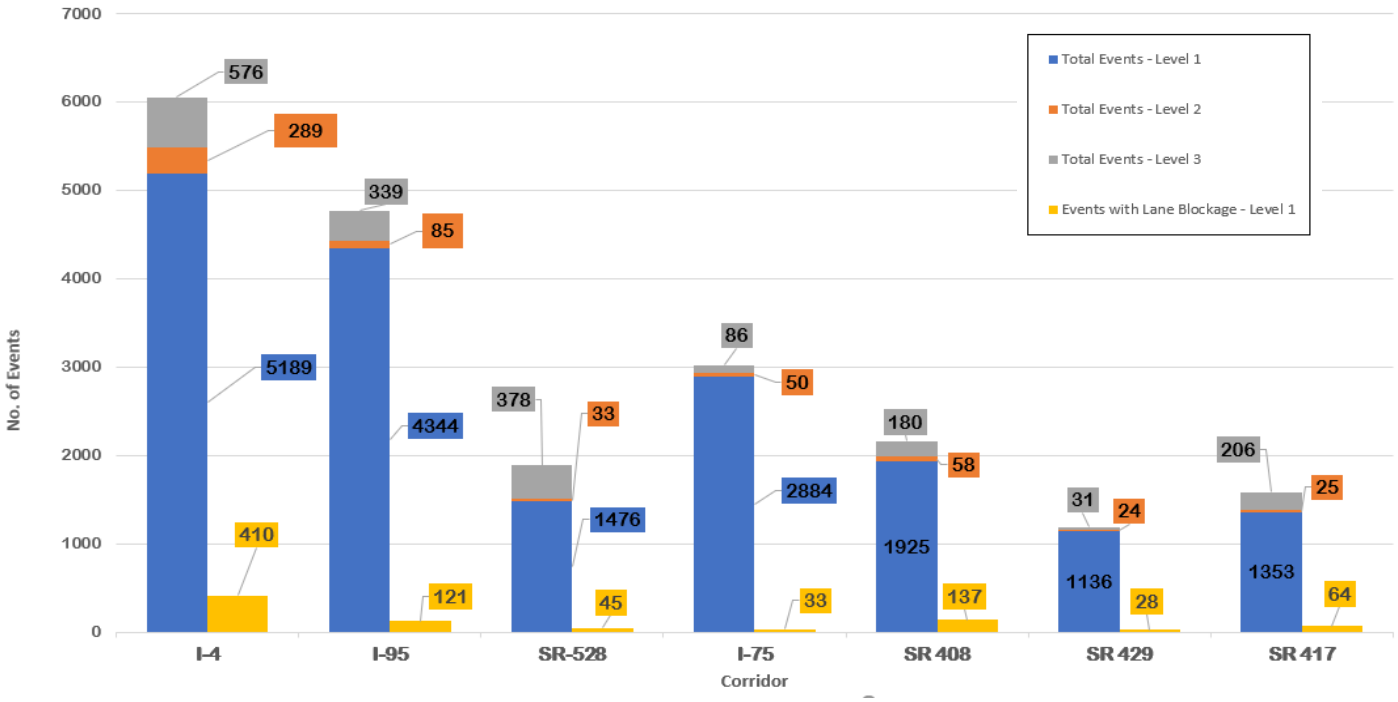
In September 2020, the NB weekend saw an increase in travel times due to fatality that blocked all lanes at MM 16 and an established detour at Exit 15/New Independence Pkwy.

FY 2021 Q1: Quarterly Total Events



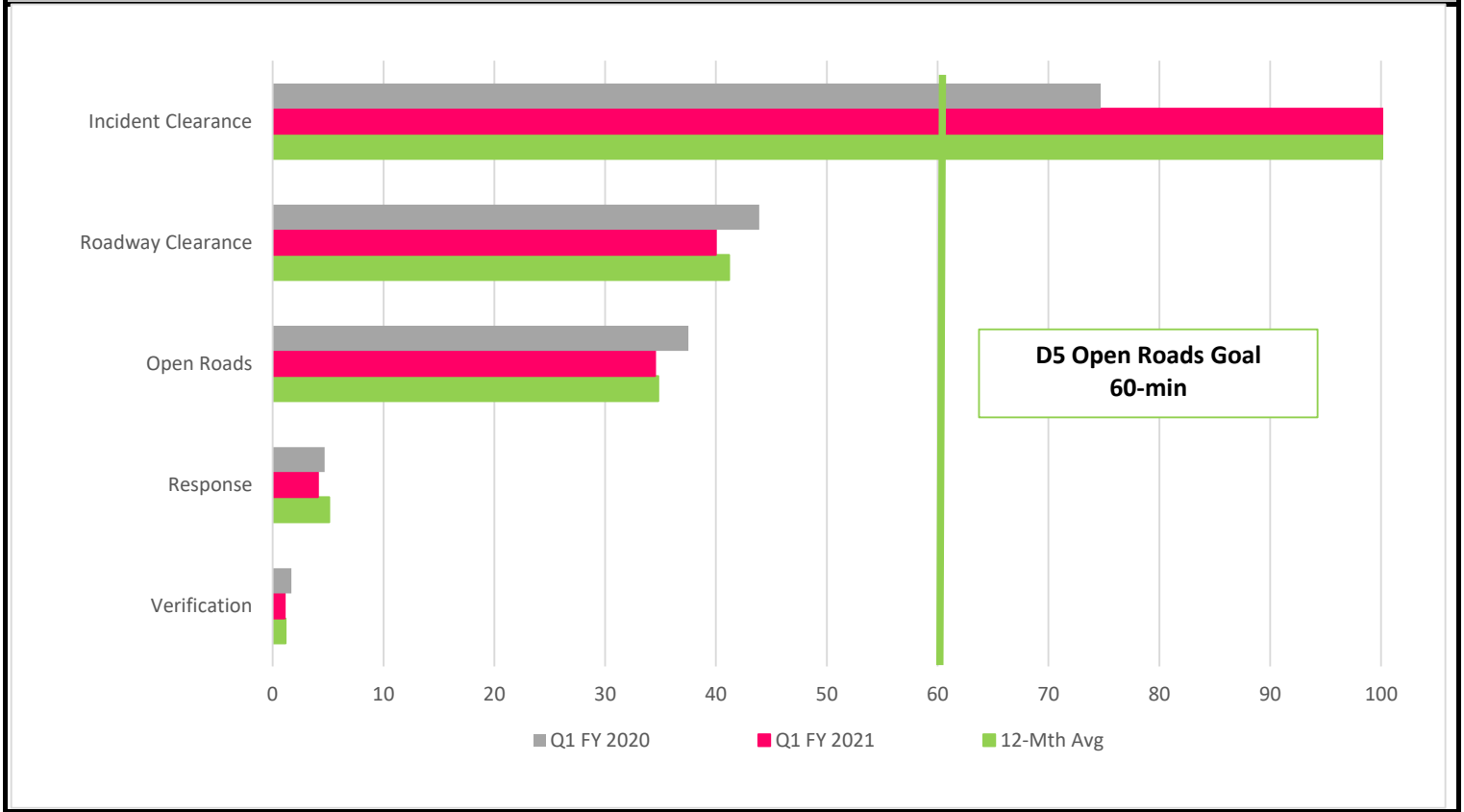
For Quarter 1 of fiscal year (FY) 2021 the total events lower than the Quarter 1 of FY 2020. For Quarter 1 of FY 2021, the events with lane blockage were decreased by 15% when it compared to Quarter 4 of FY 2020.

FY 2021 Q4: Quarterly Total Events

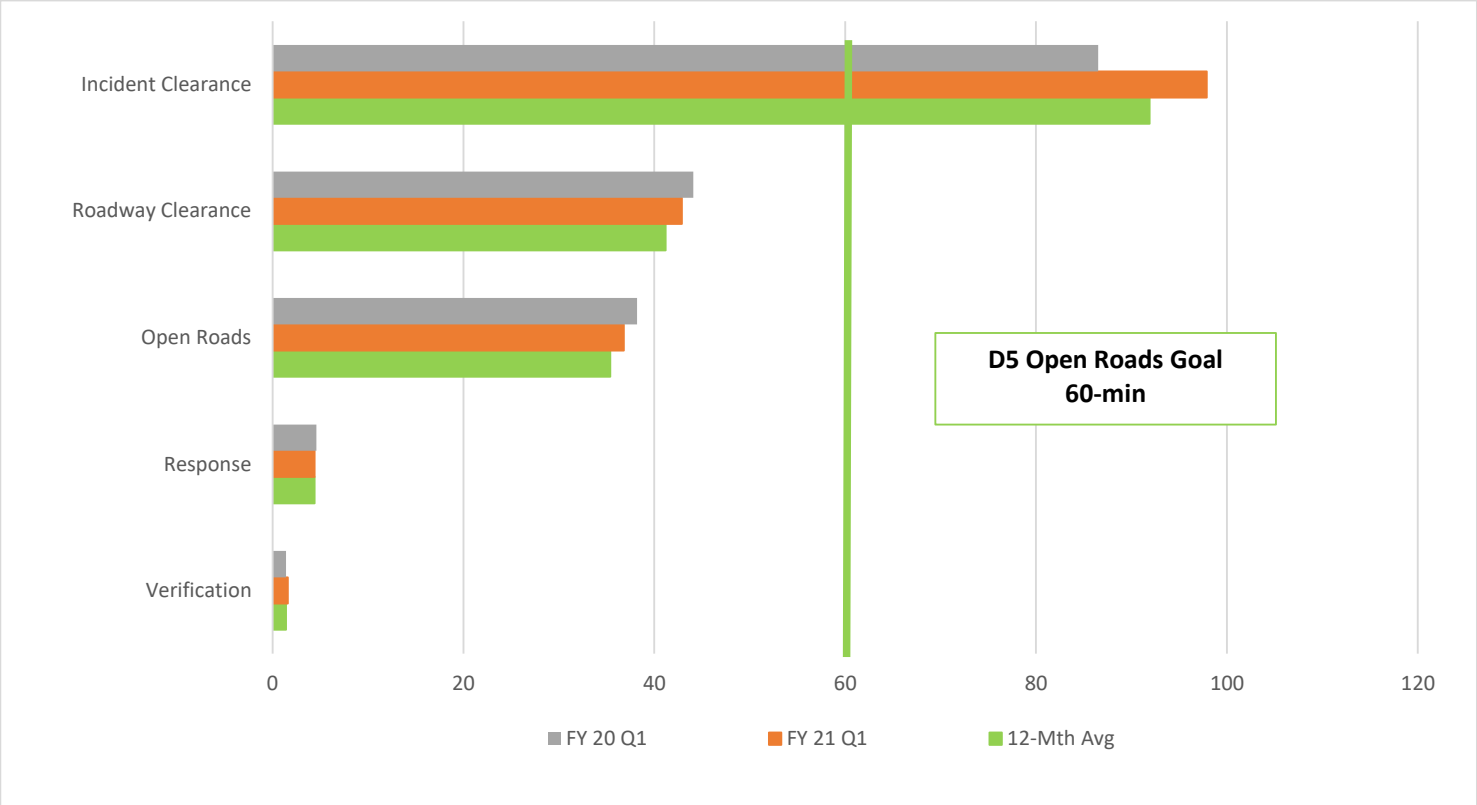


Traffic Incident Management

DISTRICT 5 INCIDENT DURATION SUMMARY

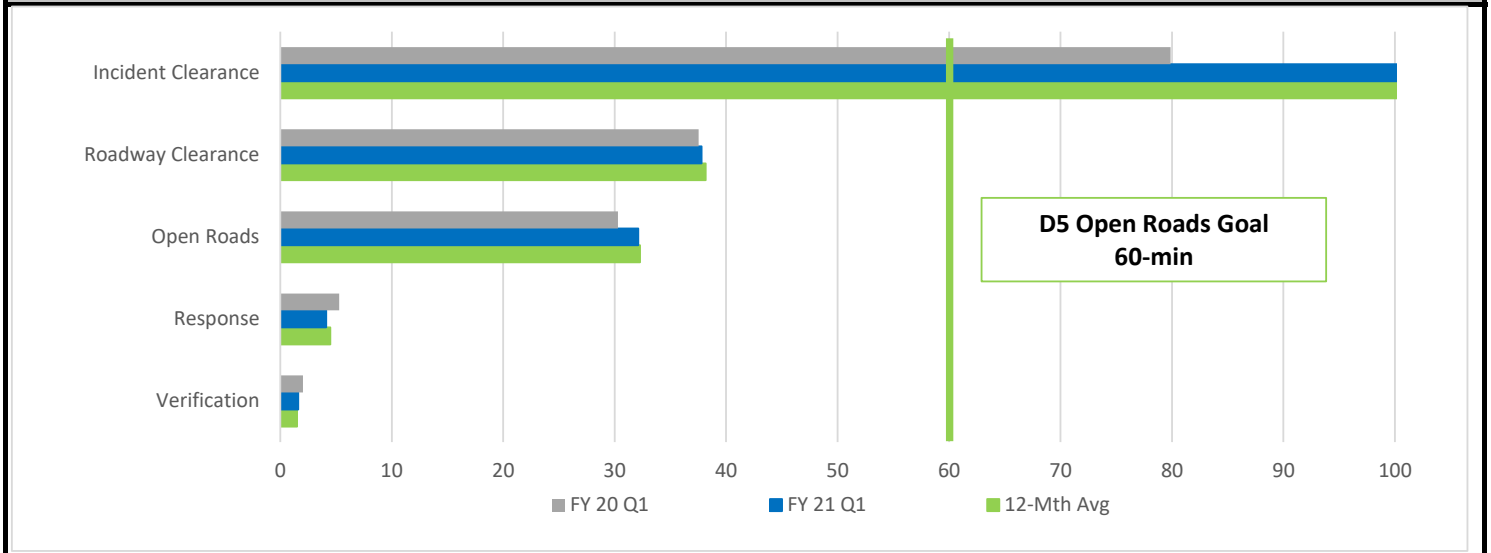


CFX INCIDENT DURATION SUMMARY

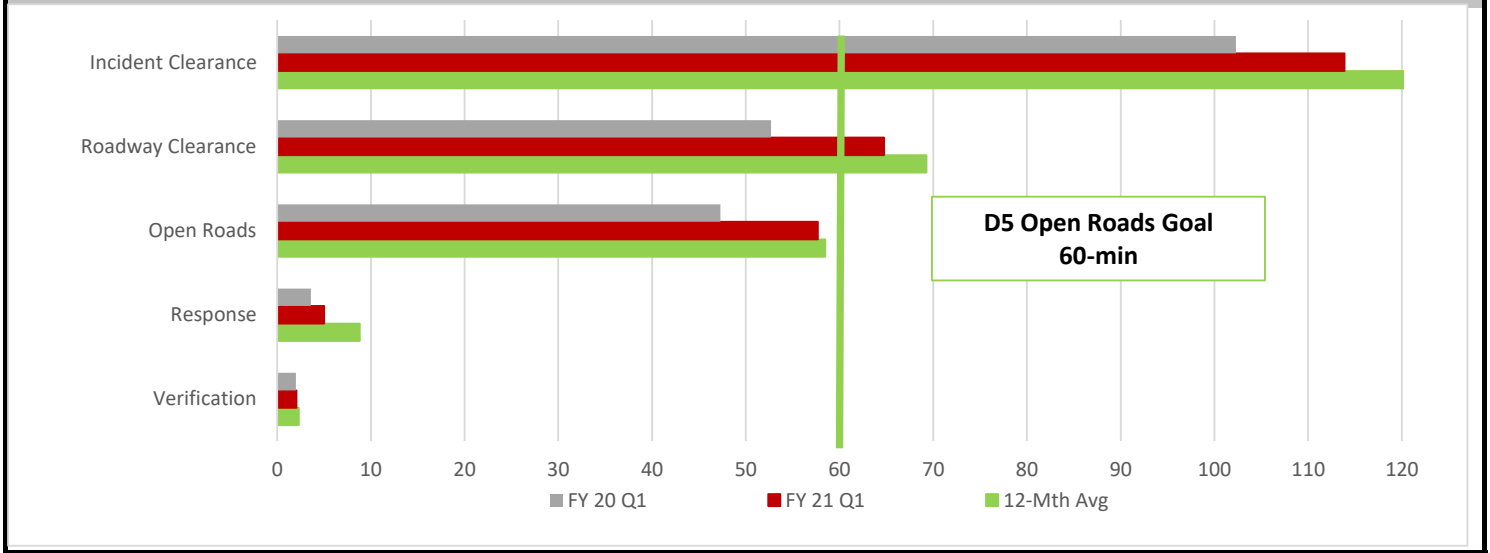


Traffic Incident Management

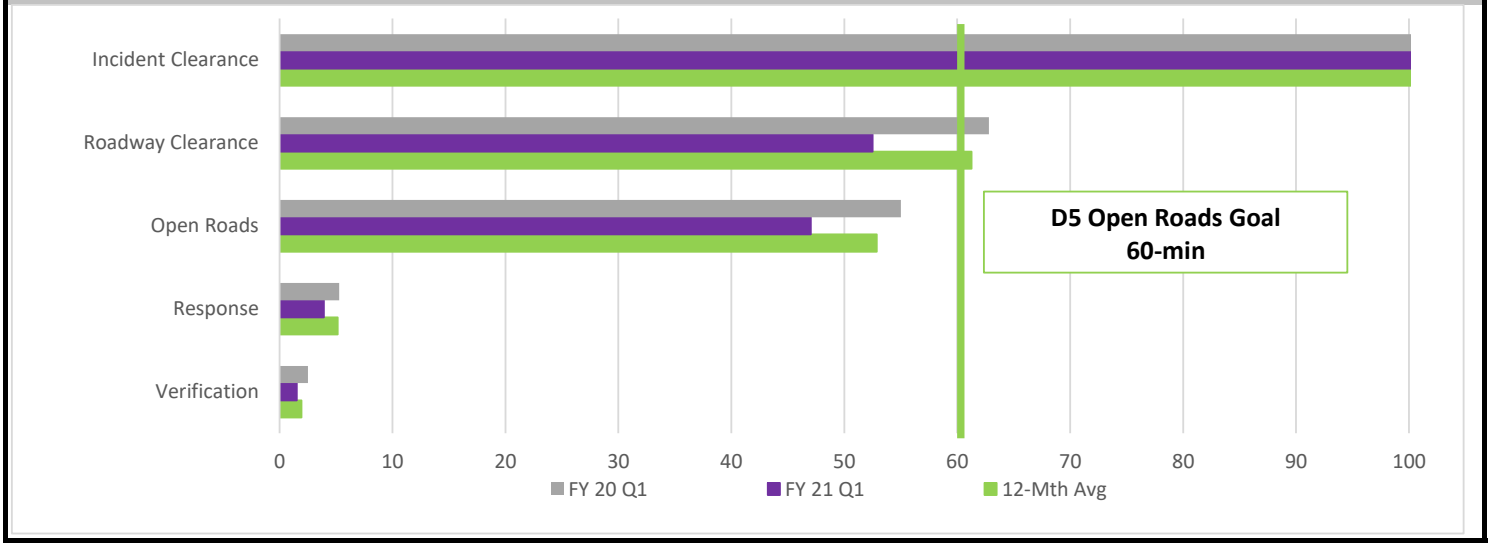
I-4 CORRIDOR INCIDENT DURATION SUMMARY



I-75 CORRIDOR INCIDENT DURATION SUMMARY

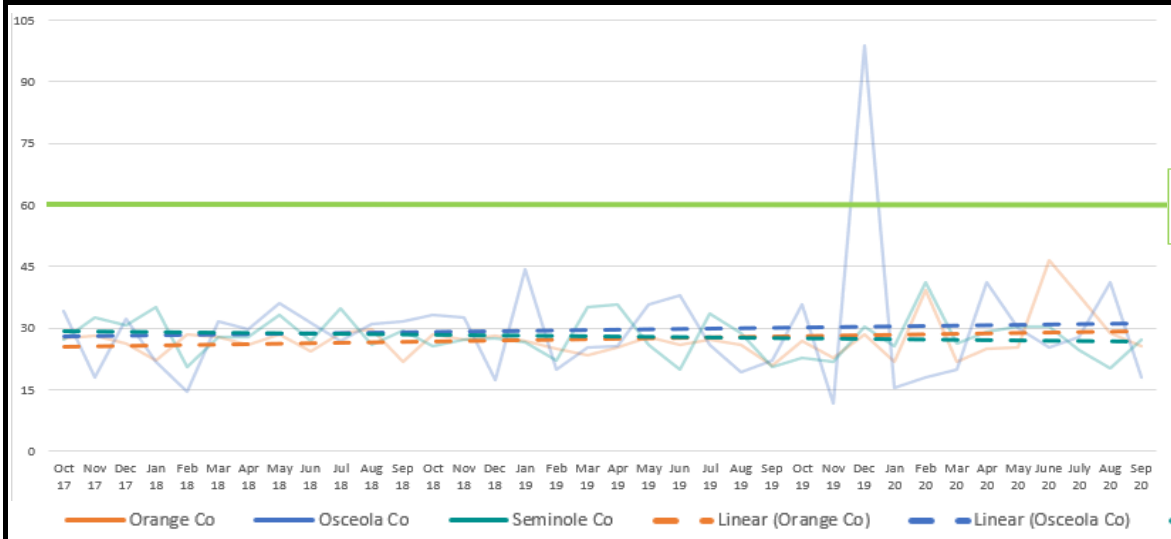


I-95 CORRIDOR INCIDENT DURATION SUMMARY



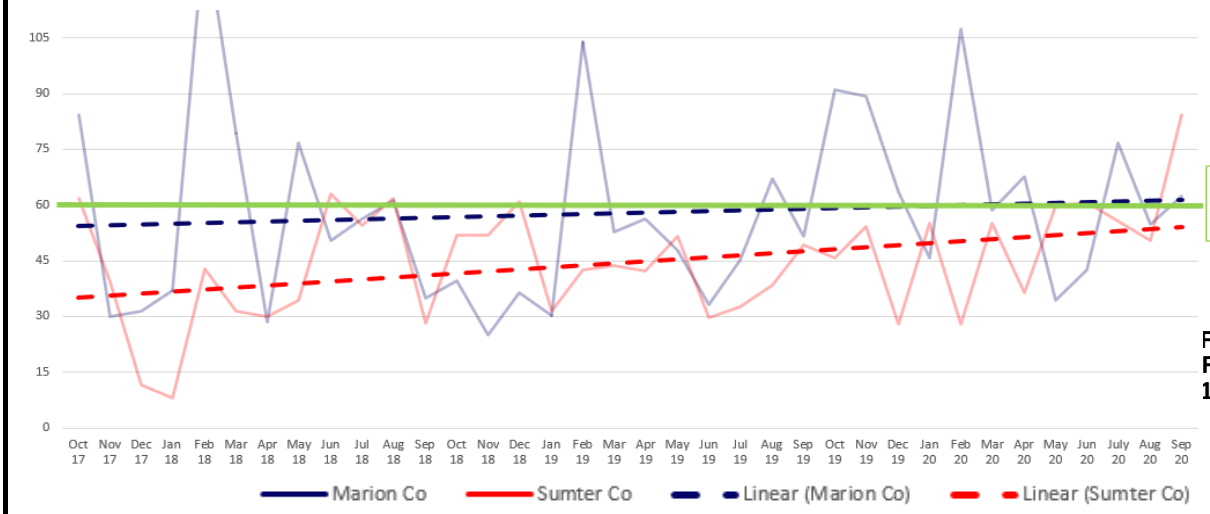
Traffic Incident Management

I-4 OPEN ROADS (3-YR TREND)



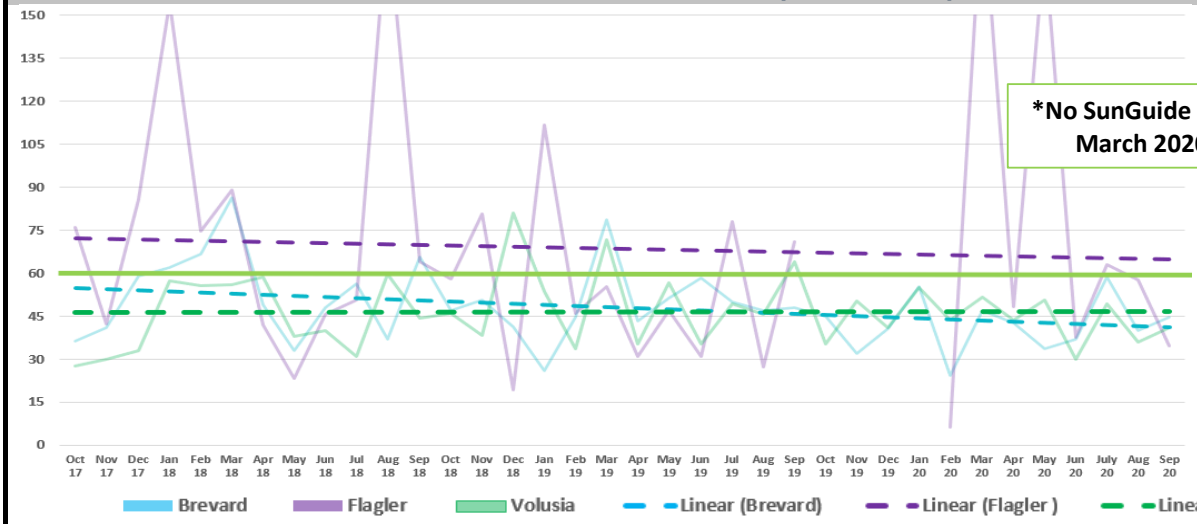
FY 21 Q1: 27.9 min
FY 20 Q1: 30.3 min
12-Mth Avg: 32.7 min

I-75 OPEN ROADS (3-YR TREND)



FY 21 Q1: 64.1 min
FY 20 Q1: 50.1 min
12-Mth Avg: 58.5 min

I-95 OPEN ROADS (3-YR TREND)



FY 21 Q1: 47.0 min
FY 20 Q1: 55.0 min
12-Mth Avg: 52.9 min

Traffic Incident Management

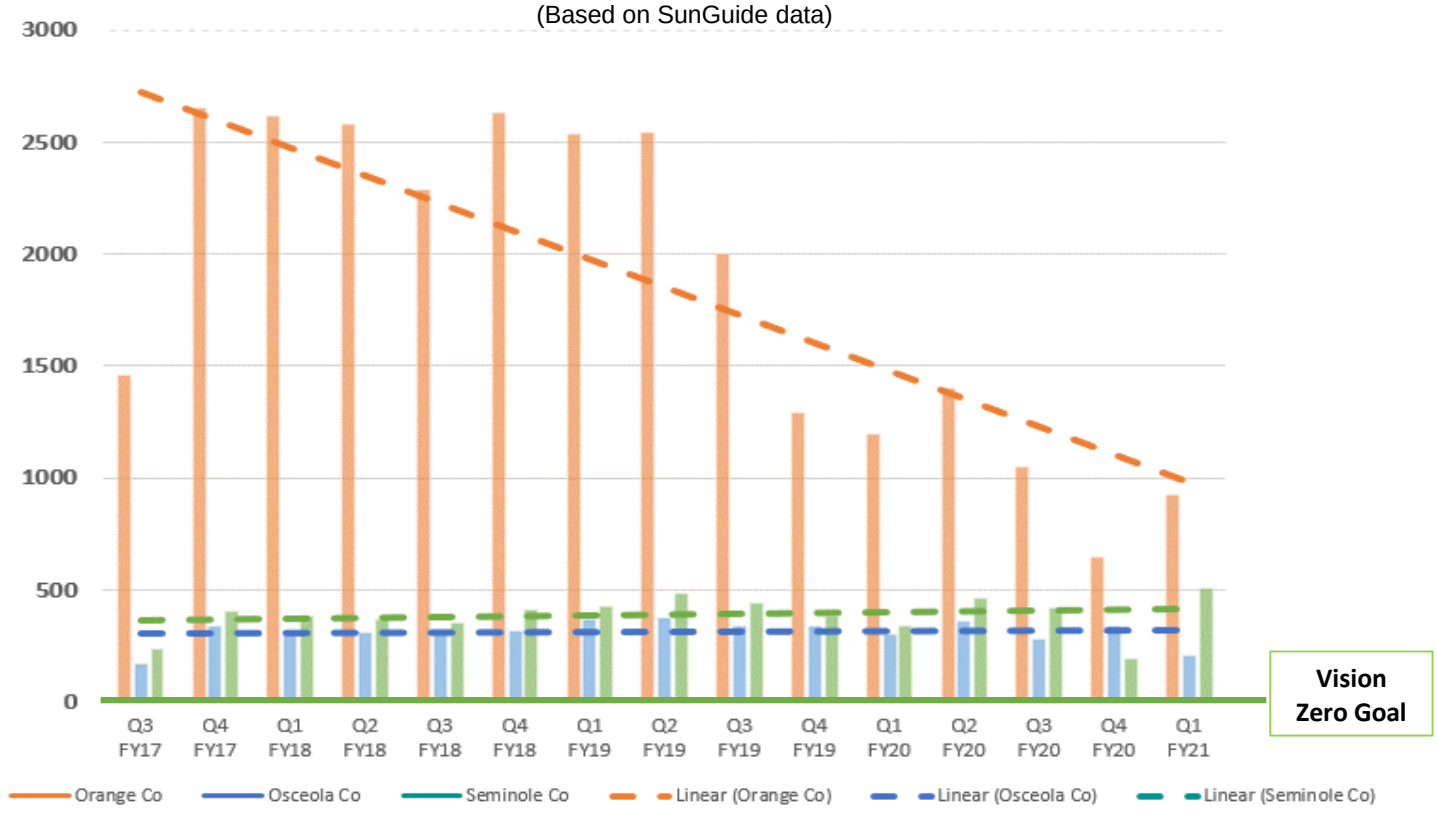
DISTRICT FIVE SAFETY GOAL

In accordance with FDOT's commitment to the national Vision Zero initiative, District Five is focused on driving down fatalities. District Five's TSM&O safety goal is **ZERO FATALITIES** on Central Florida roadways.

As part of this effort, the District is closely monitoring and identifying operational improvements to reduce the risk of secondary crashes, with an emphasis on protecting emergency responders who work in or alongside the roadway.

I-4/METRO ORLANDO CRASHES (W/TREND)

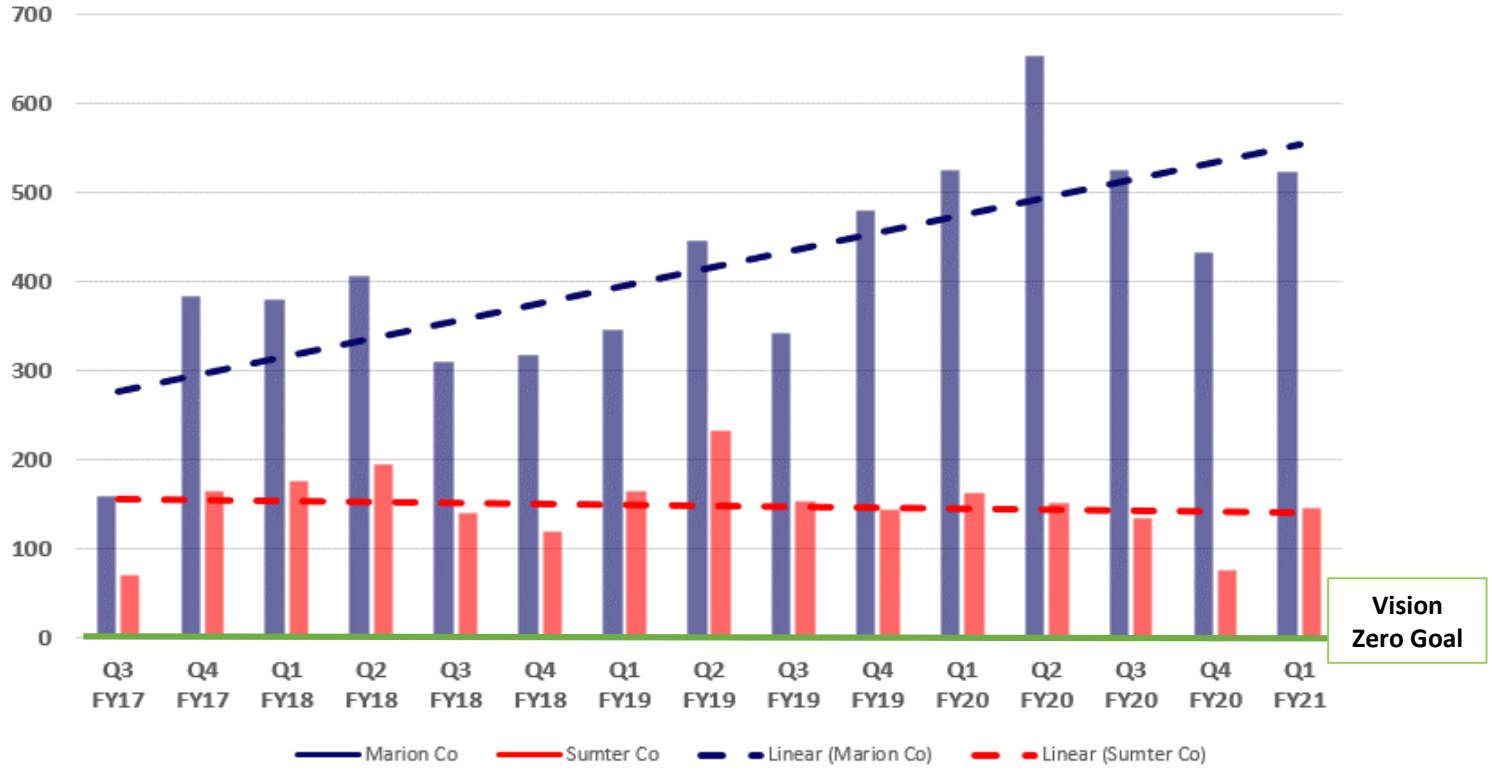
(Based on SunGuide data)



Traffic Incident Management

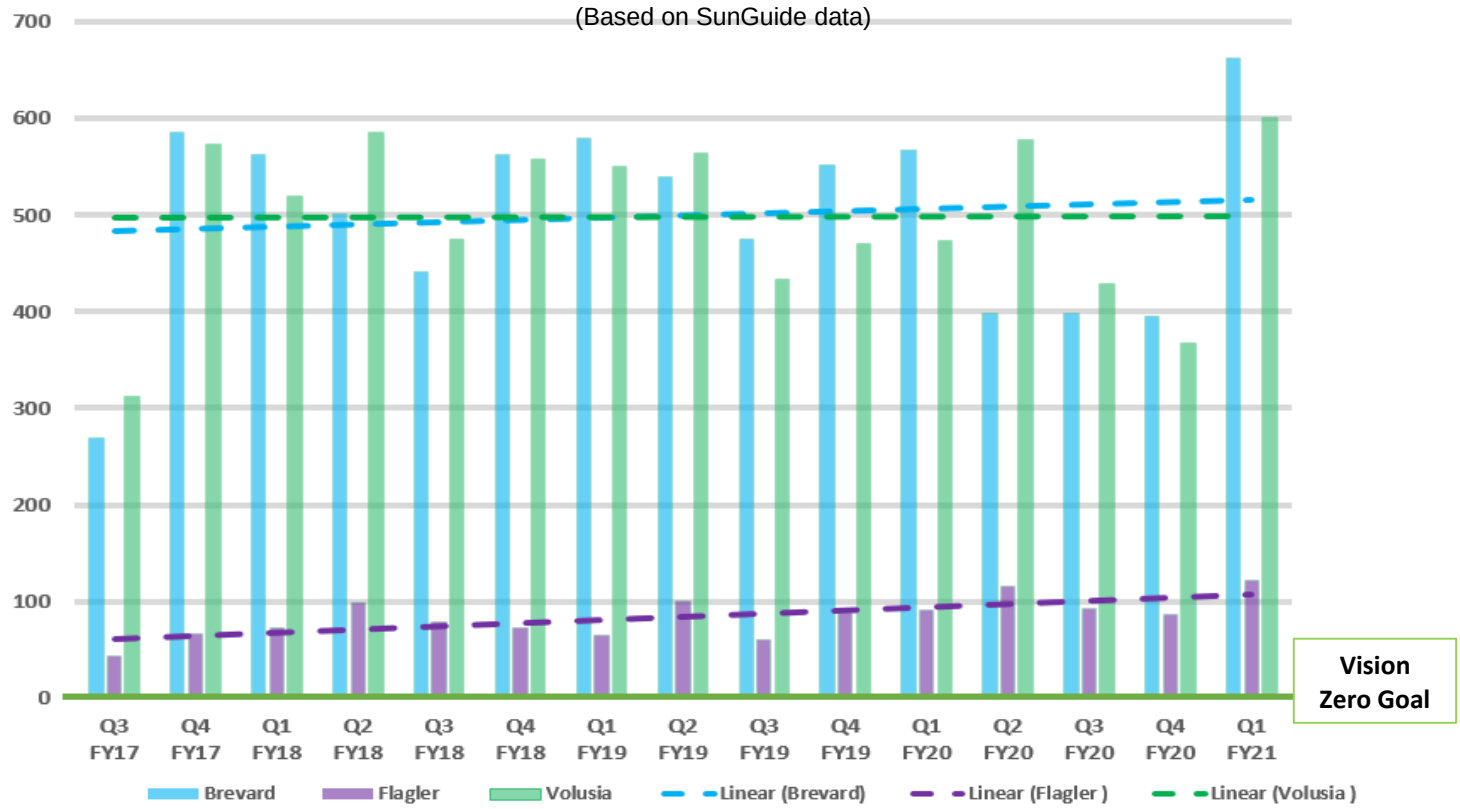
I-75 CRASHES (W/TREND)

(Based on SunGuide data)



I-95 CRASHES (W/TREND)

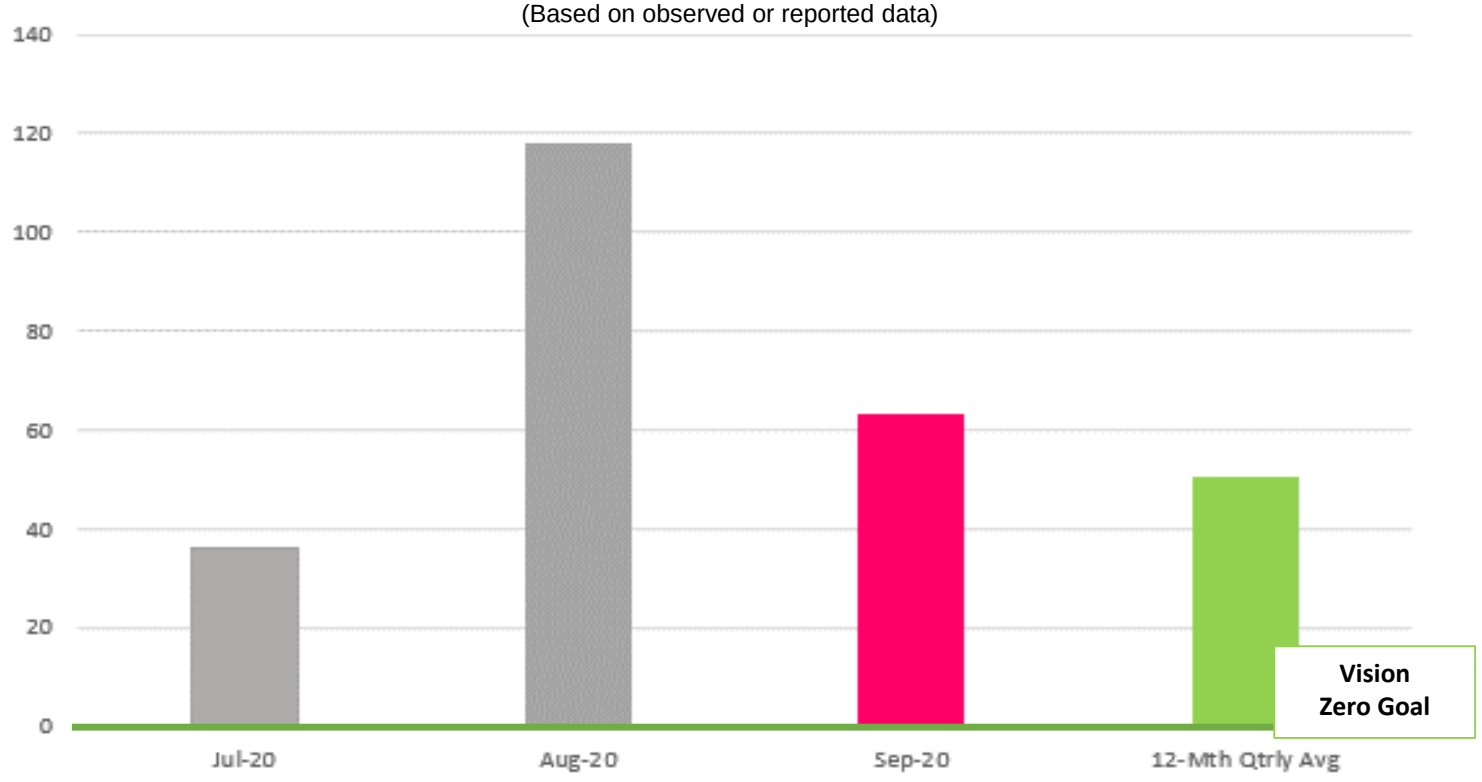
(Based on SunGuide data)



Traffic Incident Management

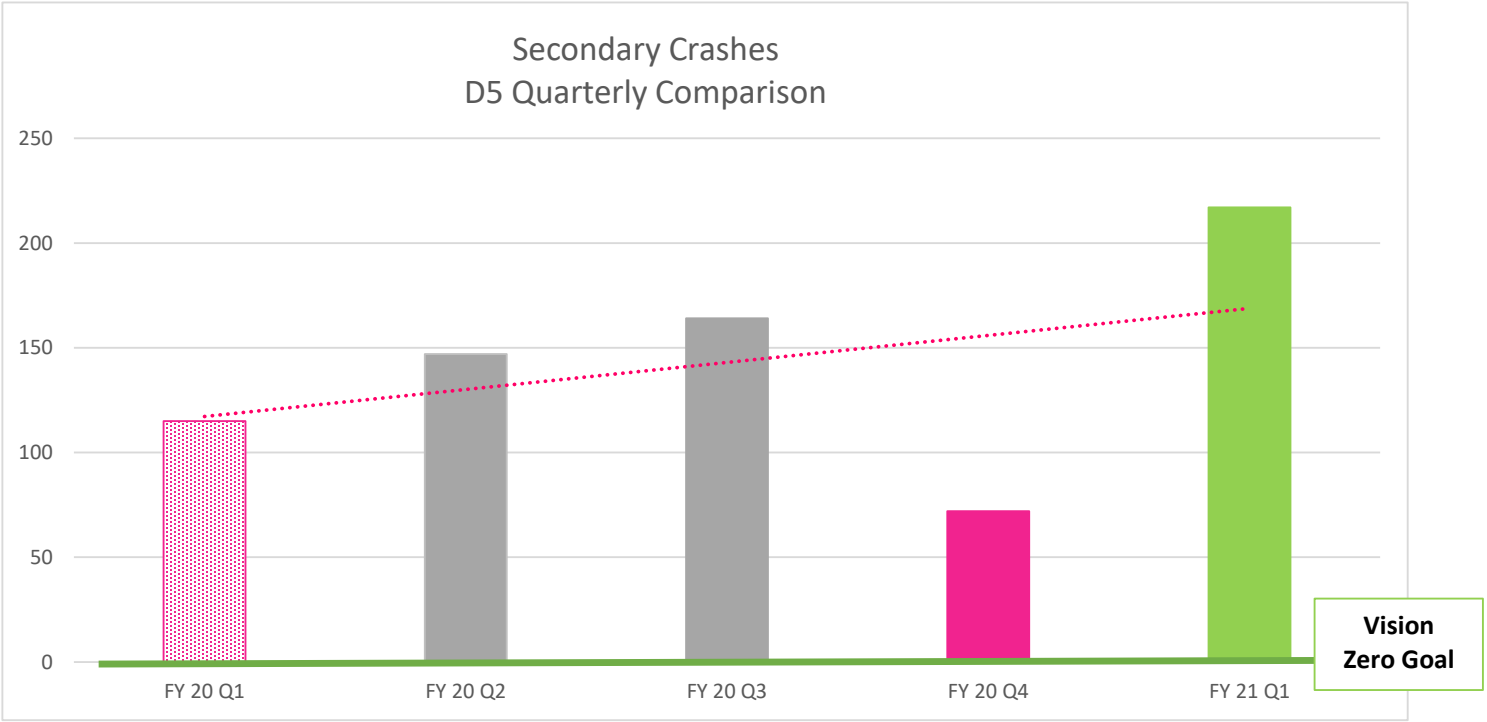
DISTRICT 5 SECONDARY CRASHES

(Based on observed or reported data)



DISTRICT 5 QUARTERLY COMPARISON (WITH TREND LINE)

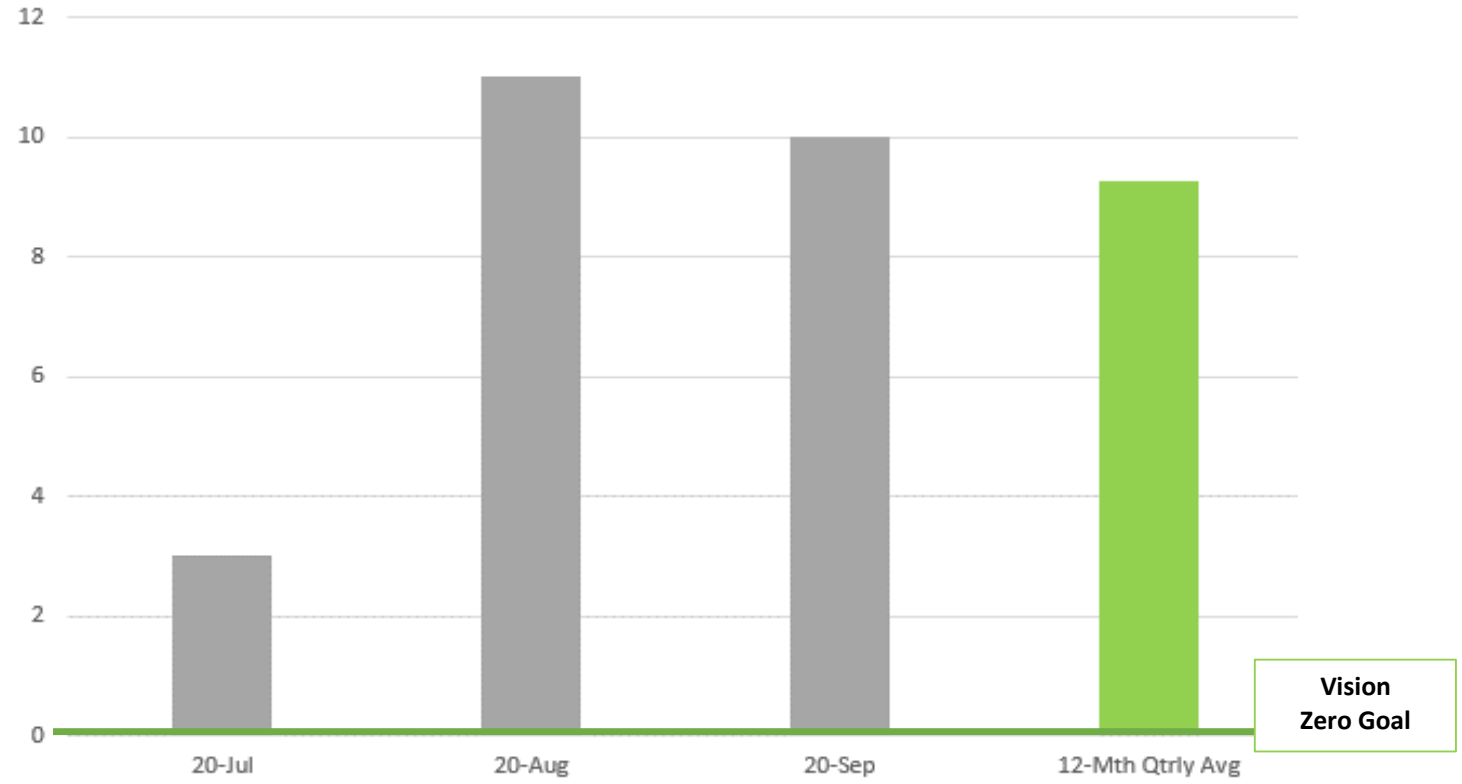
(Based on observed or reported data)



Traffic Incident Management

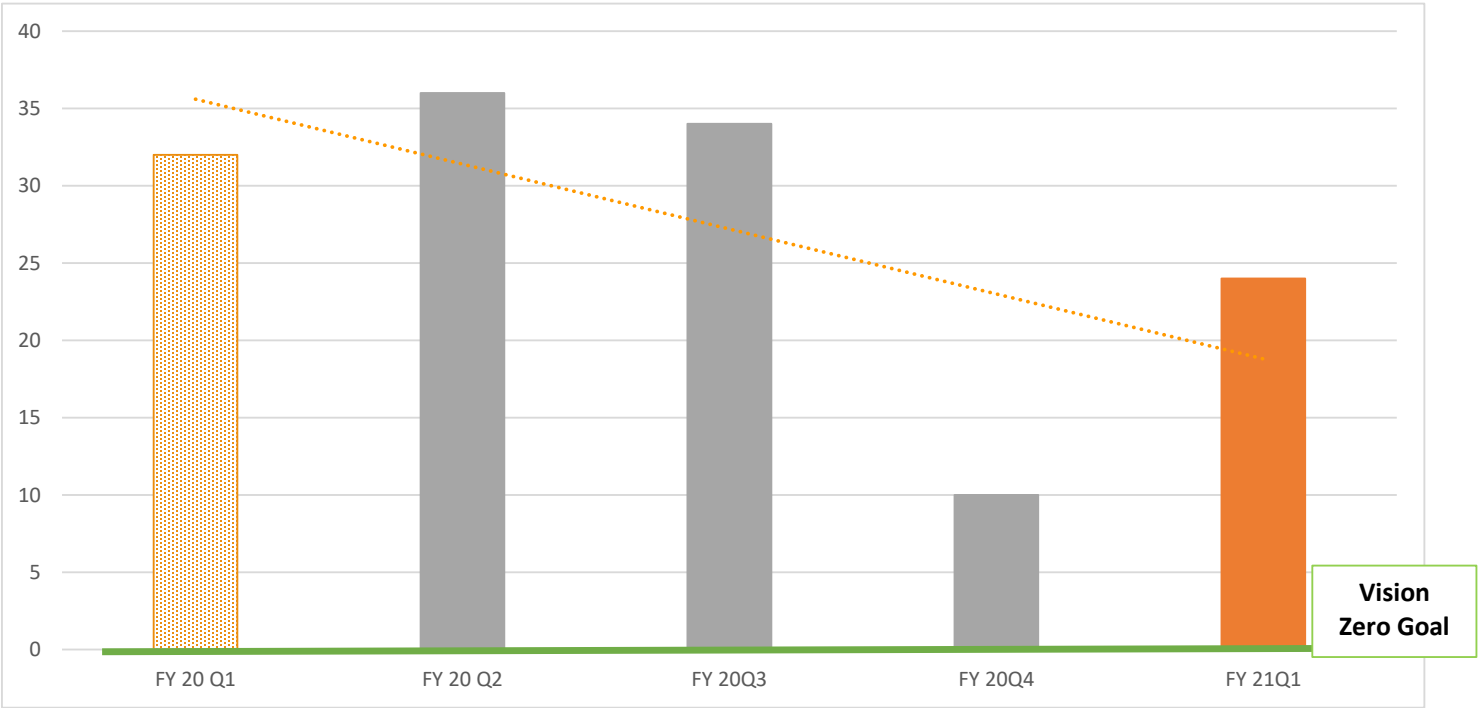
CFX SECONDARY CRASHES

(Based on observed or reported data)



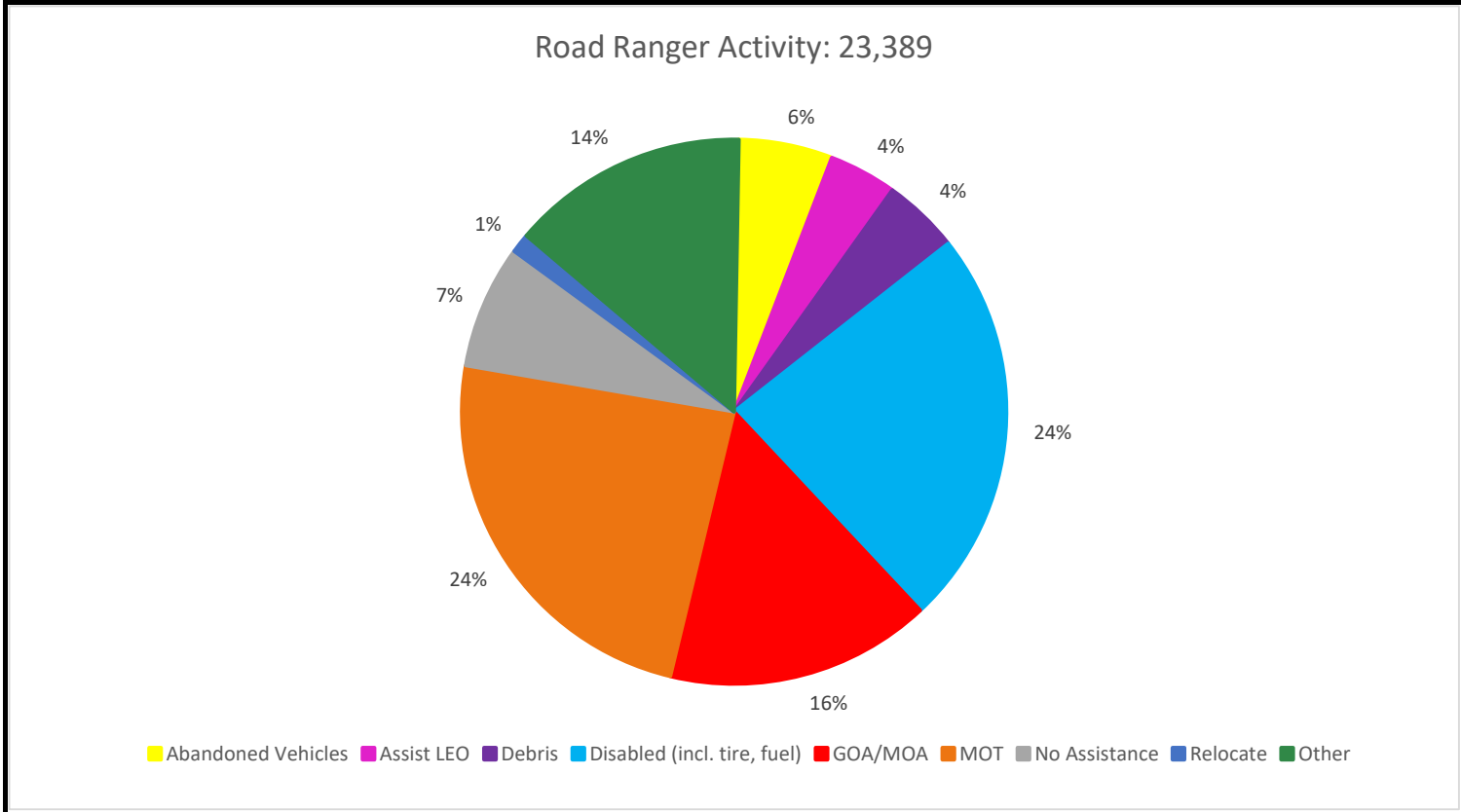
DISTRICT 5 QUARTERLY COMPARISON (WITH TREND LINE)

(Based on observed or reported data)

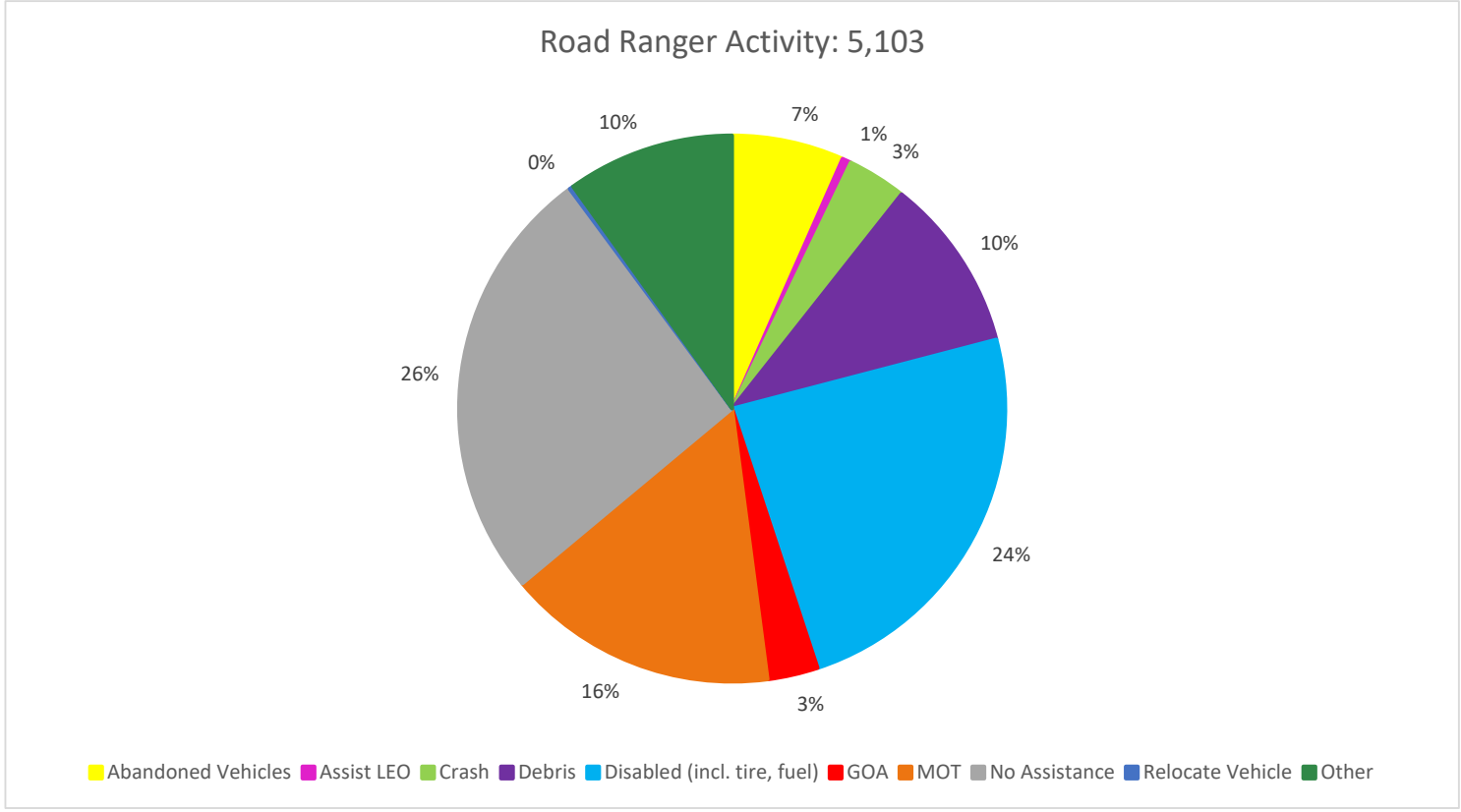


Traffic Incident Management

DISTRICT 5 ROAD RANGER ACTIVITY SUMMARY

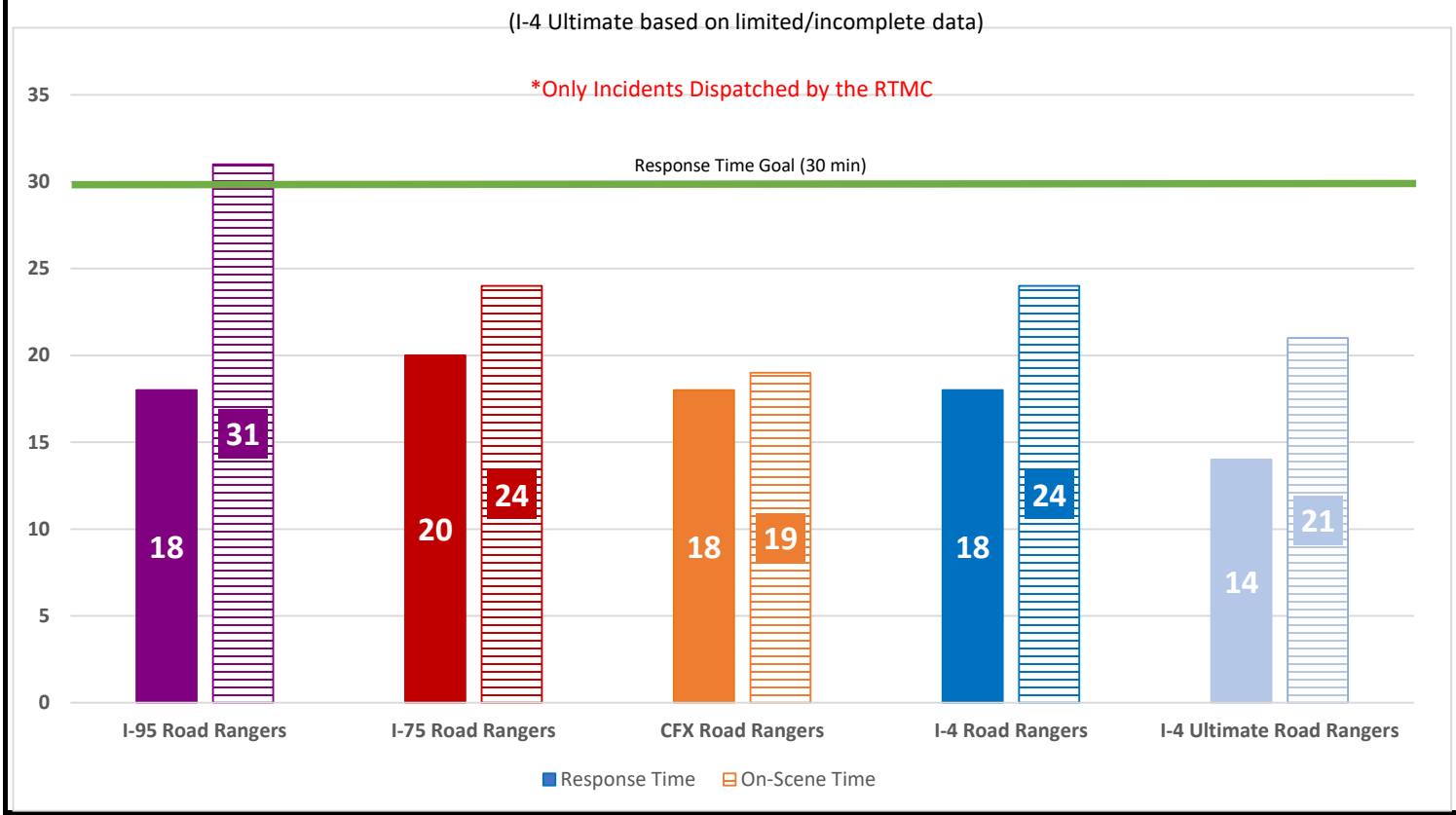


CFX ROAD RANGER ACTIVITY SUMMARY

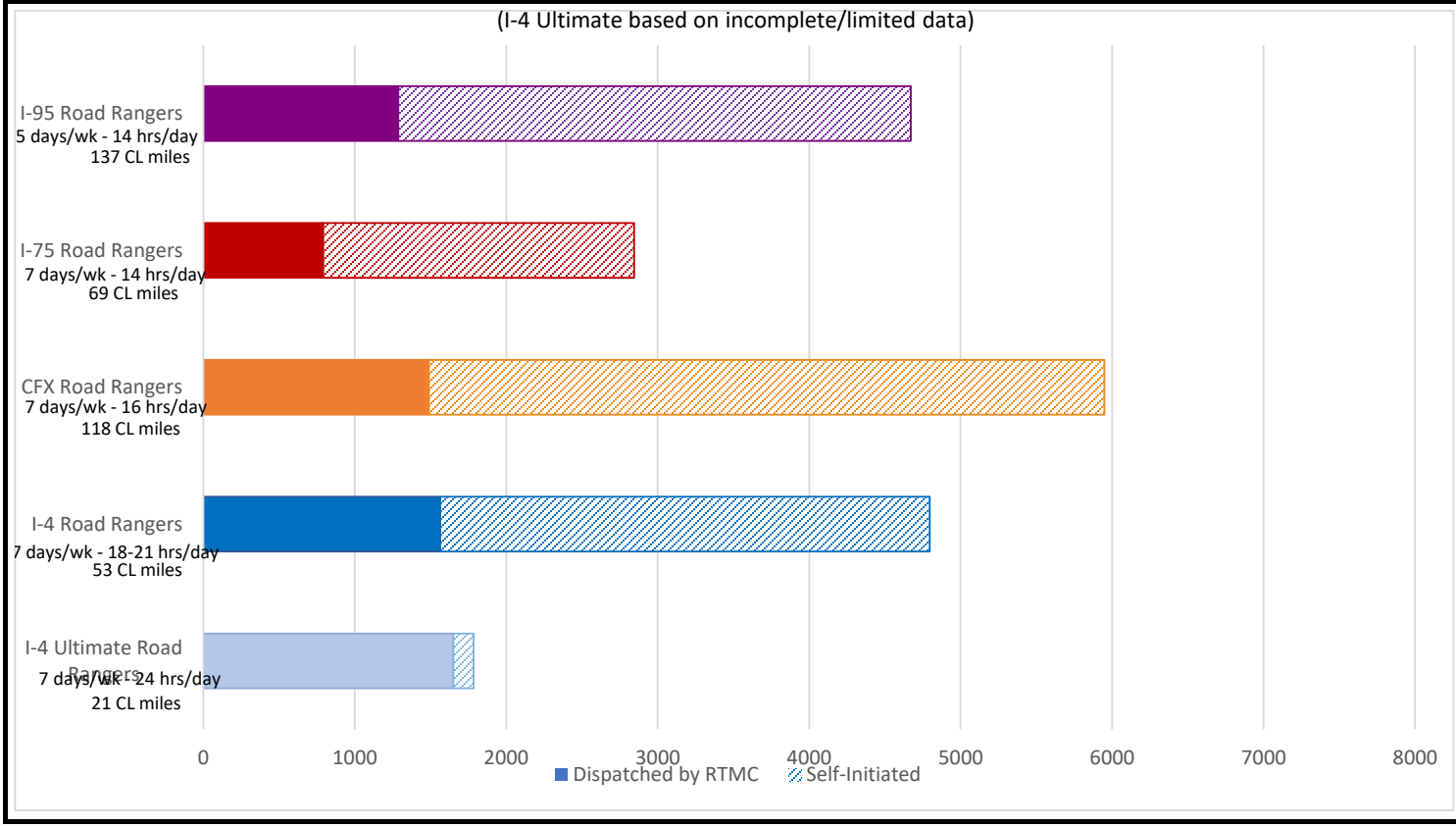


Traffic Incident Management

AVERAGE ROAD RANGER RESPONSE & ON-SCENE TIMES (BY CORRIDOR)

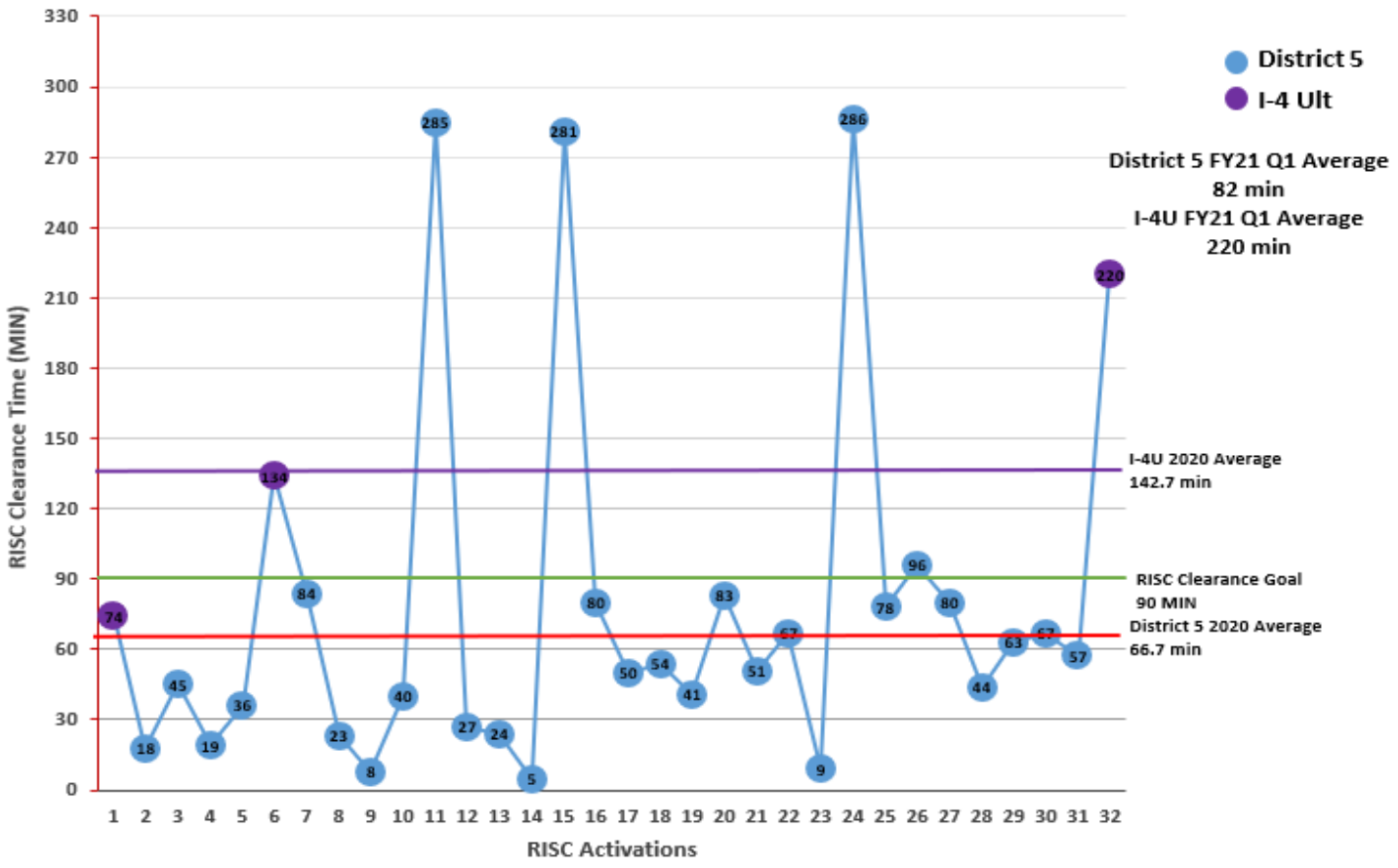


ROAD RANGER DISPATCH SUMMARY (BY CORRIDOR)

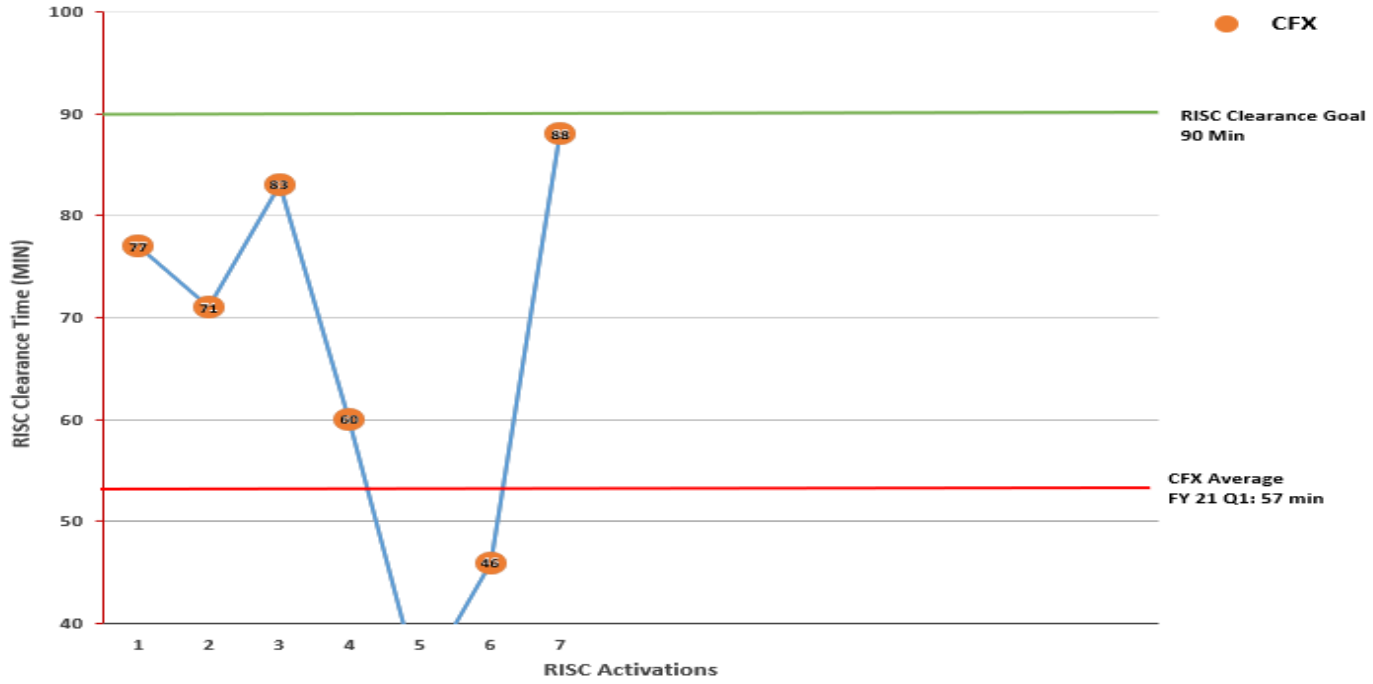


Traffic Incident Management

D5 REGIONAL RISC CLEARANCE TIMES (YEAR TO DATE)

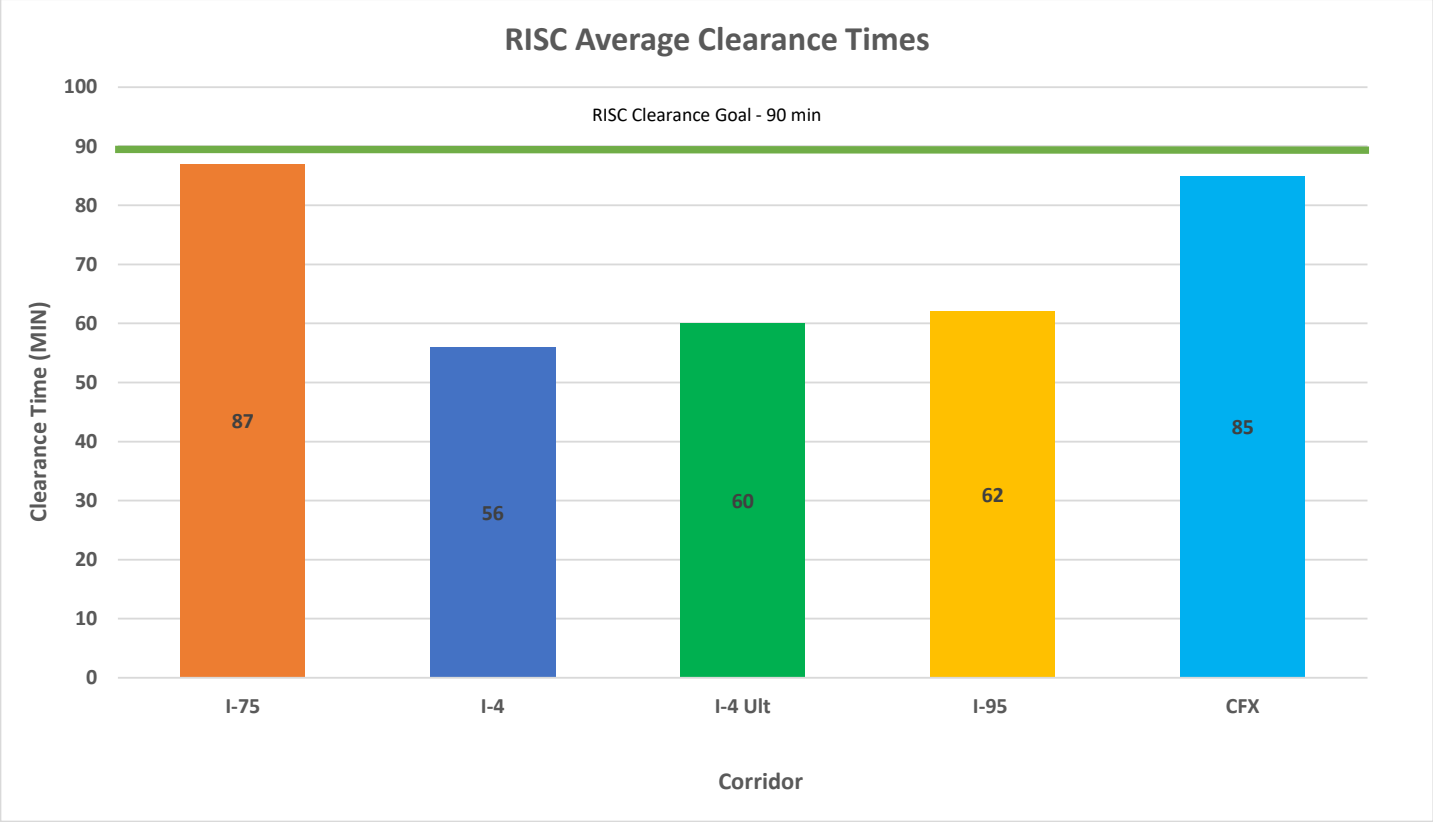


CFX REGIONAL RISC CLEARANCE TIMES (YEAR TO DATE)



Traffic Incident Management

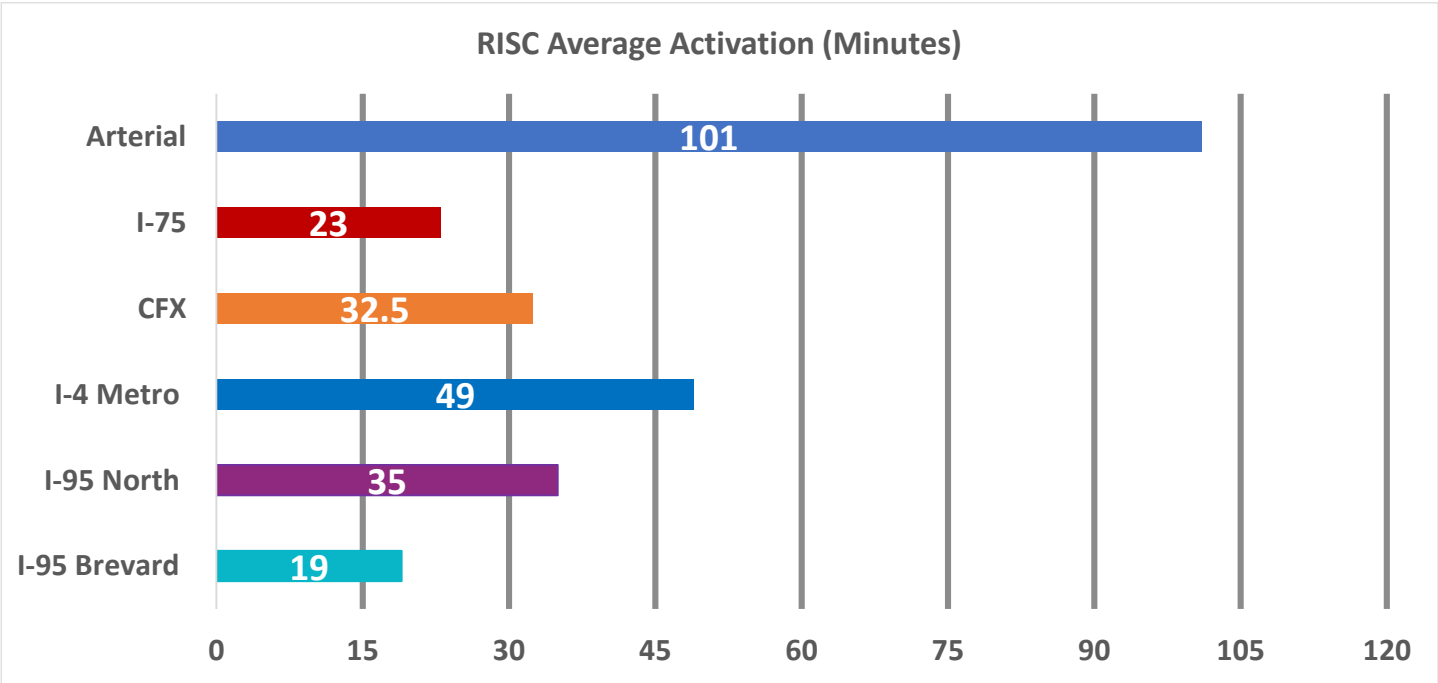
RISC CLEARANCE TIMES BY CORRIDOR (PROGRAM AVERAGE)



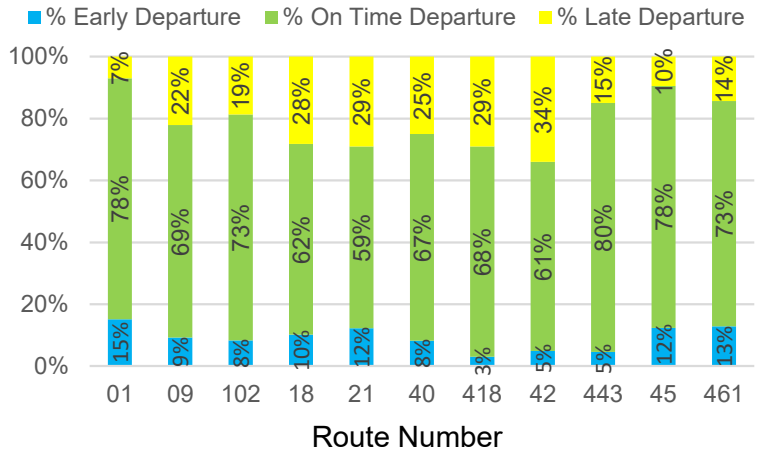
(Arterial activations include SR 44, SR 423, SR 520, US 301. Other limited access State Roads include SR 429 and SR 528.)

RISC ACTIVATION TIME BY CORRIDOR (PROGRAM AVERAGE)

(Some averages are inflated by intentional delays for fatality investigations)

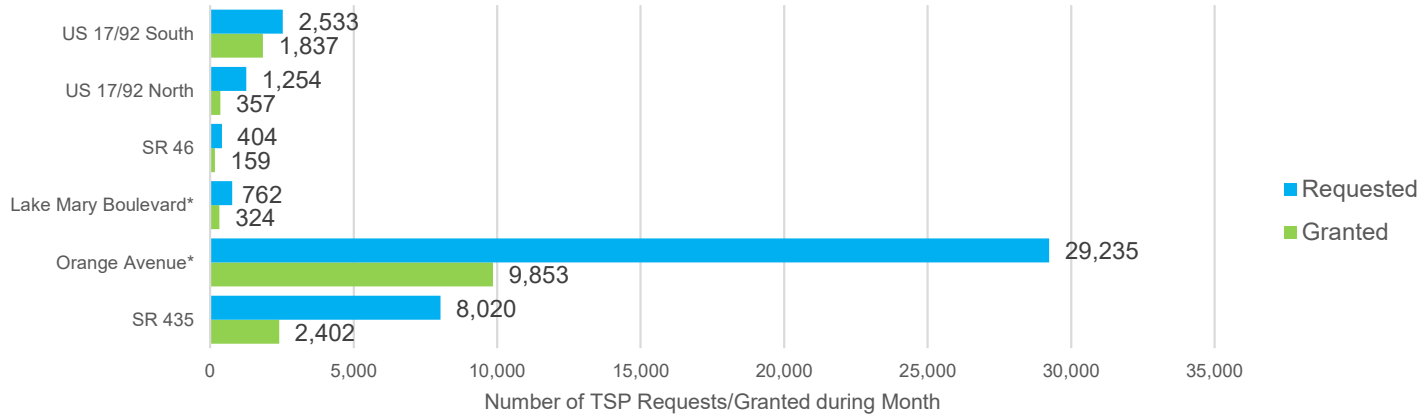


Lynx On-Time Arrival



Route Number	Route Name
01	Winter Park/Altamonte Springs
09	Winter Park Rosemont
102	Orange Avenue/South 17-92
18	S Orange Avenue/Kissimmee
21	Universal Studios
40	Americana Boulevard/Universal Orlando
418	Florida Mall/Meadow Woods/Lake Nona
42	International Drive/Orlando Int'l Airport
443	Lee Road Crosstown
45	Lake Mary
461	Central FL Regional Hospital/Sanford

Transit Signal Priority (TSP) Monthly Summary



*For information purposes only. Not an ICM corridor.

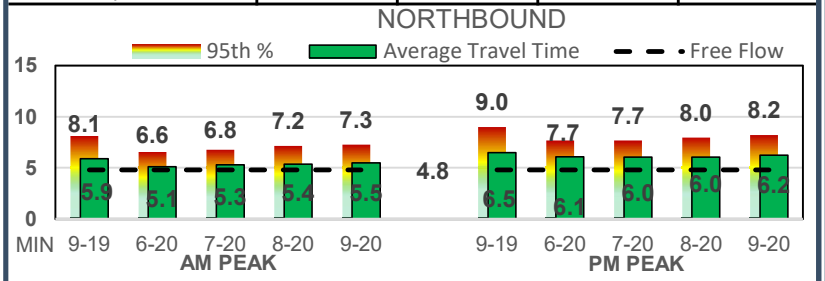
Independent Intersection TSP Request/Granted during Month

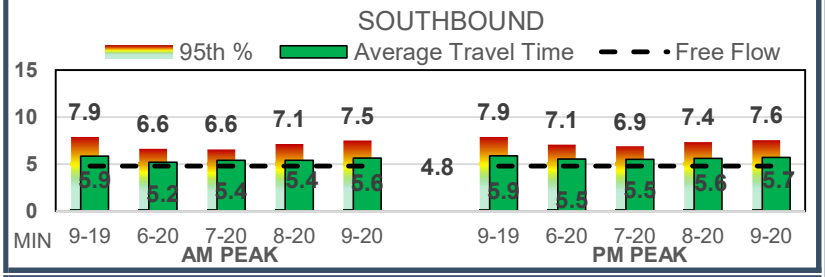
Corridor	ID	Intersection Name	# TSP Requests	# TSP Requests Granted	% TSP Requests Granted
US 17/92 South	1009	US 17/92 & Park Ave	889	417	46.9%
US 17/92 South	1010	US 17/92 & Magnolia Ave	0	0	N/A
US 17/92 South	1011	US 17/92 & Lake Ave	1644	1420	86.4%
US 17/92 North	1070	US 17-92 @ 14-Americana #4374	500	40	8.0%
US 17/92 North	1075	US 17-92 @ 15-Lowes #14366	754	317	42.0%
US 17/92 North	1080	US 17-92 @ 16-Lk Mary #1509	0	0	N/A
SR 46	1015	SR 46 @ US 17/92 #4297	246	91	37.0%
SR 46	1695	SR 46 @ 13-Airport Blvd #32	158	68	43.0%
Orange Avenue	288	Orange Ave & Michigan St	0	0	N/A
Orange Avenue	2	Orange Ave & Amelia St	6914	2803	40.5%
Orange Avenue	174	Orange Ave & Clay Ave	0	0	N/A
Orange Avenue	73	SR 50 & Orange Ave	5992	2620	43.7%
Orange Avenue	14	Orange Ave & Concord St	11820	3007	25.4%
Orange Avenue	185	Orange Ave & Garland Ave	0	0	N/A
Orange Avenue	180	Orange Ave & Highland Ave	0	0	N/A
Orange Avenue	183	Orange Ave & King St	0	0	N/A
Orange Avenue	22	Orange Ave & Livingston St	4509	1423	31.6%
Orange Avenue	186	Orange Ave & Marks St	0	0	N/A
Orange Avenue	187	Orange Ave & New Hampshire St	0	0	N/A
Orange Avenue	188	Orange Ave & Princeton St	0	0	N/A
Orange Avenue	189	Orange Ave & Rollins St	0	0	N/A
Orange Avenue	190	Orange Ave & Virginia Dr	0	0	N/A
Orange Avenue	191	Orange Ave & Winter Park St	0	0	N/A
SR 435	690	SR 435 & Arnold Palmer Rd	562	235	41.8%
SR 435	385	SR 435 & Conroy Rd	1147	727	63.4%
SR 435	394	SR 435 & Metrowest Blvd	0	0	N/A
SR 435	396	SR 435 & Raleigh St	2970	848	28.6%
SR 435	397	SR 435 & Valencia North	3341	592	17.7%
SR 50	71	SR 50 & Magnolia Ave	0	0	N/A

US 17/92, North-South corridor from Airport Blvd to SR 46 (1st St), 3.0 miles length, 9 traffic signals

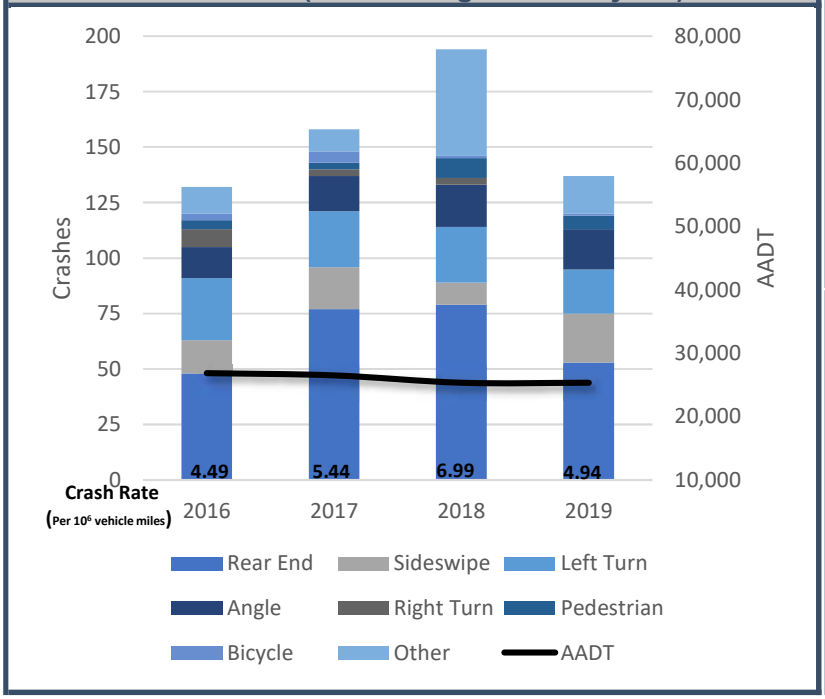
Travel Time Information (Source: BlueToad)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 4.8 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	5.5	6.2	7.3	8.2
Aug 2020	5.4	6.0	7.2	8.0
Jul 2020	5.3	6.0	6.8	7.7
Jun 2020	5.1	6.1	6.6	7.7
Sep 2019	5.9	6.5	8.1	9.0
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 4.8 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	5.6	5.7	7.5	7.6
Aug 2020	5.4	5.6	7.1	7.4
Jul 2020	5.4	5.5	6.6	6.9
Jun 2020	5.2	5.5	6.6	7.1
Sep 2019	5.9	5.9	7.9	7.9

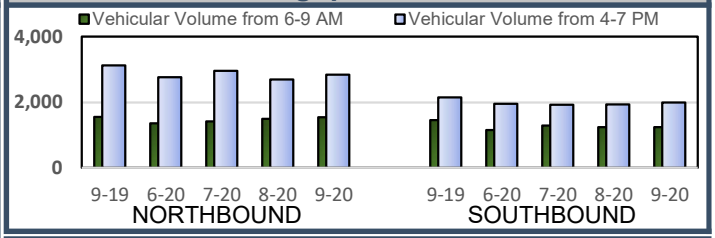




Crash Data (Source: Signal 4 Analytics)

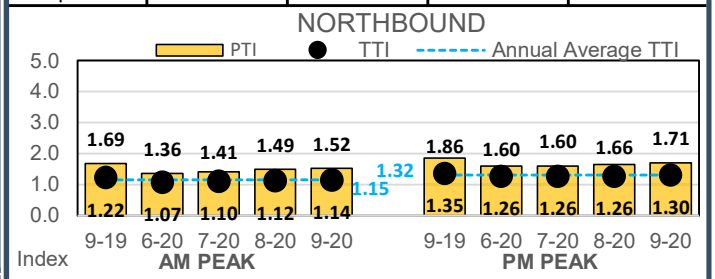


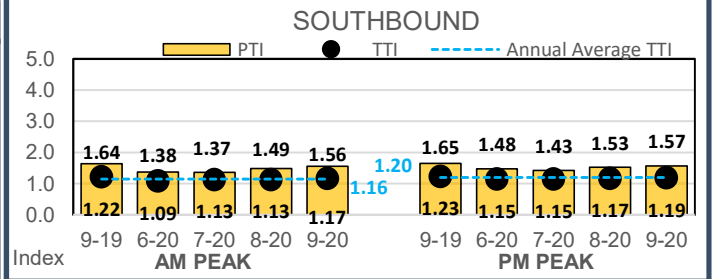
Throughput Volumes



Travel Time Reliability

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.14	1.30	1.52	1.71
Aug 2020	1.12	1.26	1.49	1.66
Jul 2020	1.10	1.26	1.41	1.60
Jun 2020	1.07	1.26	1.36	1.60
Sep 2019	1.22	1.35	1.69	1.86
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.17	1.19	1.56	1.57
Aug 2020	1.13	1.17	1.49	1.53
Jul 2020	1.13	1.15	1.37	1.43
Jun 2020	1.09	1.15	1.38	1.48
Sep 2019	1.22	1.23	1.64	1.65





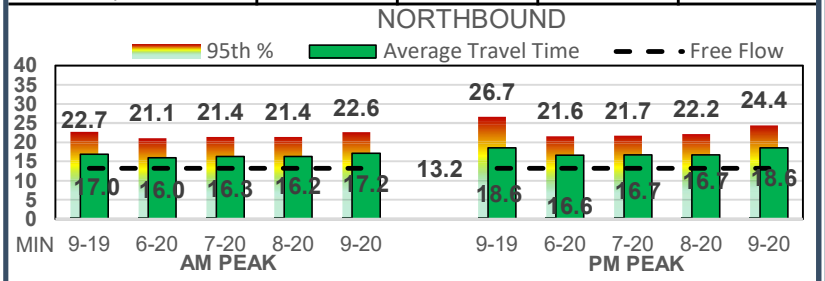
Average Travel Time Index for September 2020 = 1.20

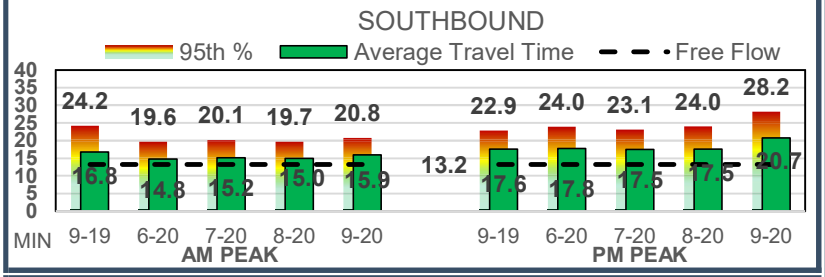
Emergency Vehicle Preemption

US 17/92, North-South corridor from Airport Blvd to Spartan Dr, 10.1 miles length, 24 traffic signals

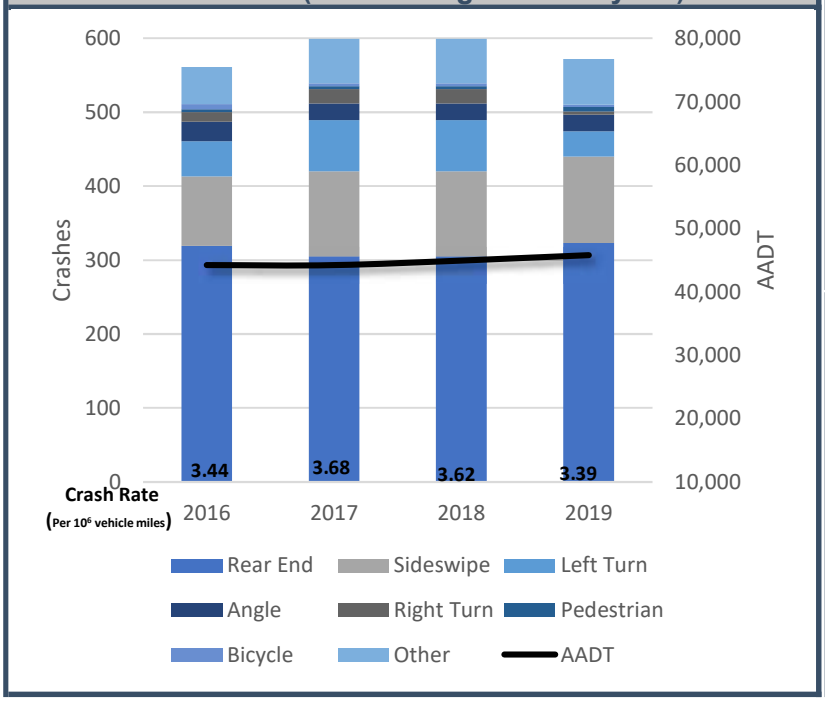
Travel Time Information (Source: BlueToad)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 13.2 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	17.2	18.6	22.6	24.4
Aug 2020	16.2	16.7	21.4	22.2
Jul 2020	16.3	16.7	21.4	21.7
Jun 2020	16.0	16.6	21.1	21.6
Sep 2019	17.0	18.6	22.7	26.7
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 13.2 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	15.9	20.7	20.8	28.2
Aug 2020	15.0	17.5	19.7	24.0
Jul 2020	15.2	17.5	20.1	23.1
Jun 2020	14.8	17.8	19.6	24.0
Sep 2019	16.8	17.6	24.2	22.9

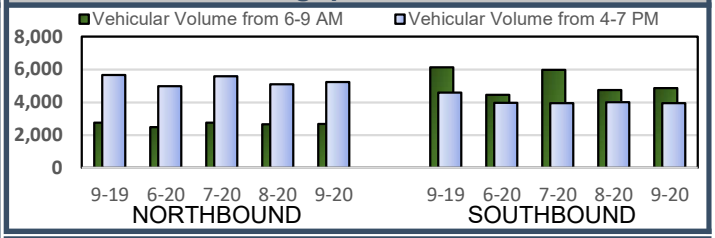




Crash Data (Source: Signal 4 Analytics)

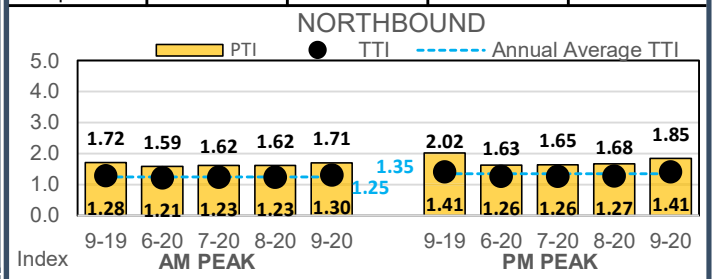


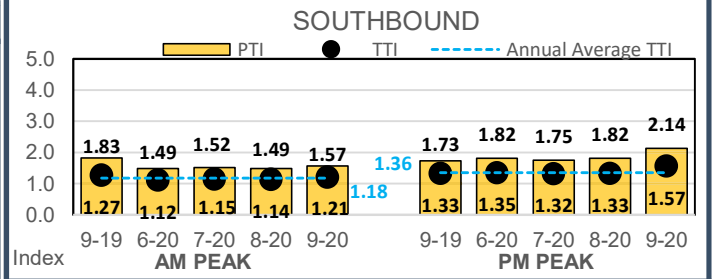
Throughput Volumes



Travel Time Reliability

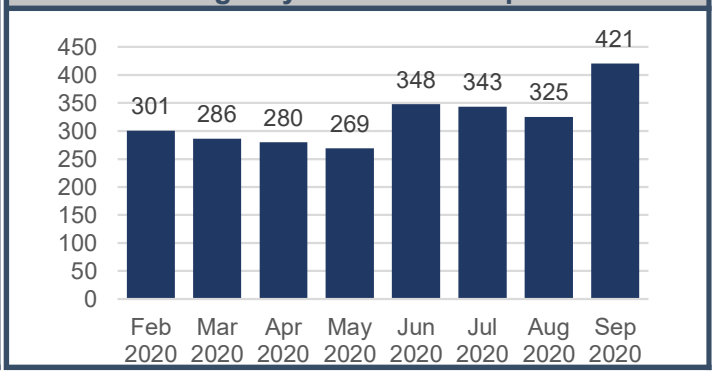
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.30	1.41	1.71	1.85
Aug 2020	1.23	1.27	1.62	1.68
Jul 2020	1.23	1.26	1.62	1.65
Jun 2020	1.21	1.26	1.59	1.63
Sep 2019	1.28	1.41	1.72	2.02
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.21	1.57	1.57	2.14
Aug 2020	1.14	1.33	1.49	1.82
Jul 2020	1.15	1.32	1.52	1.75
Jun 2020	1.12	1.35	1.49	1.82
Sep 2019	1.27	1.33	1.83	1.73





Average Travel Time Index for September 2020 = 1.37

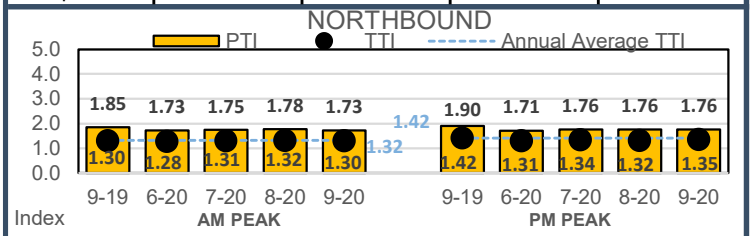
Emergency Vehicle Preemption

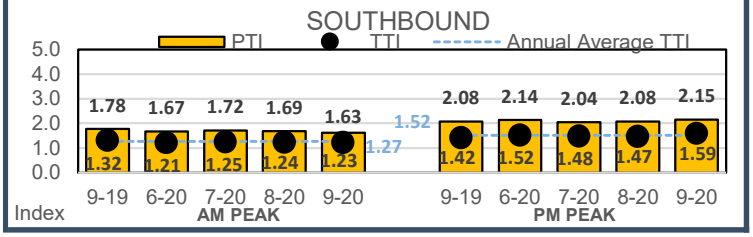


US 17/92, North-South corridor from Airport Blvd to Spartan Dr, 10.1 miles length, 24 traffic signals

Airport Blvd to SR 434, 5.8 miles length, 15 traffic signals

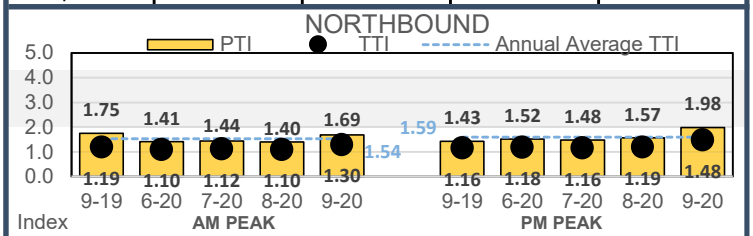
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.30	1.35	1.73	1.76
Aug 2020	1.32	1.32	1.78	1.76
Jul 2020	1.31	1.34	1.75	1.76
Jun 2020	1.28	1.31	1.73	1.71
Sep 2019	1.30	1.42	1.85	1.90
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.23	1.59	1.63	2.15
Aug 2020	1.24	1.47	1.69	2.08
Jul 2020	1.25	1.48	1.72	2.04
Jun 2020	1.21	1.52	1.67	2.14
Sep 2019	1.32	1.42	1.78	2.08

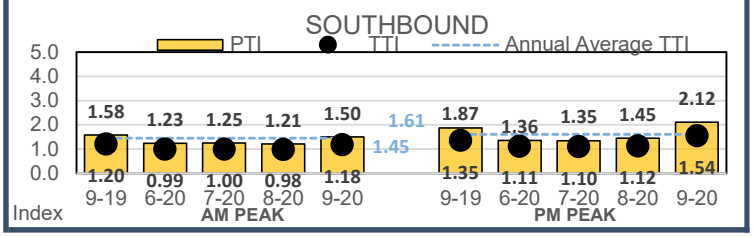




SR 434 to Spartan Dr, 4.3 miles length, 9 traffic signals

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.30	1.48	1.69	1.98
Aug 2020	1.10	1.19	1.40	1.57
Jul 2020	1.12	1.16	1.44	1.48
Jun 2020	1.10	1.18	1.41	1.52
Sep 2019	1.19	1.16	1.75	1.43
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.18	1.54	1.50	2.12
Aug 2020	0.98	1.12	1.21	1.45
Jul 2020	1.00	1.10	1.25	1.35
Jun 2020	0.99	1.11	1.23	1.36
Sep 2019	1.20	1.35	1.58	1.87

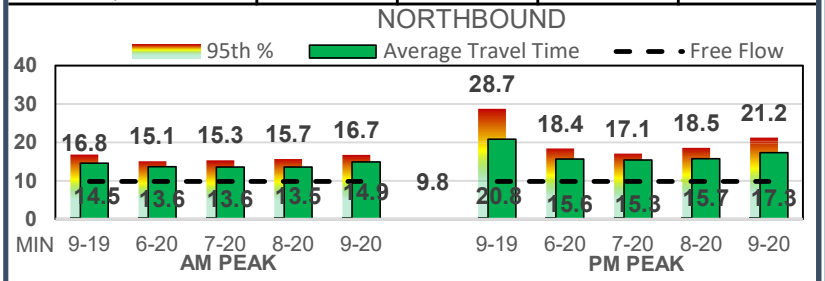


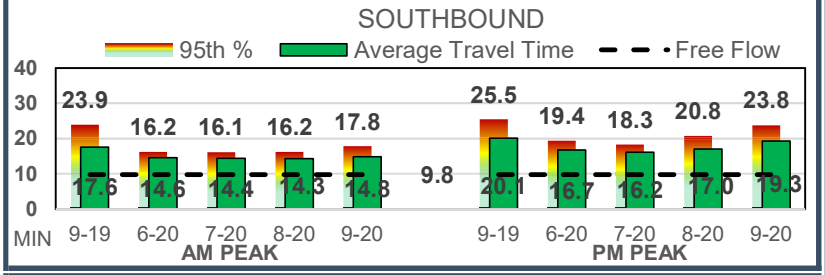


US 17/92 (Orlando Ave/Mills Ave), North-South corridor from Mayo Ave to Colonial Dr, 6.1 miles length, 22 traffic signals

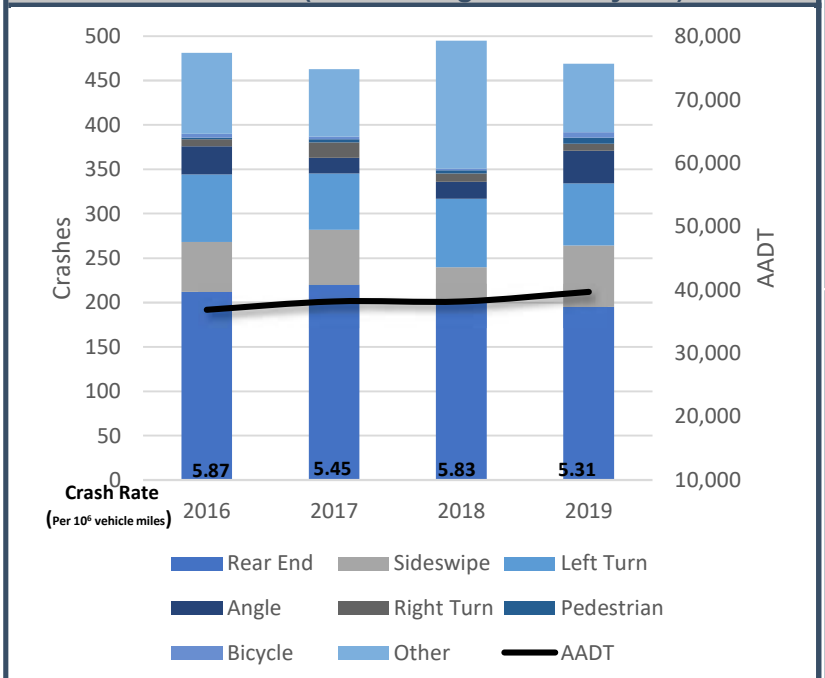
Travel Time Information (Source: BlueMAC)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 9.8 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	14.9	17.3	16.7	21.2
Aug 2020	13.5	15.7	15.7	18.5
Jul 2020	13.6	15.3	15.3	17.1
Jun 2020	13.6	15.6	15.1	18.4
Sep 2019	14.5	20.8	16.8	28.7
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 9.8 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	14.8	19.3	17.8	23.8
Aug 2020	14.3	17.0	16.2	20.8
Jul 2020	14.4	16.2	16.1	18.3
Jun 2020	14.6	16.7	16.2	19.4
Sep 2019	17.6	20.1	23.9	25.5

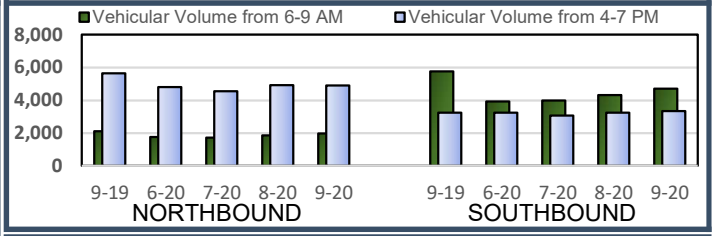




Crash Data (Source: Signal 4 Analytics)

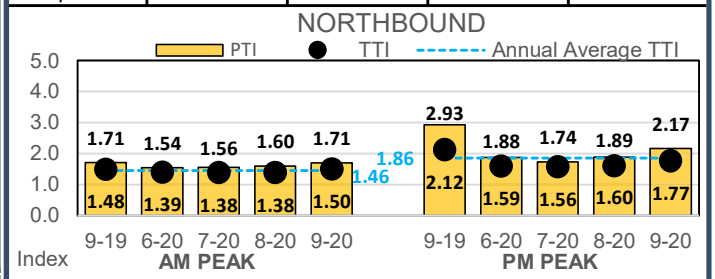


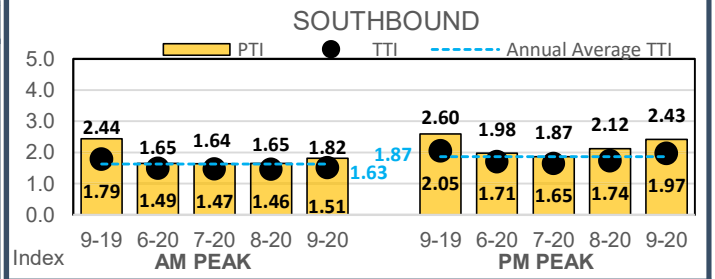
Throughput Volumes



Travel Time Reliability

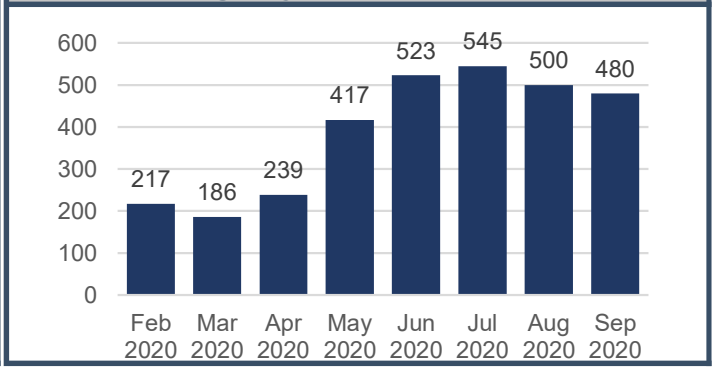
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.50	1.77	1.71	2.17
Aug 2020	1.38	1.60	1.60	1.89
Jul 2020	1.38	1.56	1.56	1.74
Jun 2020	1.39	1.59	1.54	1.88
Sep 2019	1.48	2.12	1.71	2.93
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.51	1.97	1.82	2.43
Aug 2020	1.46	1.74	1.65	2.12
Jul 2020	1.47	1.65	1.64	1.87
Jun 2020	1.49	1.71	1.65	1.98
Sep 2019	1.79	2.05	2.44	2.60





Average Travel Time Index for September 2020 = 1.69

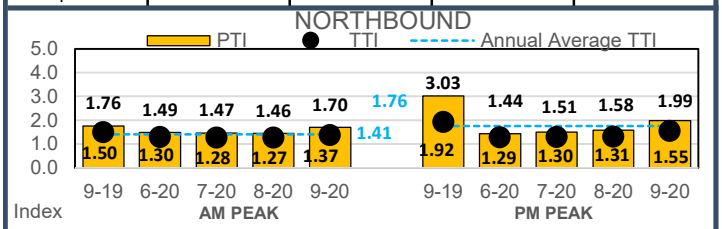
Emergency Vehicle Preemption

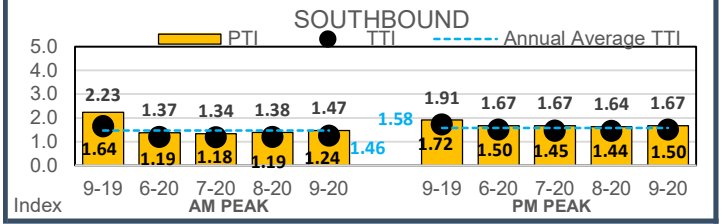


US 17/92 (Orlando Ave/Mills Ave), North-South corridor from Mayo Ave to Colonial Dr, 6.1 miles length, 22 traffic signals

Mayo Ave to Monroe Ave, 1.9 miles length, 8 traffic signals

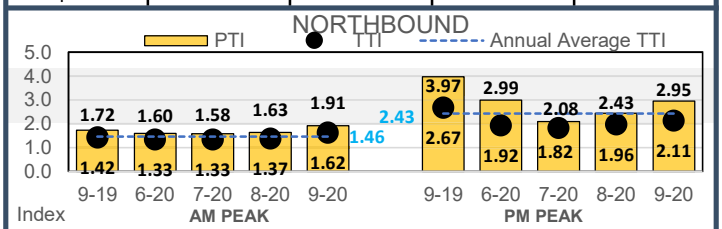
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.37	1.55	1.70	1.99
Aug 2020	1.27	1.31	1.46	1.58
Jul 2020	1.28	1.30	1.47	1.51
Jun 2020	1.30	1.29	1.49	1.44
Sep 2019	1.50	1.92	1.76	3.03
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.24	1.50	1.47	1.67
Aug 2020	1.19	1.44	1.38	1.64
Jul 2020	1.18	1.45	1.34	1.67
Jun 2020	1.19	1.50	1.37	1.67
Sep 2019	1.64	1.72	2.23	1.91

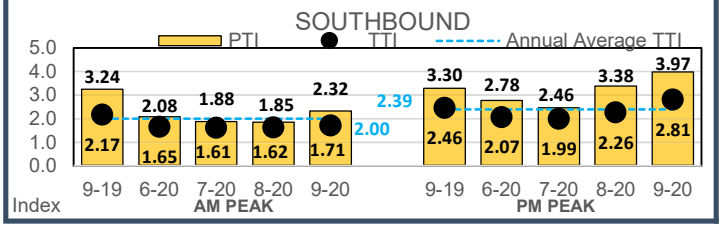




Monroe Ave to Camellia Ave, 2.0 miles length, 7 traffic signals

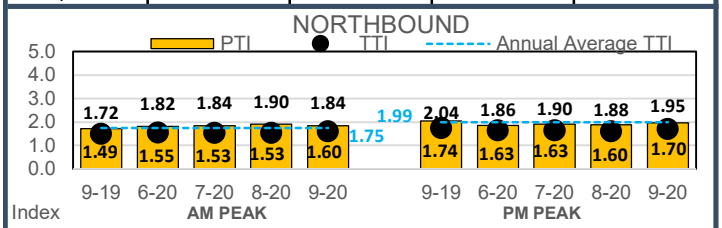
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.62	2.11	1.91	2.95
Aug 2020	1.37	1.96	1.63	2.43
Jul 2020	1.33	1.82	1.58	2.08
Jun 2020	1.33	1.92	1.60	2.99
Sep 2019	1.42	2.67	1.72	3.97
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.71	2.81	2.32	3.97
Aug 2020	1.62	2.26	1.85	3.38
Jul 2020	1.61	1.99	1.88	2.46
Jun 2020	1.65	2.07	2.08	2.78
Sep 2019	2.17	2.46	3.24	3.30

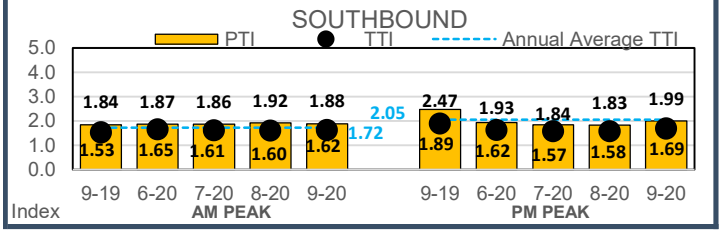




Camellia Ave to Colonial Dr, 2.2 miles length, 7 traffic signals

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.60	1.70	1.84	1.95
Aug 2020	1.53	1.60	1.90	1.88
Jul 2020	1.53	1.63	1.84	1.90
Jun 2020	1.55	1.63	1.82	1.86
Sep 2019	1.49	1.74	1.72	2.04
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.62	1.69	1.88	1.99
Aug 2020	1.60	1.58	1.92	1.83
Jul 2020	1.61	1.57	1.86	1.84
Jun 2020	1.65	1.62	1.87	1.93
Sep 2019	1.53	1.89	1.84	2.47

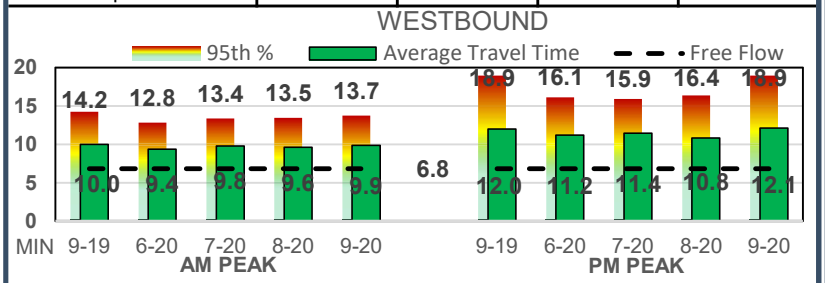


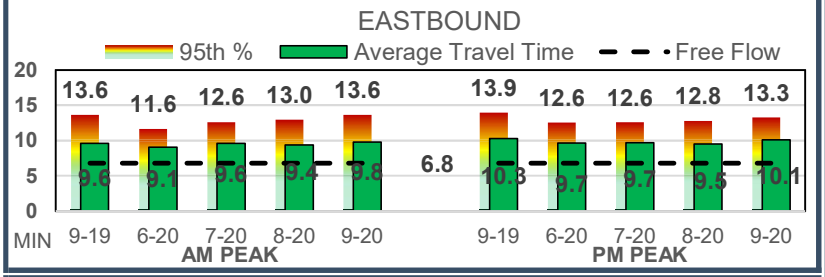


SR 46, East-West corridor from CR 431 (Orange Boulevard) to US 17-92, 5.4 miles length, 12 traffic signals

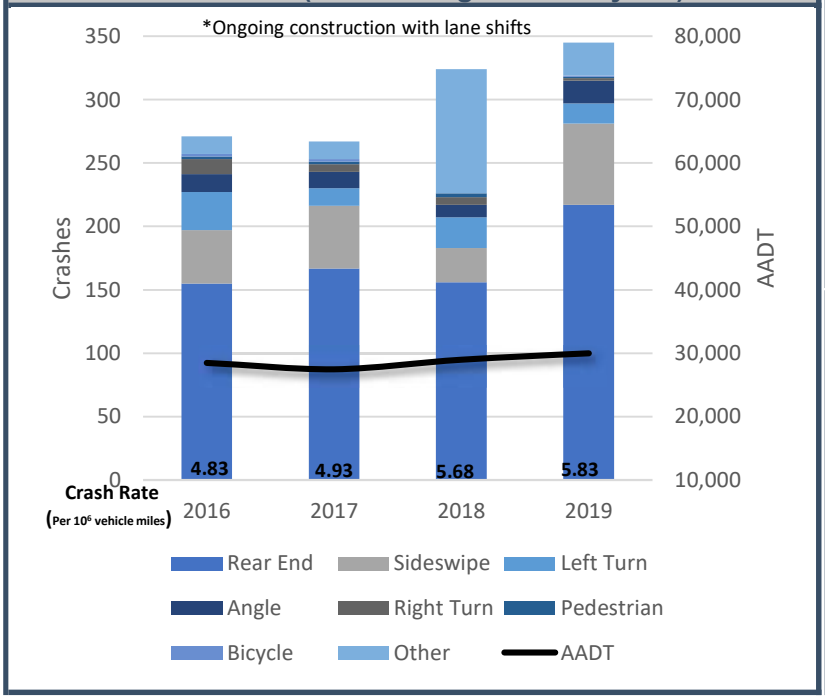
Travel Time Information (Source: BlueMAC)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 6.8 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	9.9	12.1	13.7	18.9
Aug 2020	9.6	10.8	13.5	16.4
Jul 2020	9.8	11.4	13.4	15.9
Jun 2020	9.4	11.2	12.8	16.1
Sep 2019	10.0	12.0	14.2	18.9
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 6.8 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	9.8	10.1	13.6	13.3
Aug 2020	9.4	9.5	13.0	12.8
Jul 2020	9.6	9.7	12.6	12.6
Jun 2020	9.1	9.7	11.6	12.6
Sep 2019	9.6	10.3	13.6	13.9

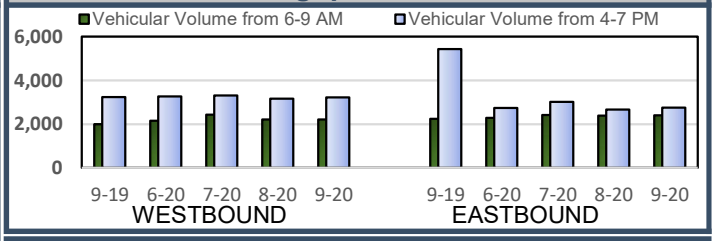




Crash Data (Source: Signal 4 Analytics)

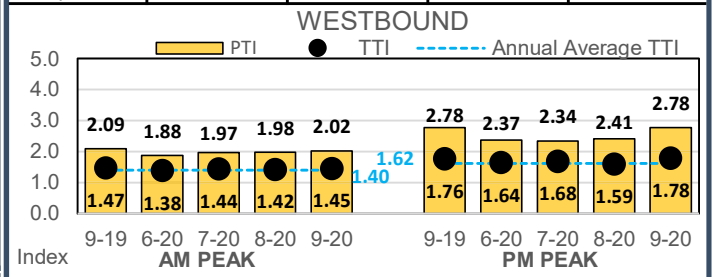


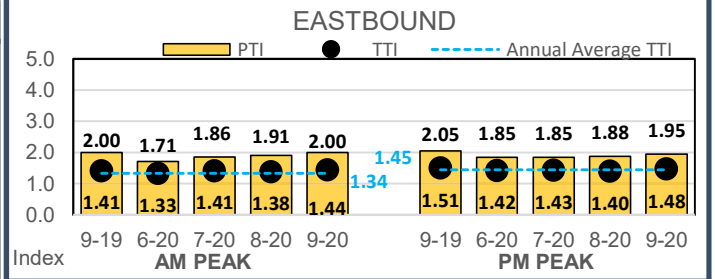
Throughput Volumes



Travel Time Reliability

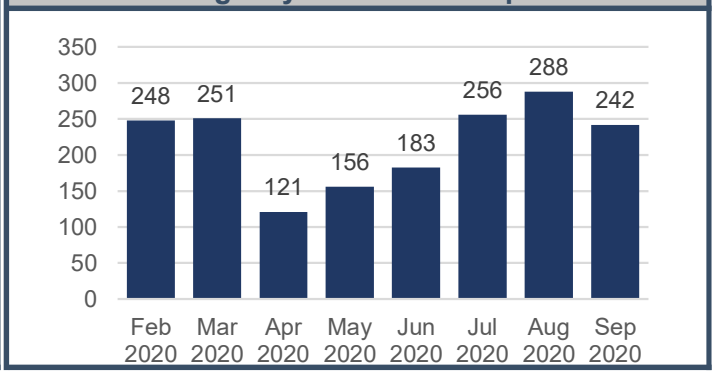
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.45	1.78	2.02	2.78
Aug 2020	1.42	1.59	1.98	2.41
Jul 2020	1.44	1.68	1.97	2.34
Jun 2020	1.38	1.64	1.88	2.37
Sep 2019	1.47	1.76	2.09	2.78
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.44	1.48	2.00	1.95
Aug 2020	1.38	1.40	1.91	1.88
Jul 2020	1.41	1.43	1.86	1.85
Jun 2020	1.33	1.42	1.71	1.85
Sep 2019	1.41	1.51	2.00	2.05





Average Travel Time Index for September 2020 = 1.54

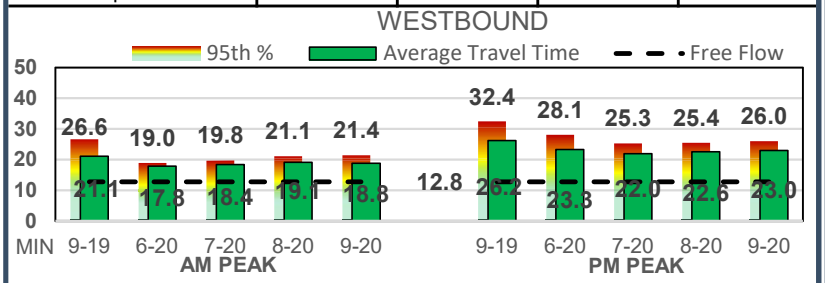
Emergency Vehicle Preemption

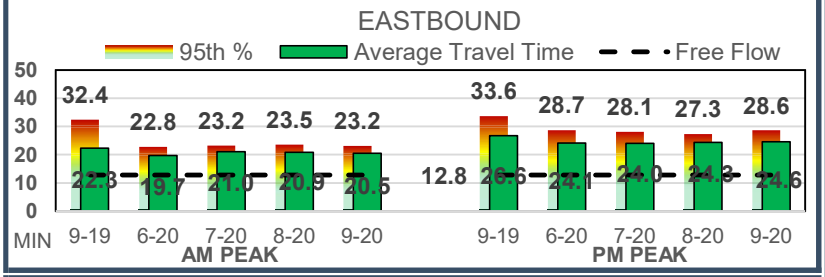


SR 50 (Colonial Drive), East-West corridor from Kirkman Rd to Semoran Blvd, 9.1 miles length, 35 traffic signals

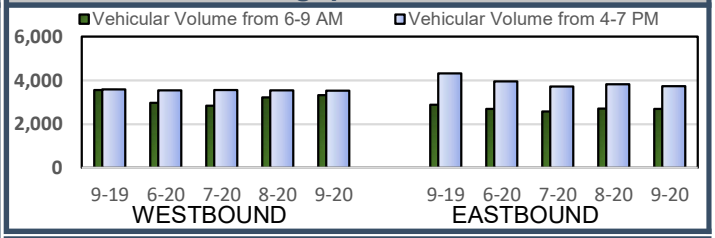
Travel Time Information (Source: BlueMAC)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 12.8 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	18.8	23.0	21.4	26.0
Aug 2020	19.1	22.6	21.1	25.4
Jul 2020	18.4	22.0	19.8	25.3
Jun 2020	17.8	23.3	19.0	28.1
Sep 2019	21.1	26.2	26.6	32.4
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 12.8 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	20.5	24.6	23.2	28.6
Aug 2020	20.9	24.3	23.5	27.3
Jul 2020	21.0	24.0	23.2	28.1
Jun 2020	19.7	24.1	22.8	28.7
Sep 2019	22.3	26.6	32.4	33.6



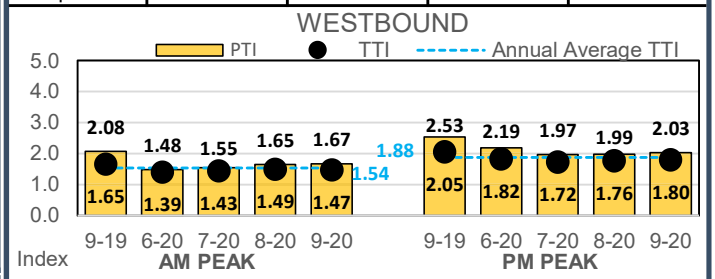


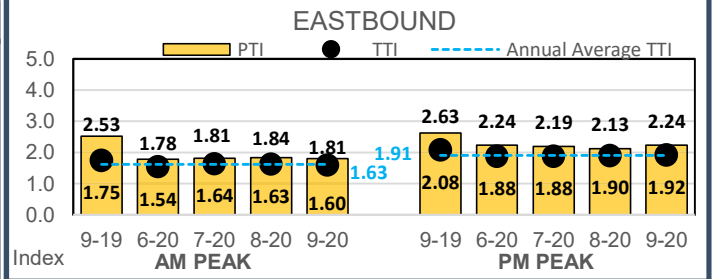
Throughput Volumes



Travel Time Reliability

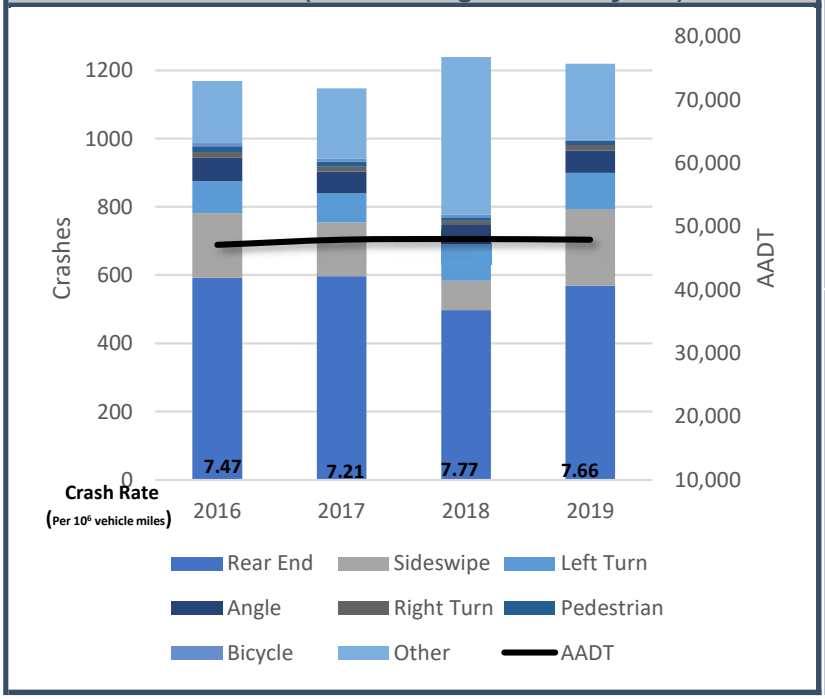
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.47	1.80	1.67	2.03
Aug 2020	1.49	1.76	1.65	1.99
Jul 2020	1.43	1.72	1.55	1.97
Jun 2020	1.39	1.82	1.48	2.19
Sep 2019	1.65	2.05	2.08	2.53
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.60	1.92	1.81	2.24
Aug 2020	1.63	1.90	1.84	2.13
Jul 2020	1.64	1.88	1.81	2.19
Jun 2020	1.54	1.88	1.78	2.24
Sep 2019	1.75	2.08	2.53	2.63



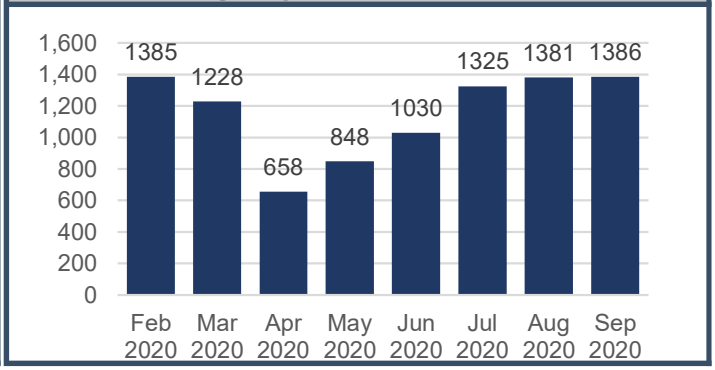


Average Travel Time Index for September 2020 = 1.69

Crash Data (Source: Signal 4 Analytics)



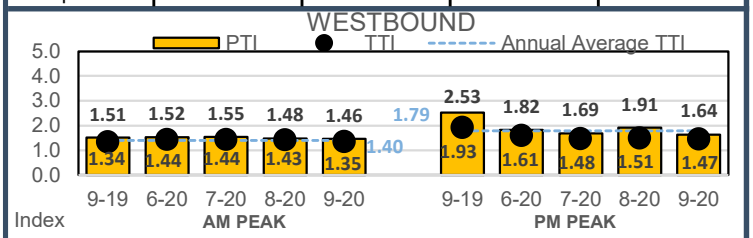
Emergency Vehicle Preemption

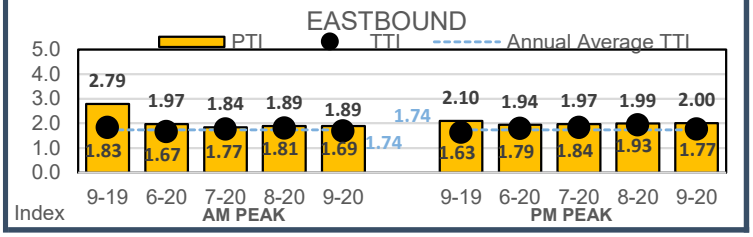


SR 50 (Colonial Drive), East-West corridor from Kirkman Rd to Semoran Blvd, 9.1 miles length, 35 traffic signals

Kirkman Rd to I-4, 4.6 miles length, 16 traffic signals

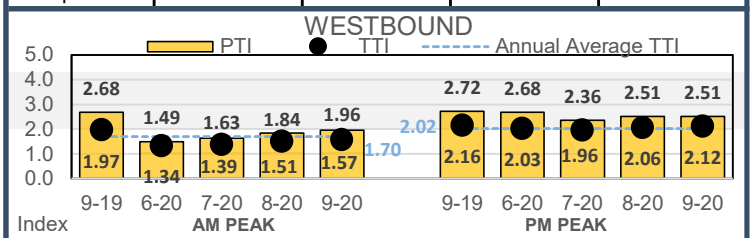
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.35	1.47	1.46	1.64
Aug 2020	1.43	1.51	1.48	1.91
Jul 2020	1.44	1.48	1.55	1.69
Jun 2020	1.44	1.61	1.52	1.82
Sep 2019	1.34	1.93	1.51	2.53
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.69	1.77	1.89	2.00
Aug 2020	1.81	1.93	1.89	1.99
Jul 2020	1.77	1.84	1.84	1.97
Jun 2020	1.67	1.79	1.97	1.94
Sep 2019	1.83	1.63	2.79	2.10

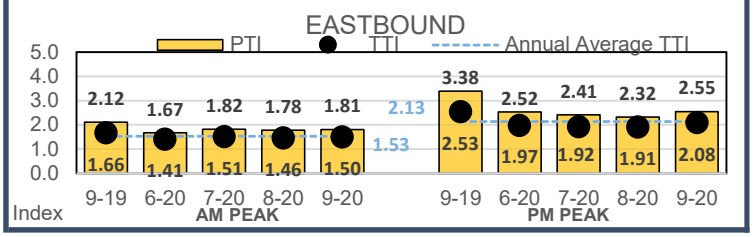




I-4 to Semoran Blvd, 4.5 miles length, 19 traffic signals

Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.57	2.12	1.96	2.51
Aug 2020	1.51	2.06	1.84	2.51
Jul 2020	1.39	1.96	1.63	2.36
Jun 2020	1.34	2.03	1.49	2.68
Sep 2019	1.97	2.16	2.68	2.72
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.50	2.08	1.81	2.55
Aug 2020	1.46	1.91	1.78	2.32
Jul 2020	1.51	1.92	1.82	2.41
Jun 2020	1.41	1.97	1.67	2.52
Sep 2019	1.66	2.53	2.12	3.38

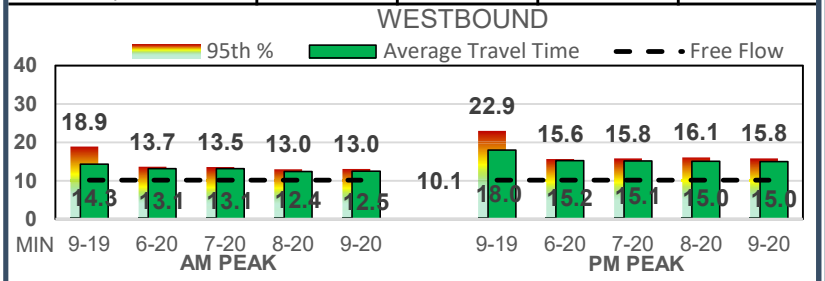


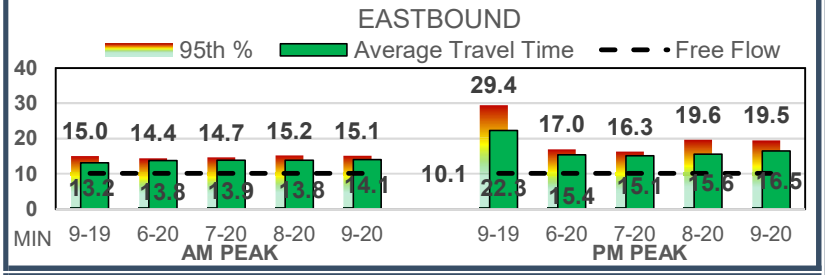


SR 50 (Colonial Drive), East-West corridor from Semoran Blvd to Bonneville Dr, 7.5 miles length, 18 traffic signals

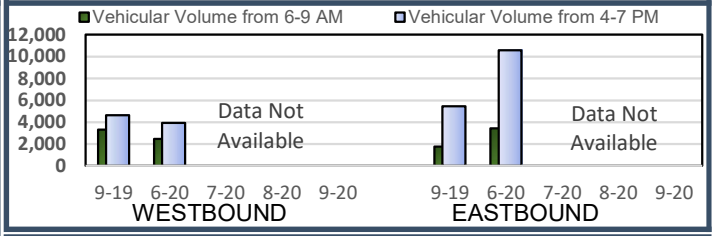
Travel Time Information (Source: BlueMAC)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 10.1 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	12.5	15.0	13.0	15.8
Aug 2020	12.4	15.0	13.0	16.1
Jul 2020	13.1	15.1	13.5	15.8
Jun 2020	13.1	15.2	13.7	15.6
Sep 2019	14.3	18.0	18.9	22.9
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 10.1 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	14.1	16.5	15.1	19.5
Aug 2020	13.8	15.6	15.2	19.6
Jul 2020	13.9	15.1	14.7	16.3
Jun 2020	13.8	15.4	14.4	17.0
Sep 2019	13.2	22.3	15.0	29.4



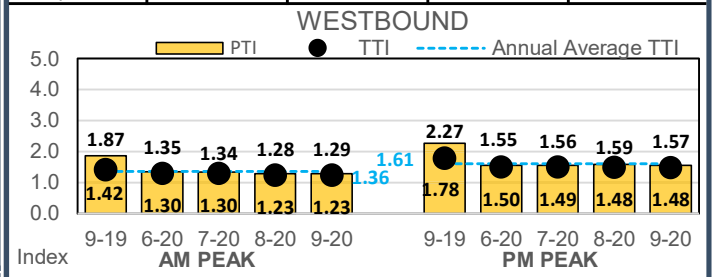


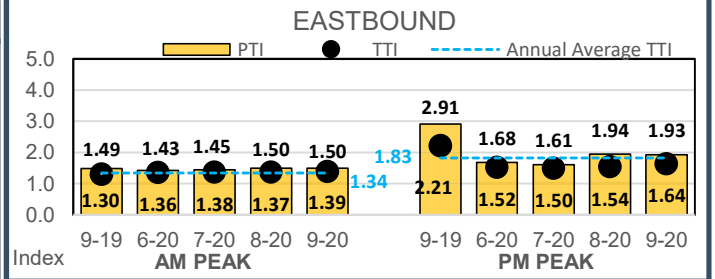
Throughput Volumes



Travel Time Reliability

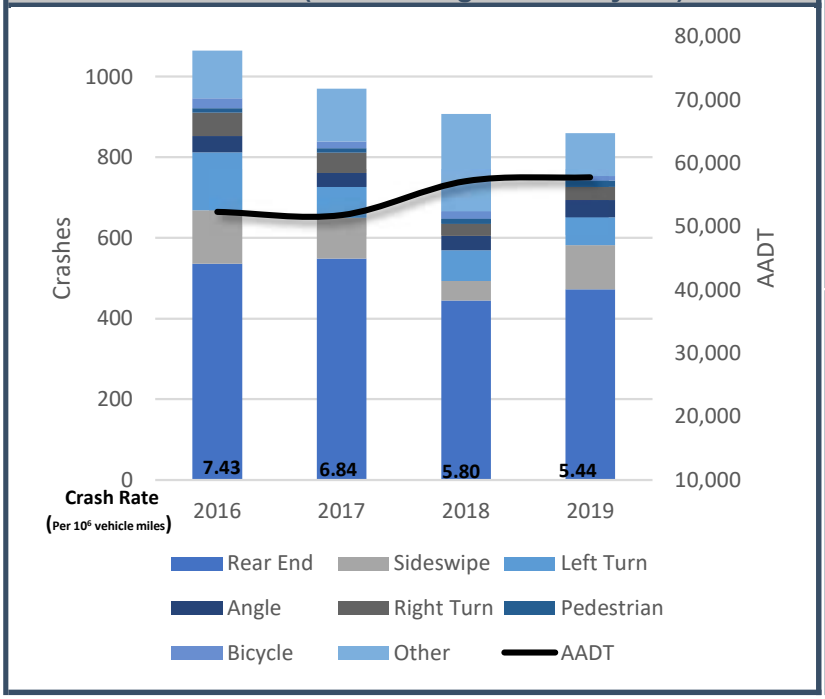
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.23	1.48	1.29	1.57
Aug 2020	1.23	1.48	1.28	1.59
Jul 2020	1.30	1.49	1.34	1.56
Jun 2020	1.30	1.50	1.35	1.55
Sep 2019	1.42	1.78	1.87	2.27
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.39	1.64	1.50	1.93
Aug 2020	1.37	1.54	1.50	1.94
Jul 2020	1.38	1.50	1.45	1.61
Jun 2020	1.36	1.52	1.43	1.68
Sep 2019	1.30	2.21	1.49	2.91



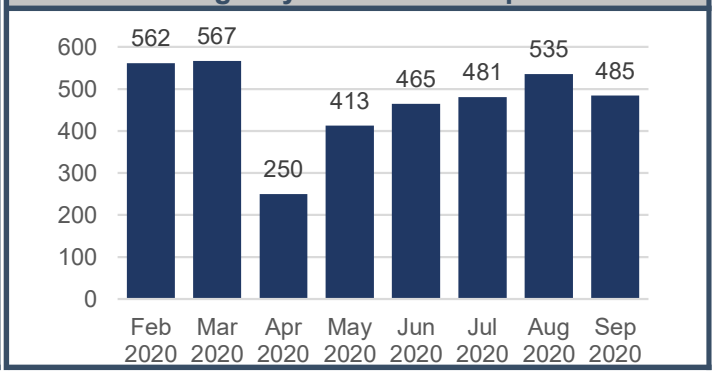


Average Travel Time Index for September 2020 = 1.44

Crash Data (Source: Signal 4 Analytics)



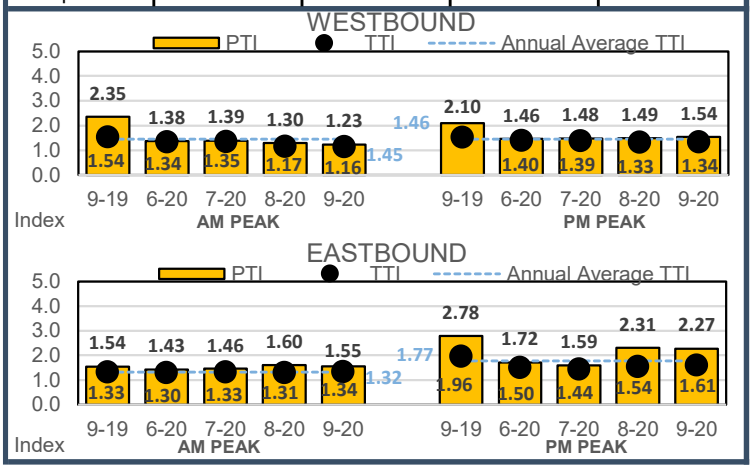
Emergency Vehicle Preemption



SR 50 (Colonial Drive), East-West corridor from Semoran Blvd to Bonneville Dr, 7.5 miles length, 18 traffic signals

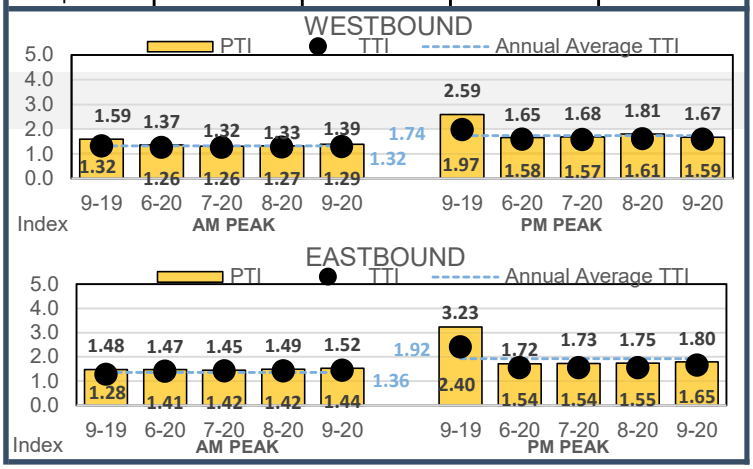
Semoran Blvd to Constantine St, 3.0 miles length, 7 traffic signals

Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.16	1.34	1.23	1.54
Aug 2020	1.17	1.33	1.30	1.49
Jul 2020	1.35	1.39	1.39	1.48
Jun 2020	1.34	1.40	1.38	1.46
Sep 2019	1.54	1.53	2.35	2.10
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.34	1.61	1.55	2.27
Aug 2020	1.31	1.54	1.60	2.31
Jul 2020	1.33	1.44	1.46	1.59
Jun 2020	1.30	1.50	1.43	1.72
Sep 2019	1.33	1.96	1.54	2.78



Constantine St to Bonneville Dr, 4.5 miles length, 11 traffic signals

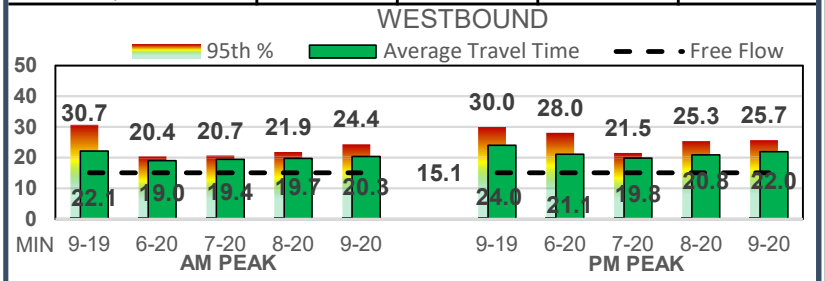
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.29	1.59	1.39	1.67
Aug 2020	1.27	1.61	1.33	1.81
Jul 2020	1.26	1.57	1.32	1.68
Jun 2020	1.26	1.58	1.37	1.65
Sep 2019	1.32	1.97	1.59	2.59
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.44	1.65	1.52	1.80
Aug 2020	1.42	1.55	1.49	1.75
Jul 2020	1.42	1.54	1.45	1.73
Jun 2020	1.41	1.54	1.47	1.72
Sep 2019	1.28	2.40	1.48	3.23

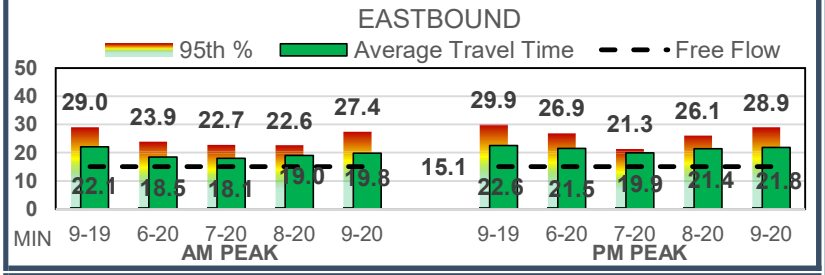


SR 50 (Colonial Drive), East-West corridor from Hastings St to Oakland Ave, 11.7 miles length, 27 traffic signals

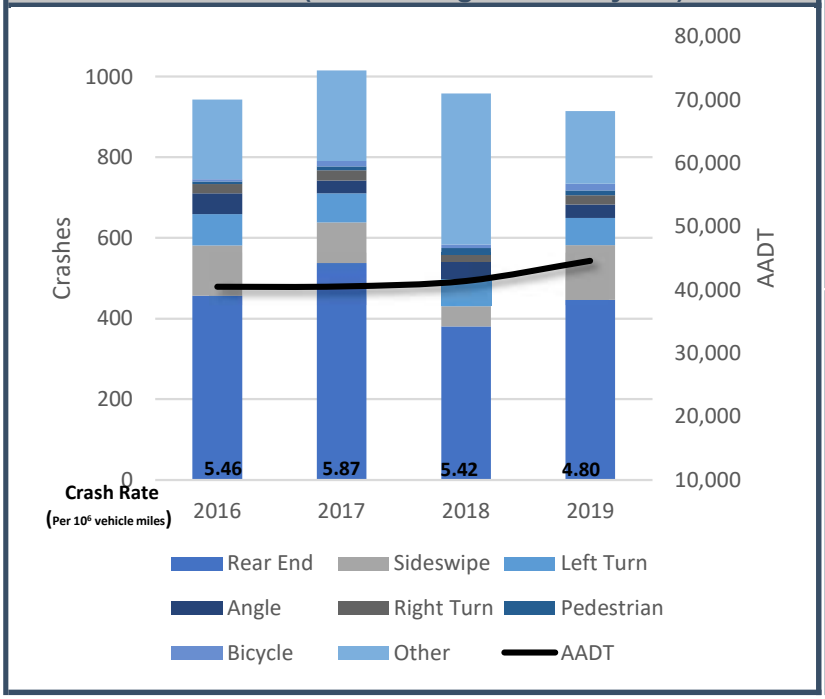
Travel Time Information (Source: BlueMAC)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 15.1 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	20.3	22.0	24.4	25.7
Aug 2020	19.7	20.8	21.9	25.3
Jul 2020	19.4	19.8	20.7	21.5
Jun 2020	19.0	21.1	20.4	28.0
Sep 2019	22.1	24.0	30.7	30.0
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 15.1 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	19.8	21.8	27.4	28.9
Aug 2020	19.0	21.4	22.6	26.1
Jul 2020	18.1	19.9	22.7	21.3
Jun 2020	18.5	21.5	23.9	26.9
Sep 2019	22.1	22.6	29.0	29.9

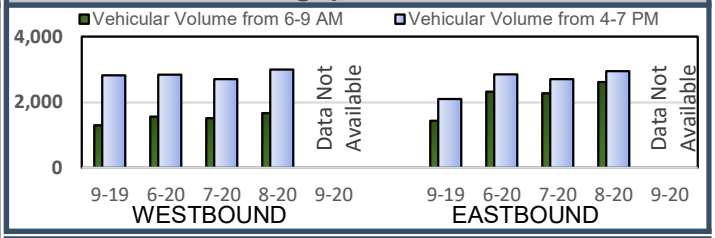




Crash Data (Source: Signal 4 Analytics)

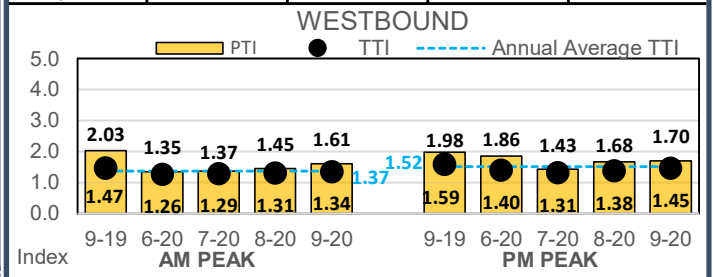


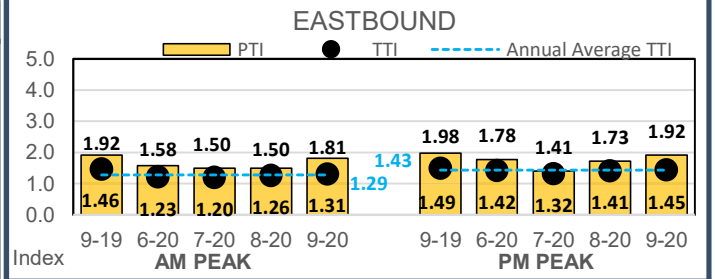
Throughput Volumes



Travel Time Reliability

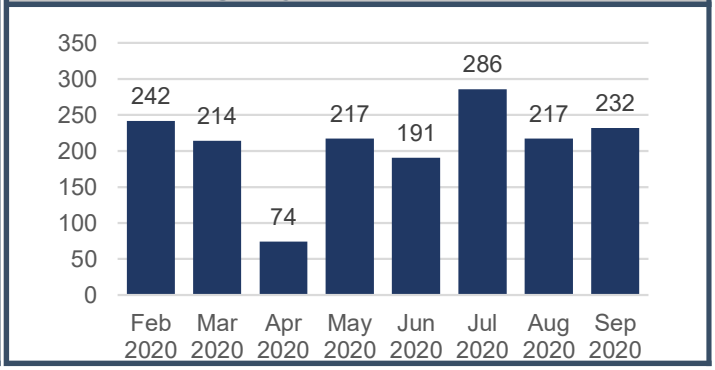
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.34	1.45	1.61	1.70
Aug 2020	1.31	1.38	1.45	1.68
Jul 2020	1.29	1.31	1.37	1.43
Jun 2020	1.26	1.40	1.35	1.86
Sep 2019	1.47	1.59	2.03	1.98
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.31	1.45	1.81	1.92
Aug 2020	1.26	1.41	1.50	1.73
Jul 2020	1.20	1.32	1.50	1.41
Jun 2020	1.23	1.42	1.58	1.78
Sep 2019	1.46	1.49	1.92	1.98





Average Travel Time Index for September 2020 = 1.39

Emergency Vehicle Preemption

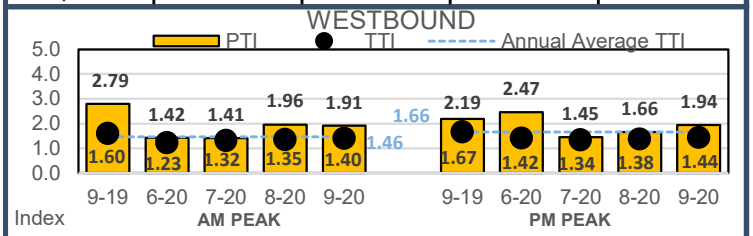


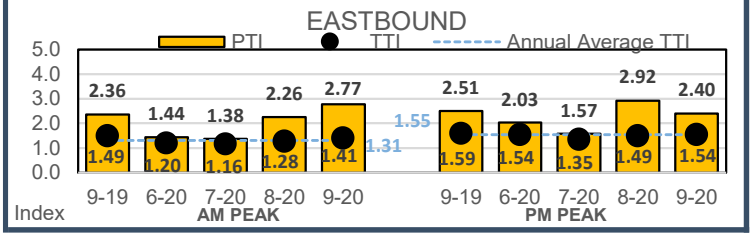
SR 50 (Colonial Drive), East-West corridor from Hastings St to Oakland Ave, 11.7 miles length, 27 traffic signals

Hastings St to Maguire Rd, 5.0 miles length, 13 traffic signals

Wesbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.40	1.44	1.91	1.94
Aug 2020	1.35	1.38	1.96	1.66
Jul 2020	1.32	1.34	1.41	1.45
Jun 2020	1.23	1.42	1.42	2.47
Sep 2019	1.60	1.67	2.79	2.19

Eastbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.41	1.54	2.77	2.40
Aug 2020	1.28	1.49	2.26	2.92
Jul 2020	1.16	1.35	1.38	1.57
Jun 2020	1.20	1.54	1.44	2.03
Sep 2019	1.49	1.59	2.36	2.51

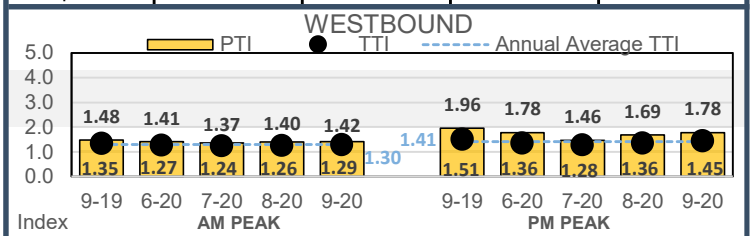


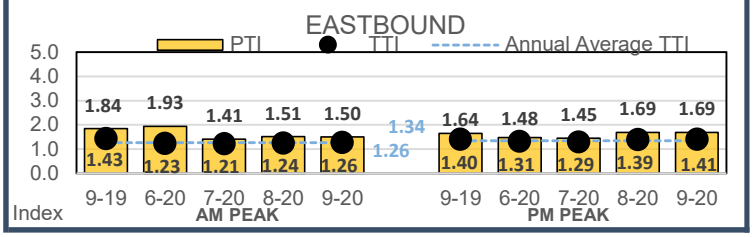


Maguire Rd to Oakland Ave, 6.7 miles length, 14 traffic signals

Wesbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.29	1.45	1.42	1.78
Aug 2020	1.26	1.36	1.40	1.69
Jul 2020	1.24	1.28	1.37	1.46
Jun 2020	1.27	1.36	1.41	1.78
Sep 2019	1.35	1.51	1.48	1.96

Eastbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.26	1.41	1.50	1.69
Aug 2020	1.24	1.39	1.51	1.69
Jul 2020	1.21	1.29	1.41	1.45
Jun 2020	1.23	1.31	1.93	1.48
Sep 2019	1.43	1.40	1.84	1.64

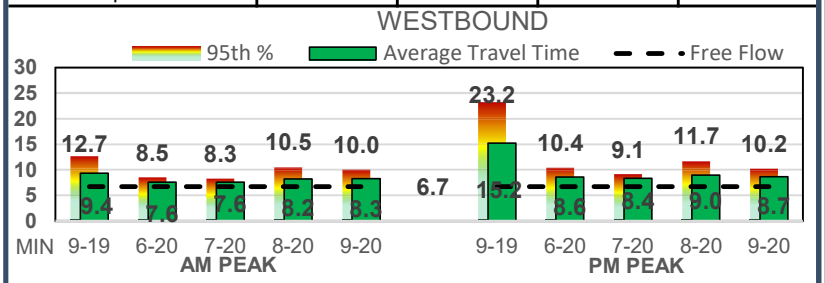


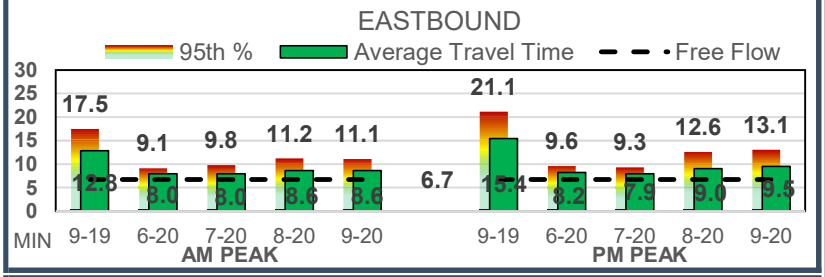


SR 414 (Maitland Blvd), East-West corridor from Bear Lake Rd/Rose Ave to Maitland Ave, 5.6 miles length, 5 traffic signals

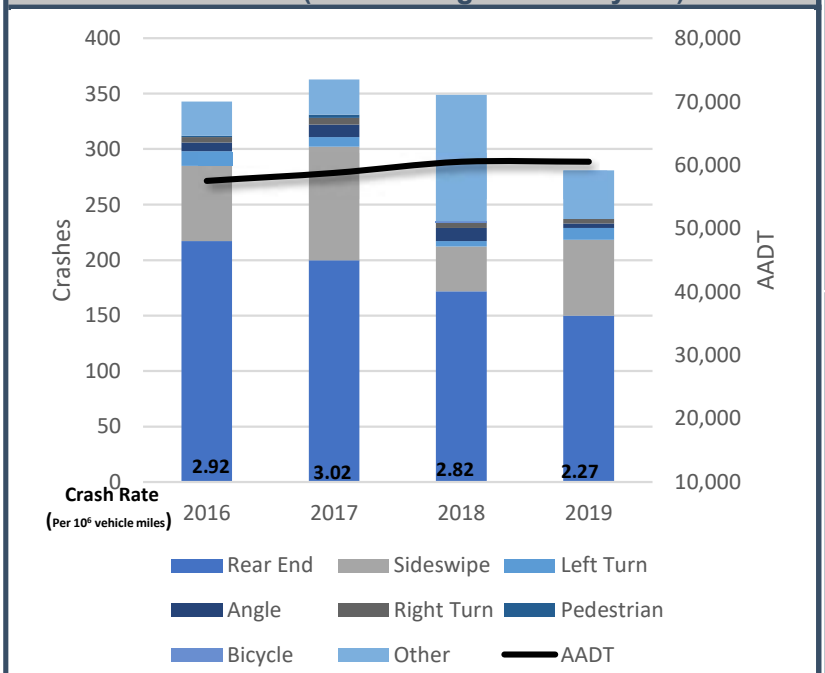
Travel Time Information (Source: BlueMAC)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 6.7 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	8.3	8.7	10.0	10.2
Aug 2020	8.2	9.0	10.5	11.7
Jul 2020	7.6	8.4	8.3	9.1
Jun 2020	7.6	8.6	8.5	10.4
Sep 2019	9.4	15.2	12.7	23.2
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 6.7 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	8.6	9.5	11.1	13.1
Aug 2020	8.6	9.0	11.2	12.6
Jul 2020	8.0	7.9	9.8	9.3
Jun 2020	8.0	8.2	9.1	9.6
Sep 2019	12.8	15.4	17.5	21.1

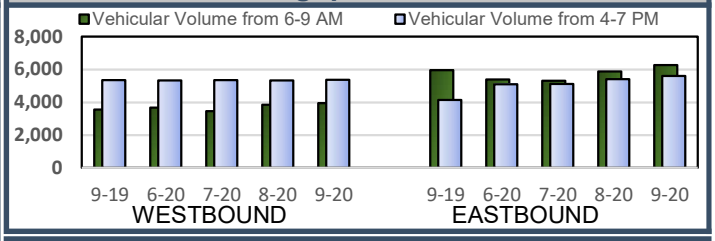




Crash Data (Source: Signal 4 Analytics)

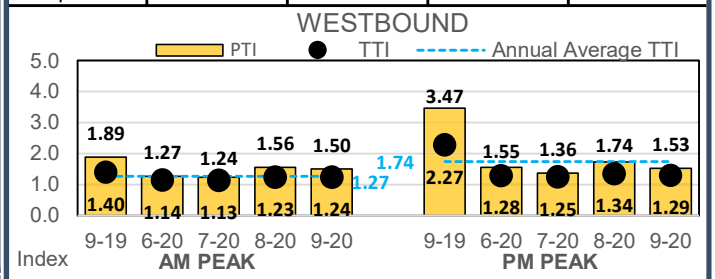


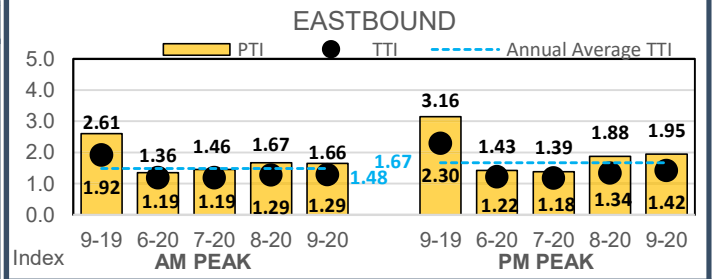
Throughput Volumes



Travel Time Reliability

Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.24	1.29	1.50	1.53
Aug 2020	1.23	1.34	1.56	1.74
Jul 2020	1.13	1.25	1.24	1.36
Jun 2020	1.14	1.28	1.27	1.55
Sep 2019	1.40	2.27	1.89	3.47
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.29	1.42	1.66	1.95
Aug 2020	1.29	1.34	1.67	1.88
Jul 2020	1.19	1.18	1.46	1.39
Jun 2020	1.19	1.22	1.36	1.43
Sep 2019	1.92	2.30	2.61	3.16





Average Travel Time Index for September 2020 = 1.31

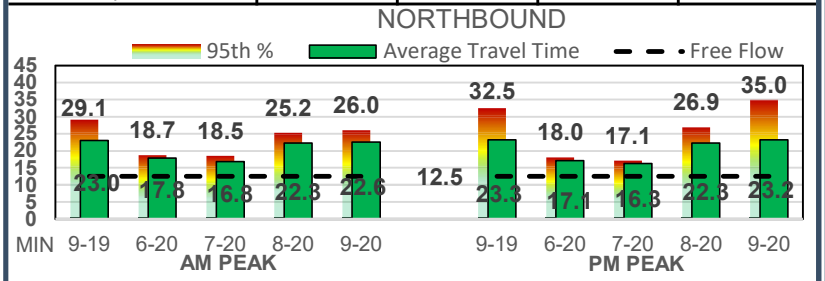
Emergency Vehicle Preemption

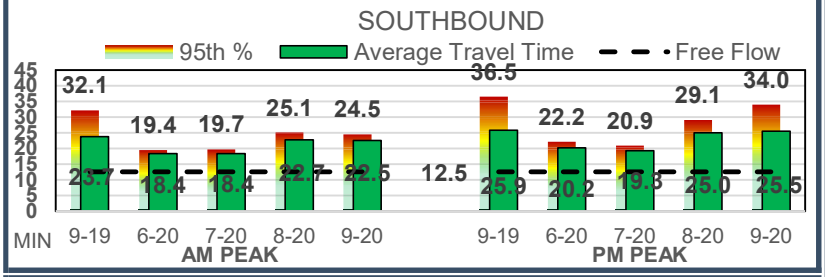
Emergency Vehicle Preemption summaries will be shown in the future once phase selectors have been brought into CMS. Phase selectors are not online due to the infrastructure.

SR 423 (John Young Pkwy/Lee Rd), North-South corridor from Wymore Rd to 36th St, 9.5 miles length, 30 traffic signals

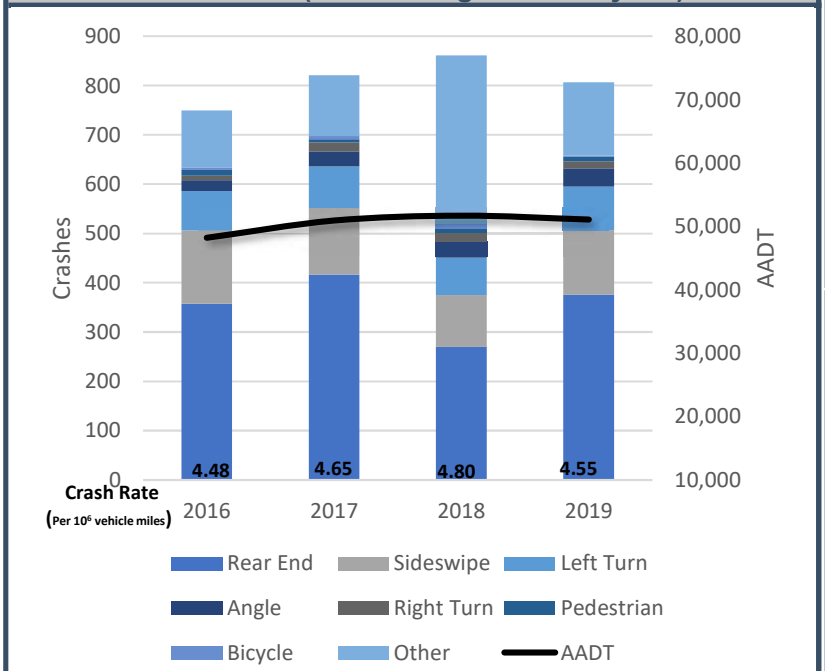
Travel Time Information (Source: BlueMAC)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 12.5 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	22.6	23.2	26.0	35.0
Aug 2020	22.3	22.3	25.2	26.9
Jul 2020	16.8	16.3	18.5	17.1
Jun 2020	17.8	17.1	18.7	18.0
Sep 2019	23.0	23.3	29.1	32.5
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 12.5 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	22.5	25.5	24.5	34.0
Aug 2020	22.7	25.0	25.1	29.1
Jul 2020	18.4	19.3	19.7	20.9
Jun 2020	18.4	20.2	19.4	22.2
Sep 2019	23.7	25.9	32.1	36.5

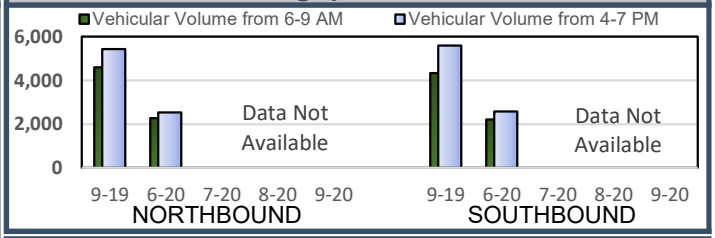




Crash Data (Source: Signal 4 Analytics)

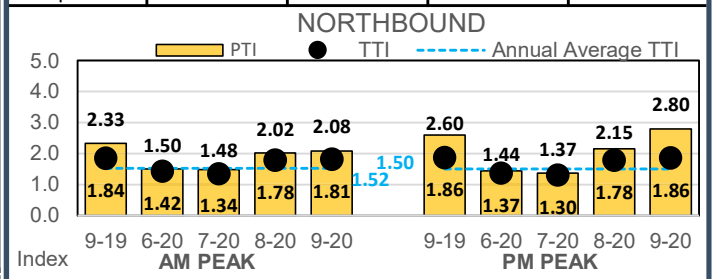


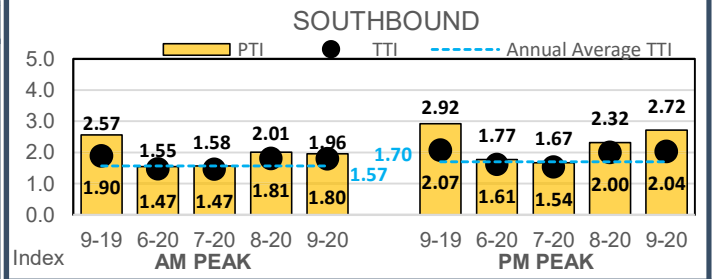
Throughput Volumes



Travel Time Reliability

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.81	1.86	2.08	2.80
Aug 2020	1.78	1.78	2.02	2.15
Jul 2020	1.34	1.30	1.48	1.37
Jun 2020	1.42	1.37	1.50	1.44
Sep 2019	1.84	1.86	2.33	2.60
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.80	2.04	1.96	2.72
Aug 2020	1.81	2.00	2.01	2.32
Jul 2020	1.47	1.54	1.58	1.67
Jun 2020	1.47	1.61	1.55	1.77
Sep 2019	1.90	2.07	2.57	2.92





Average Travel Time Index for September 2020 = 1.88

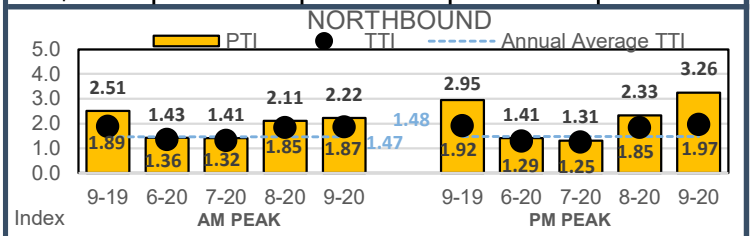
Emergency Vehicle Preemption

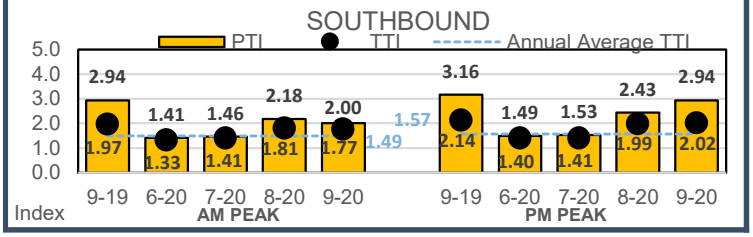
Data Not Available
due to Construction

SR 423 (John Young Pkwy/Lee Rd), North-South corridor from Wymore Rd to 36th St, 9.5 miles length, 30 traffic signals

Wymore Rd to SR 434, 3.2 miles length, 8 traffic signals

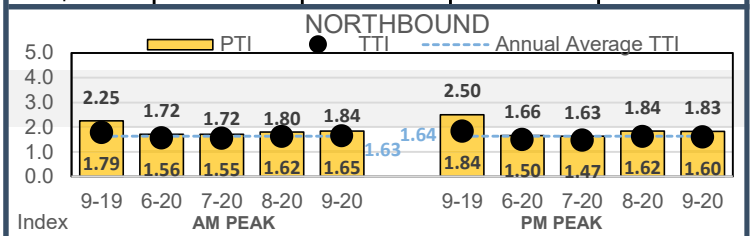
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.87	1.97	2.22	3.26
Aug 2020	1.85	1.85	2.11	2.33
Jul 2020	1.32	1.25	1.41	1.31
Jun 2020	1.36	1.29	1.43	1.41
Sep 2019	1.89	1.92	2.51	2.95
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.77	2.02	2.00	2.94
Aug 2020	1.81	1.99	2.18	2.43
Jul 2020	1.41	1.41	1.46	1.53
Jun 2020	1.33	1.40	1.41	1.49
Sep 2019	1.97	2.14	2.94	3.16

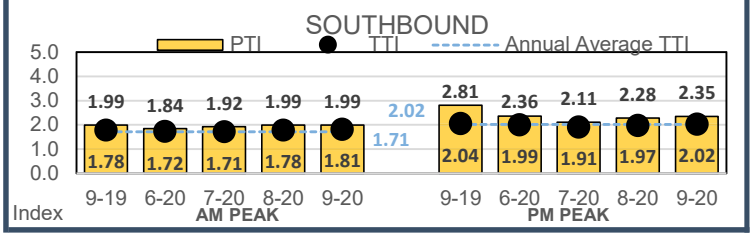




SR 434 to 36th St, 6.3 miles length, 22 traffic signals

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.65	1.60	1.84	1.83
Aug 2020	1.62	1.62	1.80	1.84
Jul 2020	1.55	1.47	1.72	1.63
Jun 2020	1.56	1.50	1.72	1.66
Sep 2019	1.79	1.84	2.25	2.50
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.81	2.02	1.99	2.35
Aug 2020	1.78	1.97	1.99	2.28
Jul 2020	1.71	1.91	1.92	2.11
Jun 2020	1.72	1.99	1.84	2.36
Sep 2019	1.78	2.04	1.99	2.81

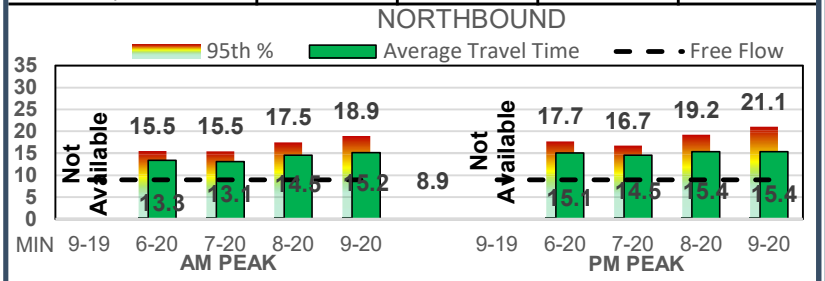


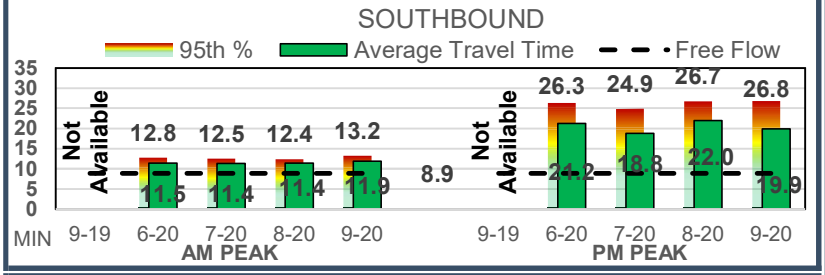


SR 423, North-South corridor from CenterView Blvd to Ham Brown Rd, 7.5 miles length, 14 traffic signals

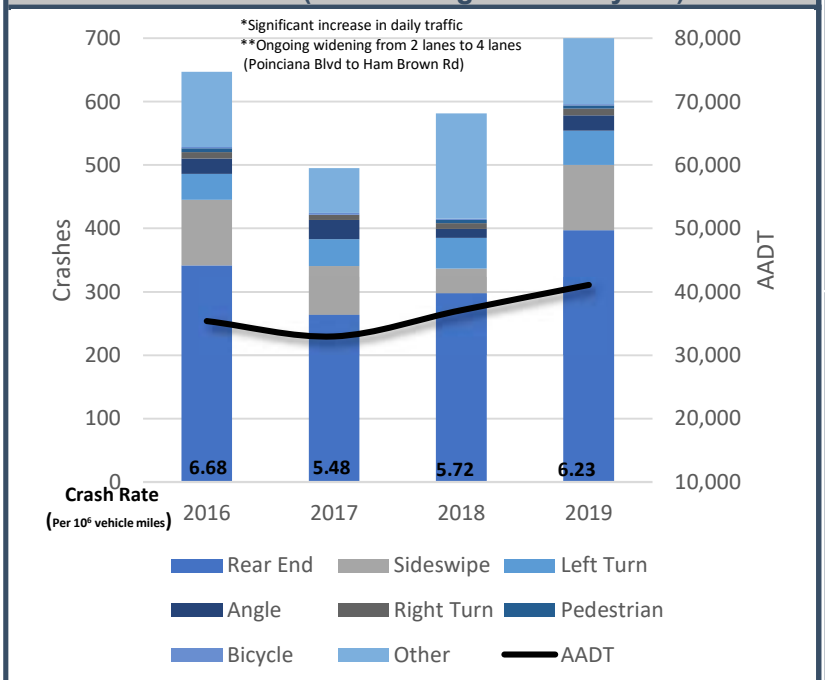
Travel Time Information (Source: BlueMAC)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 8.9 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	15.2	15.4	18.9	21.1
Aug 2020	14.5	15.4	17.5	19.2
Jul 2020	13.1	14.5	15.5	16.7
Jun 2020	13.3	15.1	15.5	17.7
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 8.9 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	11.9	19.9	13.2	26.8
Aug 2020	11.4	22.0	12.4	26.7
Jul 2020	11.4	18.8	12.5	24.9
Jun 2020	11.5	21.2	12.8	26.3
Sep 2019	N/A	N/A	N/A	N/A

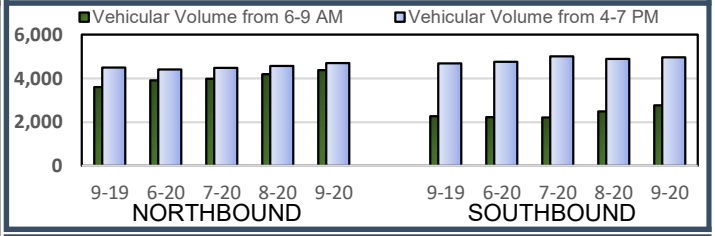




Crash Data (Source: Signal 4 Analytics)

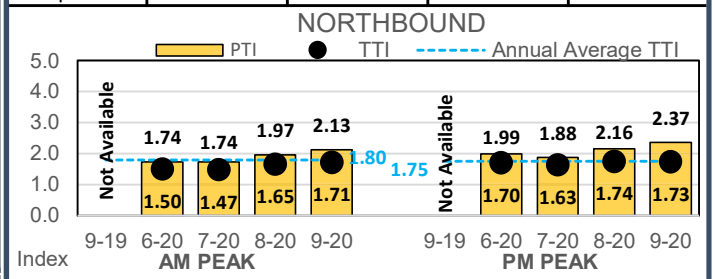


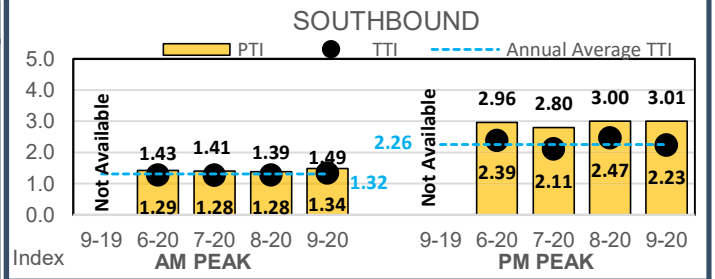
Throughput Volumes



Travel Time Reliability

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.71	1.73	2.13	2.37
Aug 2020	1.65	1.74	1.97	2.16
Jul 2020	1.47	1.63	1.74	1.88
Jun 2020	1.50	1.70	1.74	1.99
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.34	2.23	1.49	3.01
Aug 2020	1.28	2.47	1.39	3.00
Jul 2020	1.28	2.11	1.41	2.80
Jun 2020	1.29	2.39	1.43	2.96
Sep 2019	N/A	N/A	N/A	N/A





Average Travel Time Index for September 2020 = 1.75

Emergency Vehicle Preemption

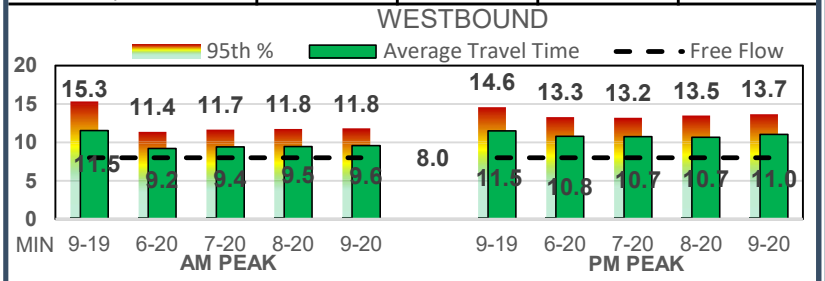
Emergency Vehicle Preemption summaries will be shown in the future once phase selectors have been brought into CMS. Phase selectors are not online due to the infrastructure.

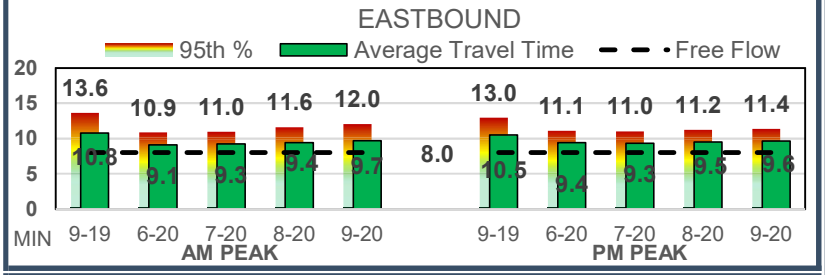
ARTERIALS

SR 434, East-West corridor from US 17/92 to SR 417, 6.6 miles length, 16 traffic signals

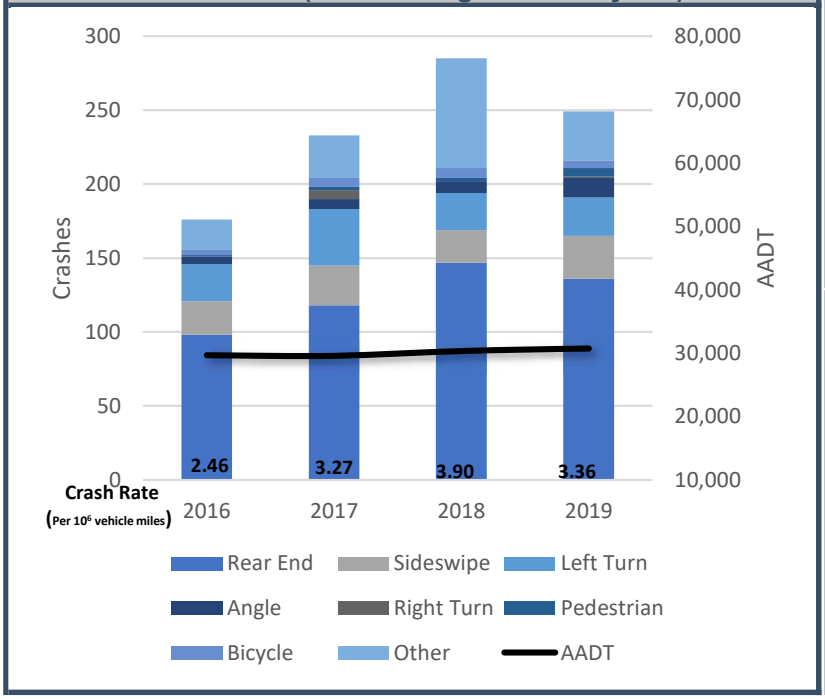
Travel Time Information (Source: BlueToad)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 8 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	9.6	11.0	11.8	13.7
Aug 2020	9.5	10.7	11.8	13.5
Jul 2020	9.4	10.7	11.7	13.2
Jun 2020	9.2	10.8	11.4	13.3
Sep 2019	11.5	11.5	15.3	14.6
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 8 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	9.7	9.6	12.0	11.4
Aug 2020	9.4	9.5	11.6	11.2
Jul 2020	9.3	9.3	11.0	11.0
Jun 2020	9.1	9.4	10.9	11.1
Sep 2019	10.8	10.5	13.6	13.0

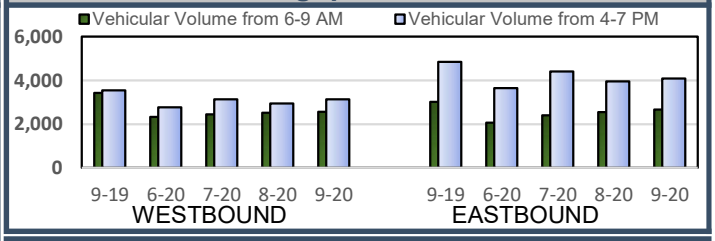




Crash Data (Source: Signal 4 Analytics)

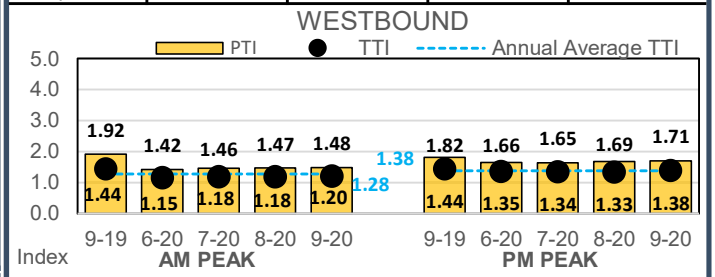


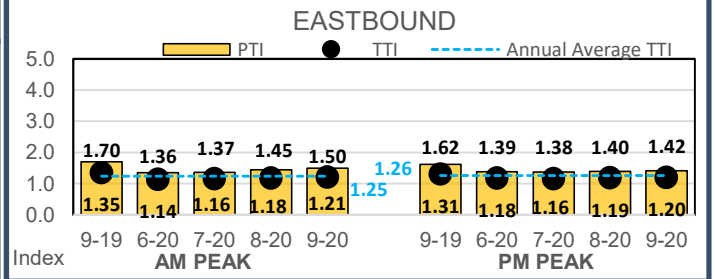
Throughput Volumes



Travel Time Reliability

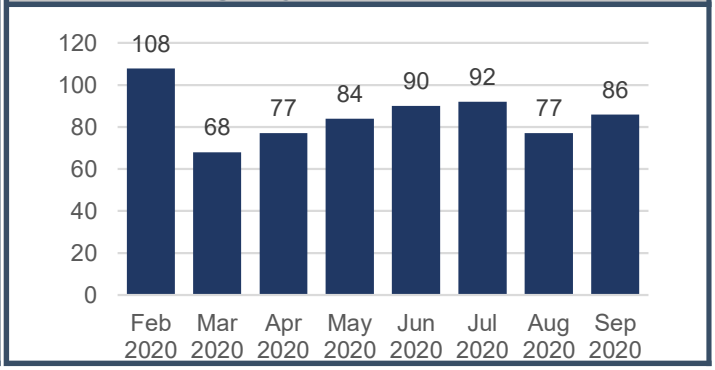
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.20	1.38	1.48	1.71
Aug 2020	1.18	1.33	1.47	1.69
Jul 2020	1.18	1.34	1.46	1.65
Jun 2020	1.15	1.35	1.42	1.66
Sep 2019	1.44	1.44	1.92	1.82
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.21	1.20	1.50	1.42
Aug 2020	1.18	1.19	1.45	1.40
Jul 2020	1.16	1.16	1.37	1.38
Jun 2020	1.14	1.18	1.36	1.39
Sep 2019	1.35	1.31	1.70	1.62





Average Travel Time Index for September 2020 = 1.25

Emergency Vehicle Preemption

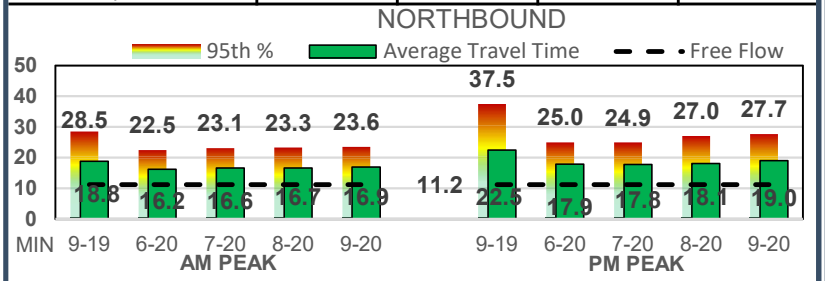


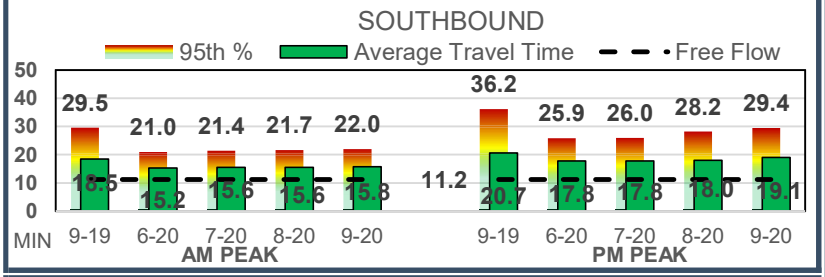
FDOT ATSPM Automated Traffic Signal Performance Measures | Seminole County Florida's Natural Choice | ARTERIALS | District Five ICM

SR 434 (Forest City Rd), North-South corridor from US 17/92 to SR 414, 9.0 miles length, 26 traffic signals

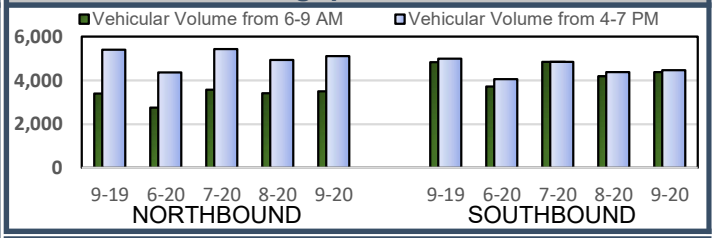
Travel Time Information (Source: BlueToad)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 11.2 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	16.9	19.0	23.6	27.7
Aug 2020	16.7	18.1	23.3	27.0
Jul 2020	16.6	17.8	23.1	24.9
Jun 2020	16.2	17.9	22.5	25.0
Sep 2019	18.8	22.5	28.5	37.5
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 11.2 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	15.8	19.1	22.0	29.4
Aug 2020	15.6	18.0	21.7	28.2
Jul 2020	15.6	17.8	21.4	26.0
Jun 2020	15.2	17.8	21.0	25.9
Sep 2019	18.5	20.7	29.5	36.2



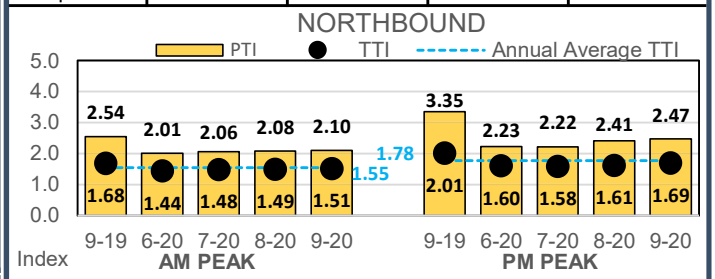


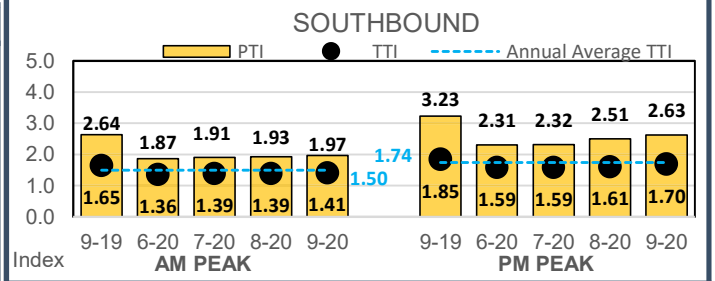
Throughput Volumes



Travel Time Reliability

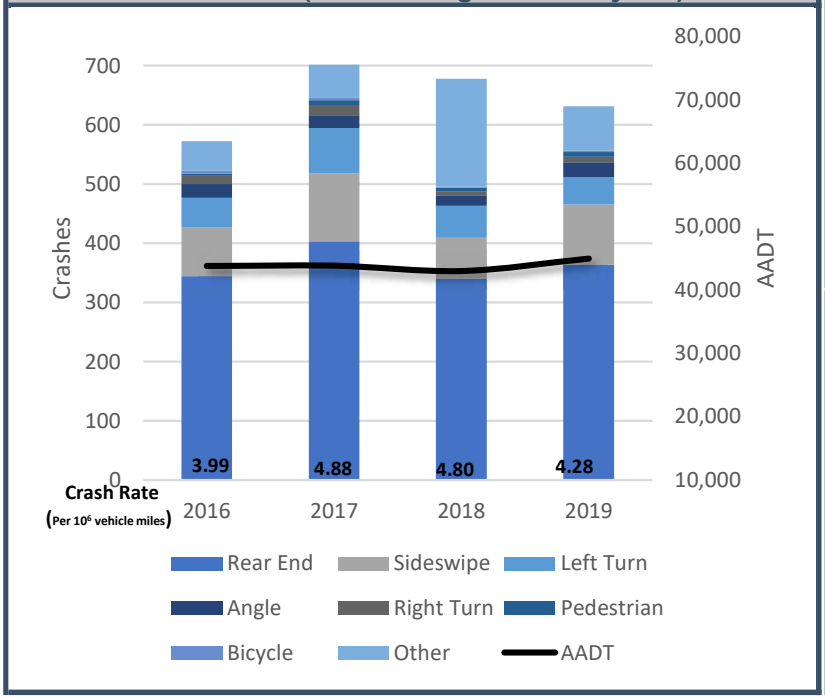
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.51	1.69	2.10	2.47
Aug 2020	1.49	1.61	2.08	2.41
Jul 2020	1.48	1.58	2.06	2.22
Jun 2020	1.44	1.60	2.01	2.23
Sep 2019	1.68	2.01	2.54	3.35
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.41	1.70	1.97	2.63
Aug 2020	1.39	1.61	1.93	2.51
Jul 2020	1.39	1.59	1.91	2.32
Jun 2020	1.36	1.59	1.87	2.31
Sep 2019	1.65	1.85	2.64	3.23



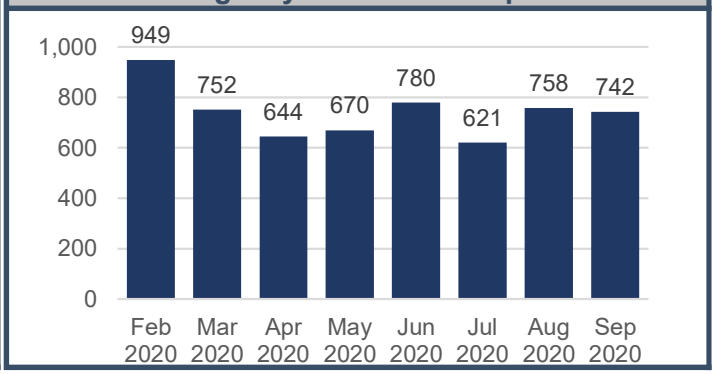


Average Travel Time Index for September 2020 = 1.58

Crash Data (Source: Signal 4 Analytics)



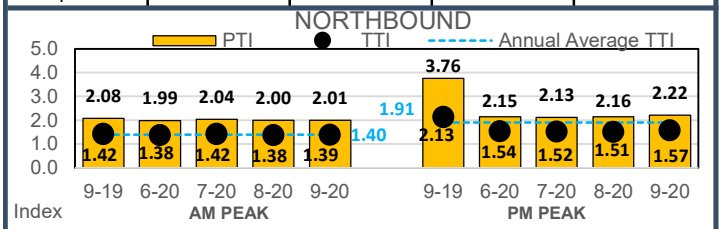
Emergency Vehicle Preemption

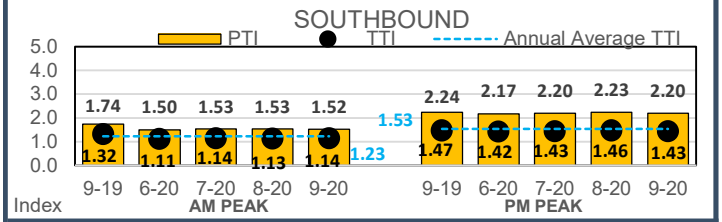


SR 434 (Forest City Rd), North-South corridor from US 17/92 to SR 414, 9.0 miles length, 26 traffic signals

SR 414 to 436, 1.8 miles length, 6 traffic signals

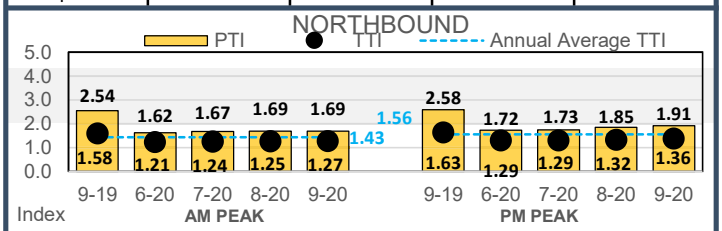
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.39	1.57	2.01	2.22
Aug 2020	1.38	1.51	2.00	2.16
Jul 2020	1.42	1.52	2.04	2.13
Jun 2020	1.38	1.54	1.99	2.15
Sep 2019	1.42	2.13	2.08	3.76
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.14	1.43	1.52	2.20
Aug 2020	1.13	1.46	1.53	2.23
Jul 2020	1.14	1.43	1.53	2.20
Jun 2020	1.11	1.42	1.50	2.17
Sep 2019	1.32	1.47	1.74	2.24

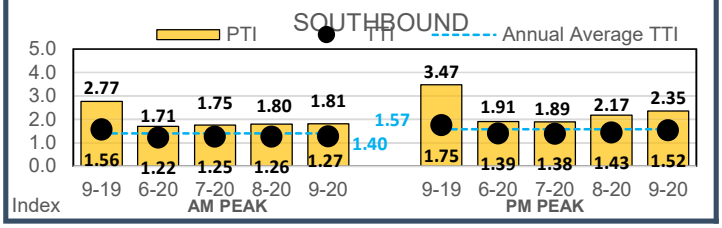




SR 436 to I-4, 3.3 miles length, 9 traffic signals

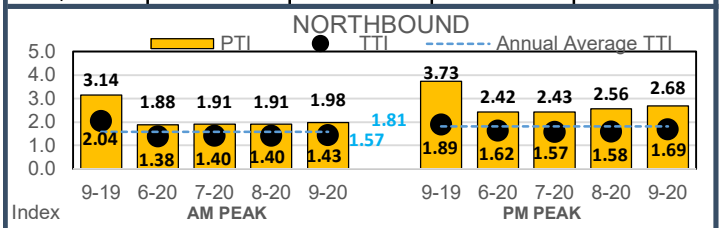
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.27	1.36	1.69	1.91
Aug 2020	1.25	1.32	1.69	1.85
Jul 2020	1.24	1.29	1.67	1.73
Jun 2020	1.21	1.29	1.62	1.72
Sep 2019	1.58	1.63	2.54	2.58
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.27	1.52	1.81	2.35
Aug 2020	1.26	1.43	1.80	2.17
Jul 2020	1.25	1.38	1.75	1.89
Jun 2020	1.22	1.39	1.71	1.91
Sep 2019	1.56	1.75	2.77	3.47

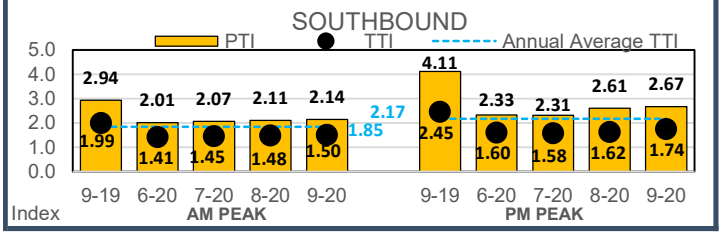




I-4 to US 17-92, 3.9 miles length, 11 traffic signals

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.43	1.69	1.98	2.68
Aug 2020	1.40	1.58	1.91	2.56
Jul 2020	1.40	1.57	1.91	2.43
Jun 2020	1.38	1.62	1.88	2.42
Sep 2019	2.04	1.89	3.14	3.73
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.50	1.74	2.14	2.67
Aug 2020	1.48	1.62	2.11	2.61
Jul 2020	1.45	1.58	2.07	2.31
Jun 2020	1.41	1.60	2.01	2.33
Sep 2019	1.99	2.45	2.94	4.11

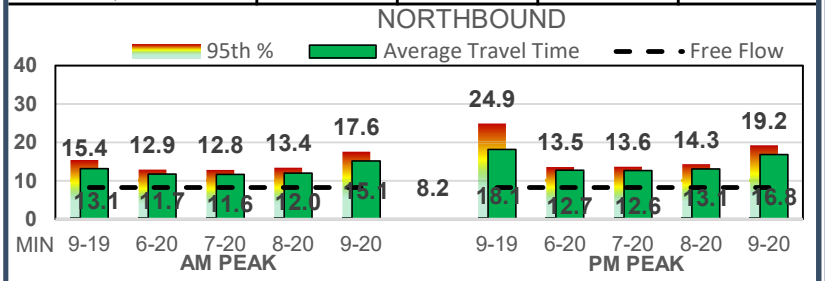


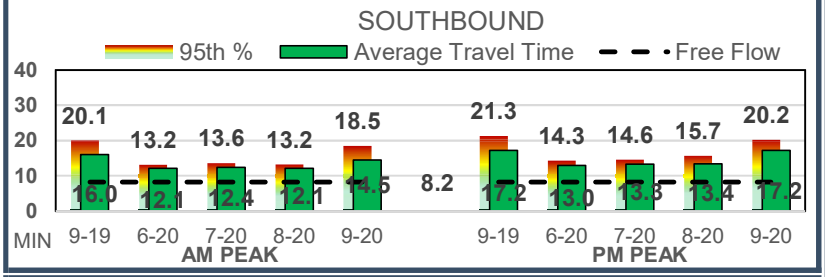


SR 435 (Kirkman Rd), North-South corridor from Colonial Dr to Carrier Dr, 6.7 miles length, 17 traffic signals

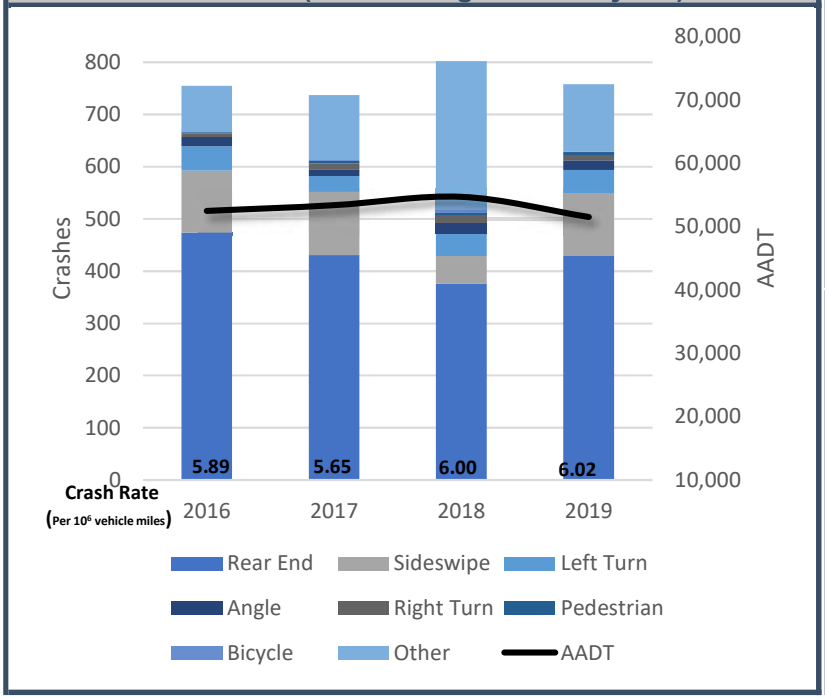
Travel Time Information (Source: BlueMAC)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 8.2 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	15.1	16.8	17.6	19.2
Aug 2020	12.0	13.1	13.4	14.3
Jul 2020	11.6	12.6	12.8	13.6
Jun 2020	11.7	12.7	12.9	13.5
Sep 2019	13.1	18.1	15.4	24.9
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 8.2 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	14.5	17.2	18.5	20.2
Aug 2020	12.1	13.4	13.2	15.7
Jul 2020	12.4	13.3	13.6	14.6
Jun 2020	12.1	13.0	13.2	14.3
Sep 2019	16.0	17.2	20.1	21.3

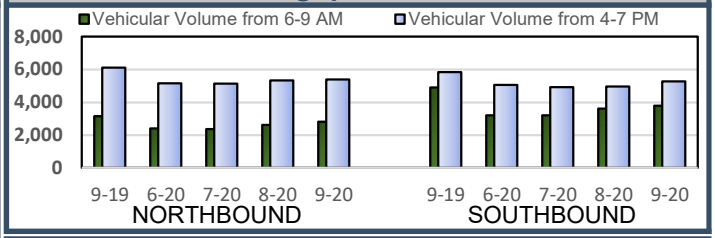




Crash Data (Source: Signal 4 Analytics)

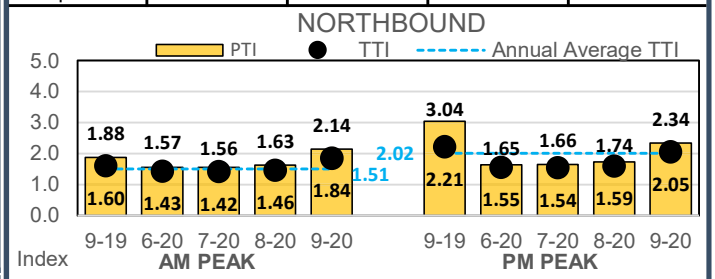


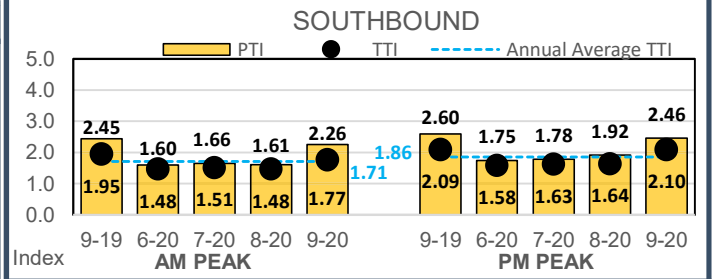
Throughput Volumes



Travel Time Reliability

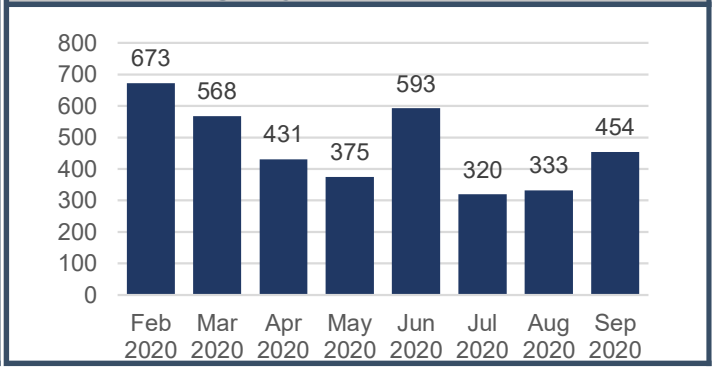
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.84	2.05	2.14	2.34
Aug 2020	1.46	1.59	1.63	1.74
Jul 2020	1.42	1.54	1.56	1.66
Jun 2020	1.43	1.55	1.57	1.65
Sep 2019	1.60	2.21	1.88	3.04
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.77	2.10	2.26	2.46
Aug 2020	1.48	1.64	1.61	1.92
Jul 2020	1.51	1.63	1.66	1.78
Jun 2020	1.48	1.58	1.60	1.75
Sep 2019	1.95	2.09	2.45	2.60





Average Travel Time Index for September 2020 = 1.94

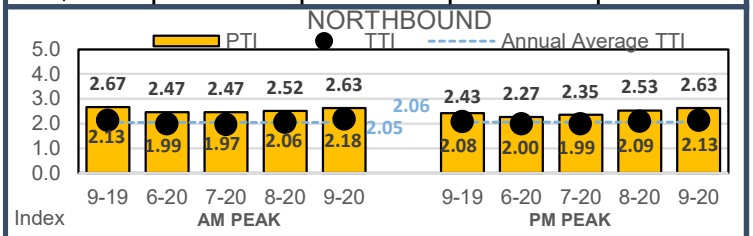
Emergency Vehicle Preemption

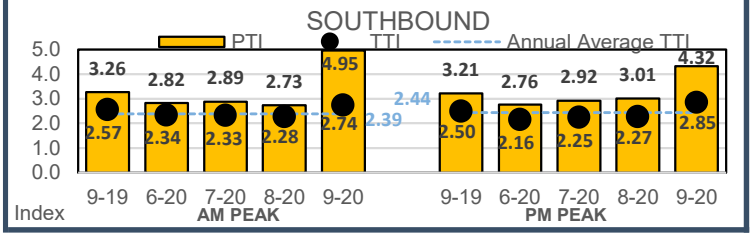


SR 435 (Kirkman Rd), North-South corridor from Colonial Dr to Carrier Dr, 6.7 miles length, 17 traffic signals

Colonial Dr to Old Winter Garden Rd, 1.0 mile length, 4 traffic signals

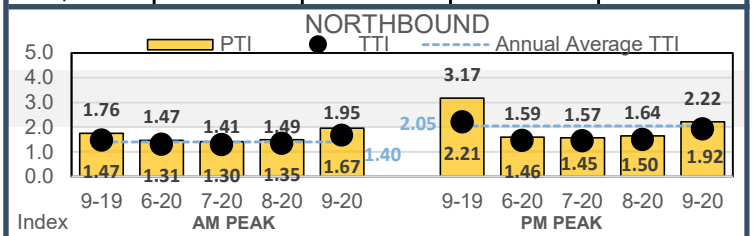
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	2.18	2.13	2.63	2.63
Aug 2020	2.06	2.09	2.52	2.53
Jul 2020	1.97	1.99	2.47	2.35
Jun 2020	1.99	2.00	2.47	2.27
Sep 2019	2.13	2.08	2.67	2.43
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	2.74	2.85	4.95	4.32
Aug 2020	2.28	2.27	2.73	3.01
Jul 2020	2.33	2.25	2.89	2.92
Jun 2020	2.34	2.16	2.82	2.76
Sep 2019	2.57	2.50	3.26	3.21

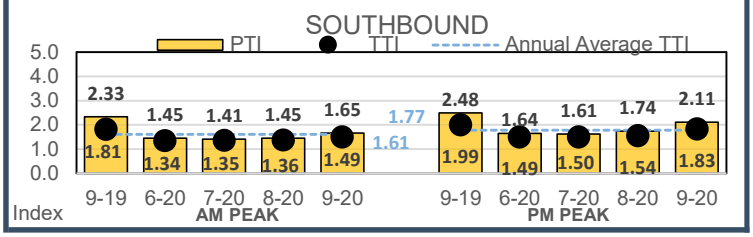




Old Winter Garden Rd to Carrier Dr, 5.7 miles length, 13 traffic signals

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.67	1.92	1.95	2.22
Aug 2020	1.35	1.50	1.49	1.64
Jul 2020	1.30	1.45	1.41	1.57
Jun 2020	1.31	1.46	1.47	1.59
Sep 2019	1.47	2.21	1.76	3.17
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.49	1.83	1.65	2.11
Aug 2020	1.36	1.54	1.45	1.74
Jul 2020	1.35	1.50	1.41	1.61
Jun 2020	1.34	1.49	1.45	1.64
Sep 2019	1.81	1.99	2.33	2.48



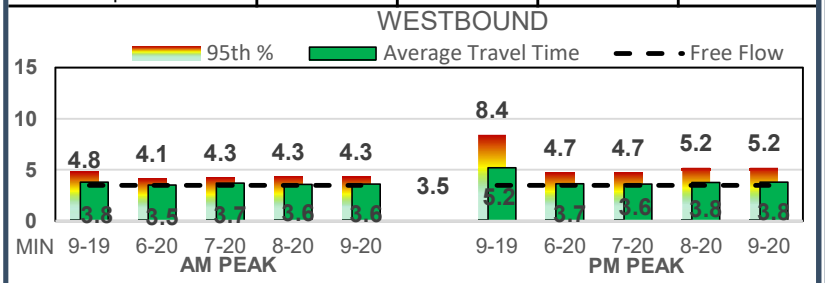


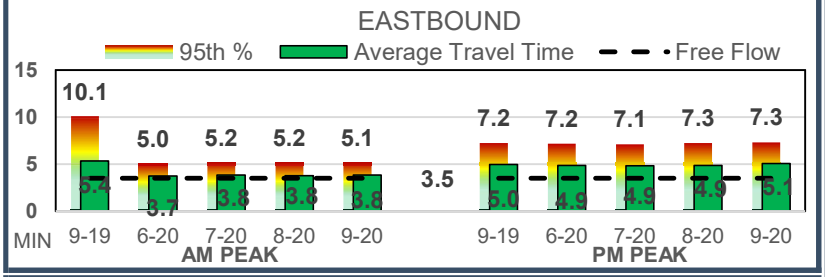
ARTERIALS

SR 436 (Semoran Blvd), East-West corridor from SR 434 to Line Dr, 2.6 miles length, 10 traffic signals

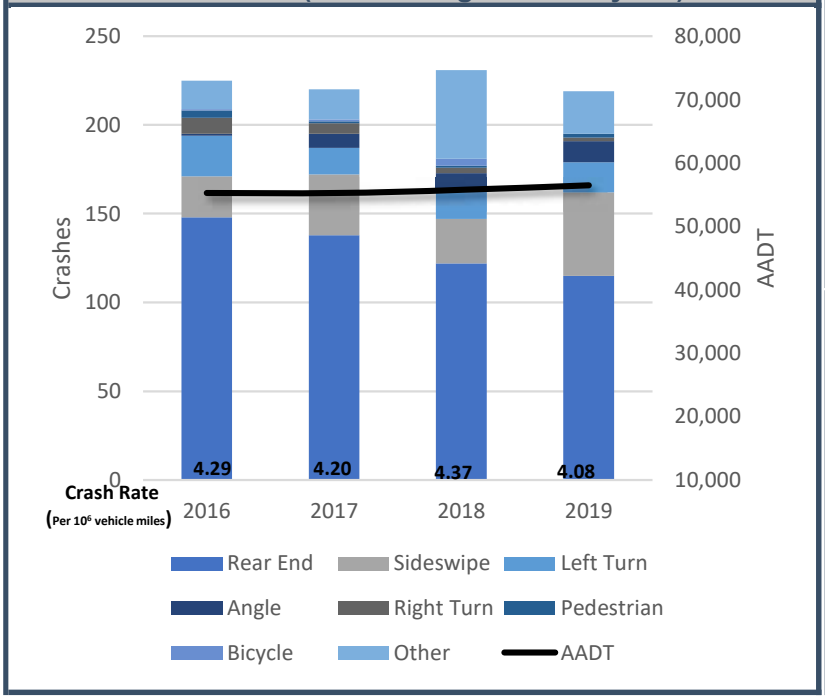
Travel Time Information (Source: BlueToad)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 3.5 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	3.6	3.8	4.3	5.2
Aug 2020	3.6	3.8	4.3	5.2
Jul 2020	3.7	3.6	4.3	4.7
Jun 2020	3.5	3.7	4.1	4.7
Sep 2019	3.8	5.2	4.8	8.4
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 3.5 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	3.8	5.1	5.1	7.3
Aug 2020	3.8	4.9	5.2	7.3
Jul 2020	3.8	4.9	5.2	7.1
Jun 2020	3.7	4.9	5.0	7.2
Sep 2019	5.4	5.0	10.1	7.2

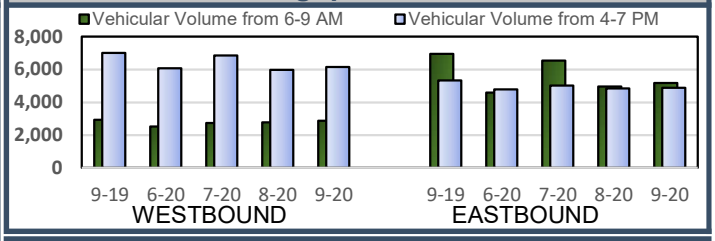




Crash Data (Source: Signal 4 Analytics)

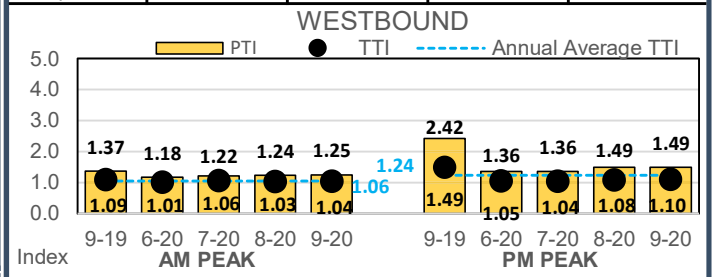


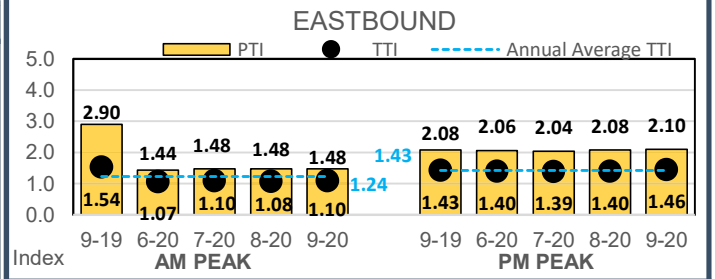
Throughput Volumes



Travel Time Reliability

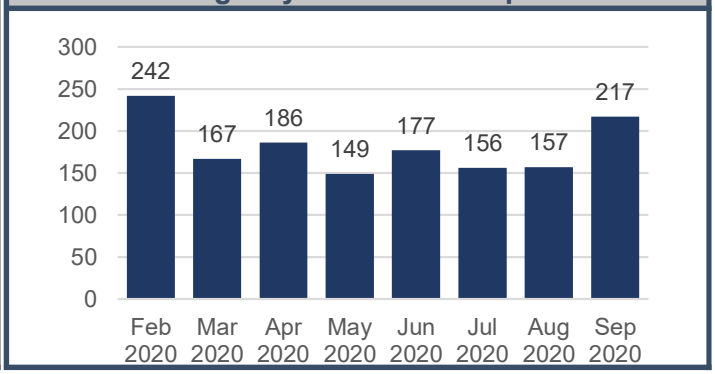
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.04	1.10	1.25	1.49
Aug 2020	1.03	1.08	1.24	1.49
Jul 2020	1.06	1.04	1.22	1.36
Jun 2020	1.01	1.05	1.18	1.36
Sep 2019	1.09	1.49	1.37	2.42
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.10	1.46	1.48	2.10
Aug 2020	1.08	1.40	1.48	2.08
Jul 2020	1.10	1.39	1.48	2.04
Jun 2020	1.07	1.40	1.44	2.06
Sep 2019	1.54	1.43	2.90	2.08





Average Travel Time Index for September 2020 = 1.18

Emergency Vehicle Preemption

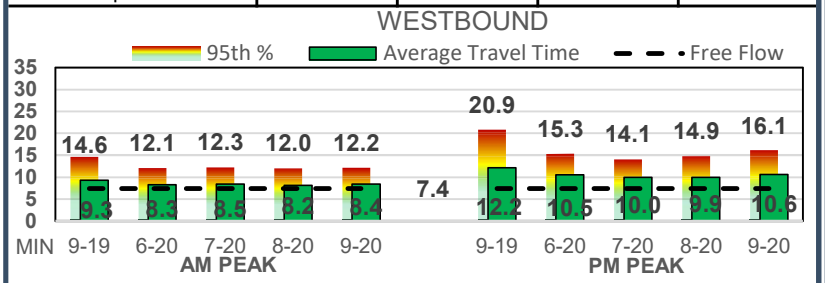


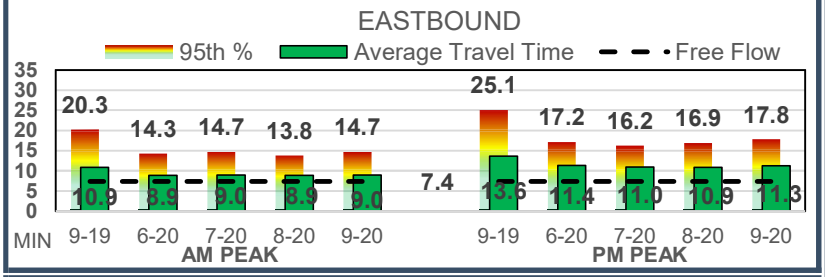
ARTERIALS

SR 436 (Semoran Blvd), East-West corridor from SR 434 to US 17/92, 4.8 miles length, 23 traffic signals

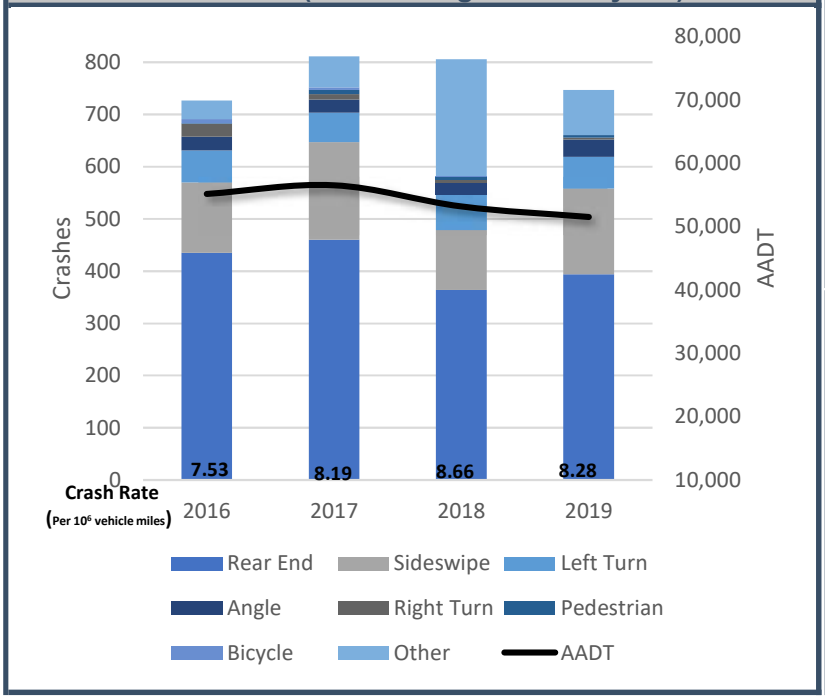
Travel Time Information (Source: BlueToad)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 7.4 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	8.4	10.6	12.2	16.1
Aug 2020	8.2	9.9	12.0	14.9
Jul 2020	8.5	10.0	12.3	14.1
Jun 2020	8.3	10.5	12.1	15.3
Sep 2019	9.3	12.2	14.6	20.9
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 7.4 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	9.0	11.3	14.7	17.8
Aug 2020	8.9	10.9	13.8	16.9
Jul 2020	9.0	11.0	14.7	16.2
Jun 2020	8.9	11.4	14.3	17.2
Sep 2019	10.9	13.6	20.3	25.1

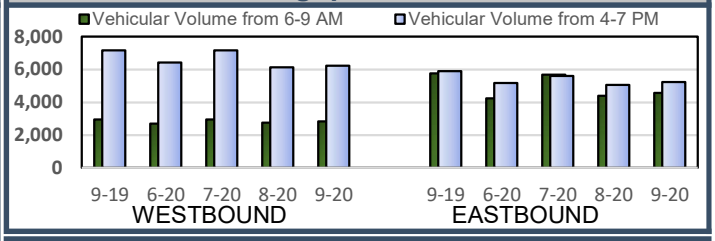




Crash Data (Source: Signal 4 Analytics)

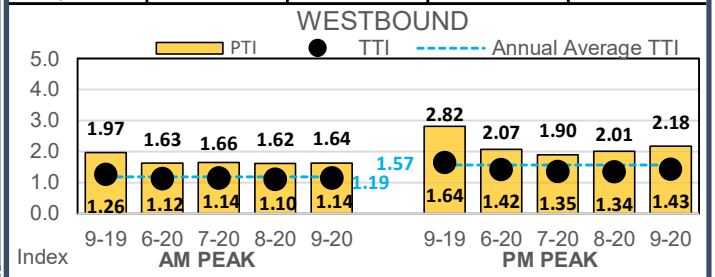


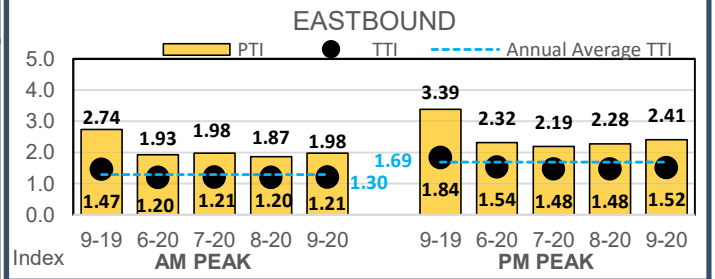
Throughput Volumes



Travel Time Reliability

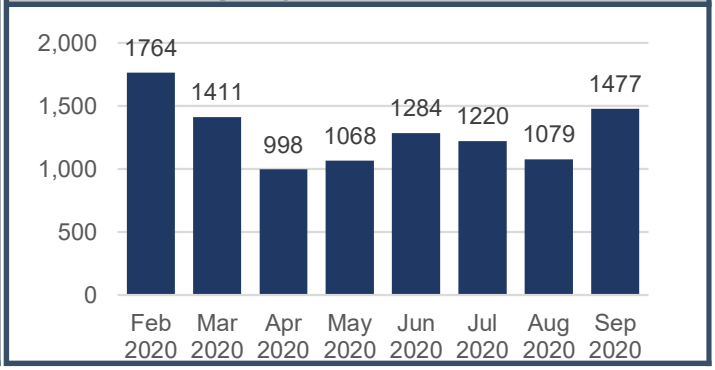
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.14	1.43	1.64	2.18
Aug 2020	1.10	1.34	1.62	2.01
Jul 2020	1.14	1.35	1.66	1.90
Jun 2020	1.12	1.42	1.63	2.07
Sep 2019	1.26	1.64	1.97	2.82
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.21	1.52	1.98	2.41
Aug 2020	1.20	1.48	1.87	2.28
Jul 2020	1.21	1.48	1.98	2.19
Jun 2020	1.20	1.54	1.93	2.32
Sep 2019	1.47	1.84	2.74	3.39





Average Travel Time Index for September 2020 = 1.33

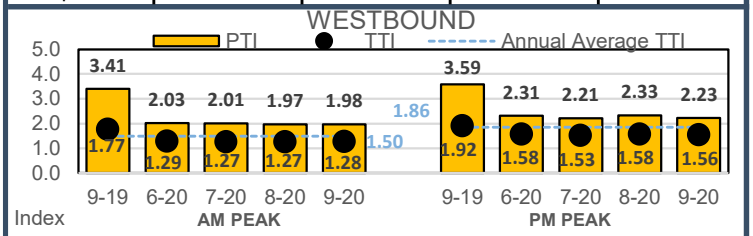
Emergency Vehicle Preemption

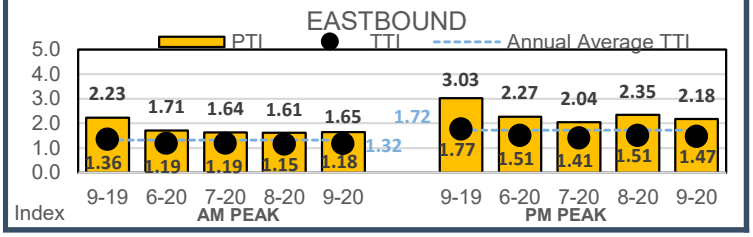


SR 436 (Semoran Blvd), East-West corridor from SR 434 to US 17/92, 4.8 miles length, 23 traffic signals

SR 434 to I-4, 1.8 miles length, 10 traffic signals

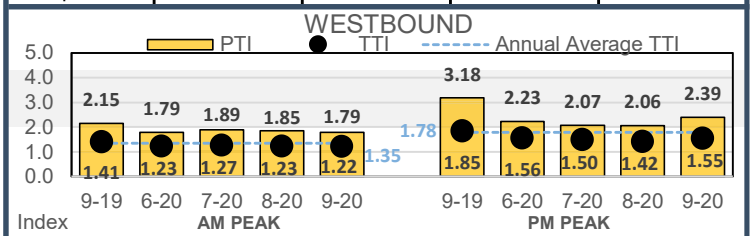
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.28	1.56	1.98	2.23
Aug 2020	1.27	1.58	1.97	2.33
Jul 2020	1.27	1.53	2.01	2.21
Jun 2020	1.29	1.58	2.03	2.31
Sep 2019	1.77	1.92	3.41	3.59
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.18	1.47	1.65	2.18
Aug 2020	1.15	1.51	1.61	2.35
Jul 2020	1.19	1.41	1.64	2.04
Jun 2020	1.19	1.51	1.71	2.27
Sep 2019	1.36	1.77	2.23	3.03

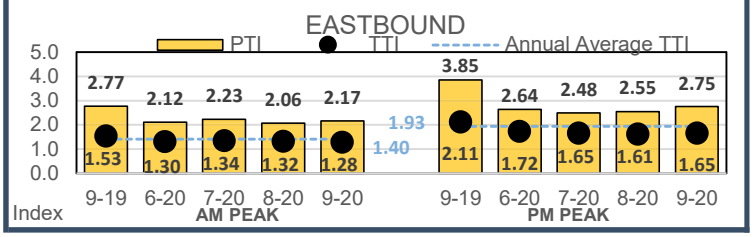




I-4 to US 17/92, 3.0 miles length, 13 traffic signals

Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.22	1.55	1.79	2.39
Aug 2020	1.23	1.42	1.85	2.06
Jul 2020	1.27	1.50	1.89	2.07
Jun 2020	1.23	1.56	1.79	2.23
Sep 2019	1.41	1.85	2.15	3.18
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.28	1.65	2.17	2.75
Aug 2020	1.32	1.61	2.06	2.55
Jul 2020	1.34	1.65	2.23	2.48
Jun 2020	1.30	1.72	2.12	2.64
Sep 2019	1.53	2.11	2.77	3.85



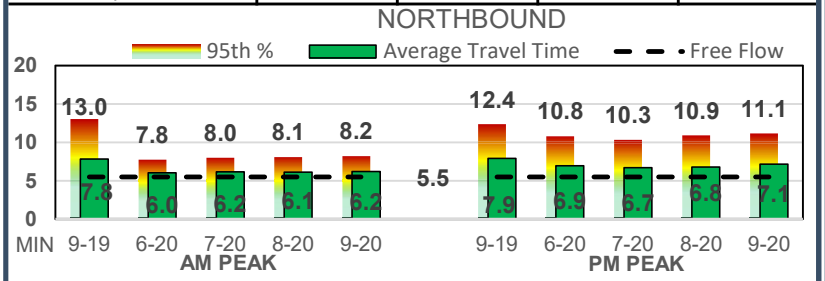


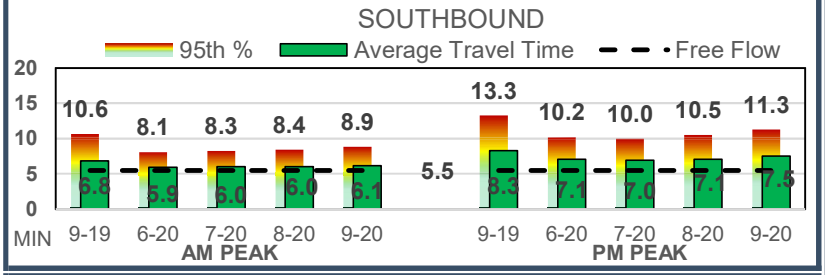
ARTERIALS

SR 436 (Semoran Blvd), North-South corridor from US 17/92 to Casselton Dr, 4.1 miles length, 14 traffic signals

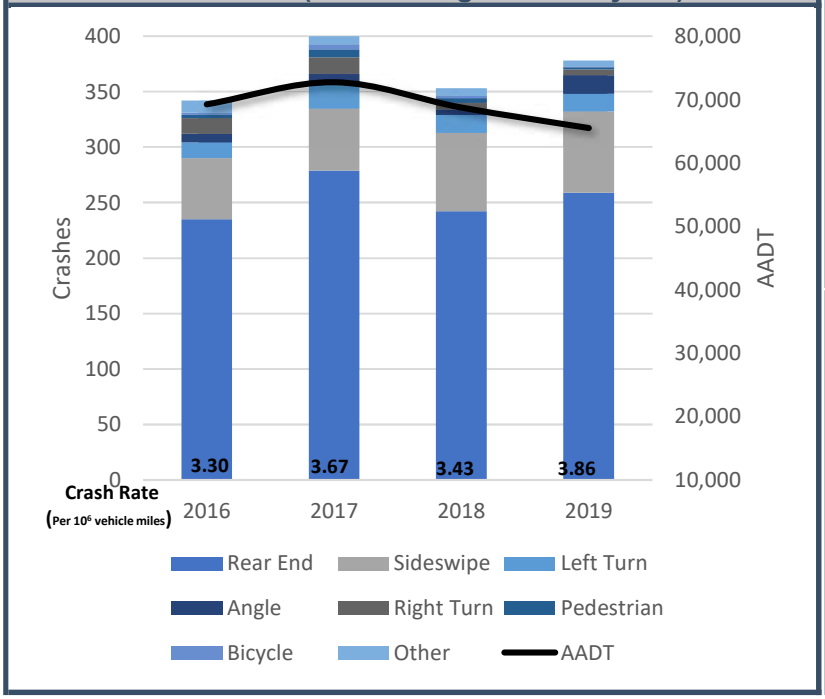
Travel Time Information (Source: BlueToad)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 5.5 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	6.2	7.1	8.2	11.1
Aug 2020	6.1	6.8	8.1	10.9
Jul 2020	6.2	6.7	8.0	10.3
Jun 2020	6.0	6.9	7.8	10.8
Sep 2019	7.8	7.9	13.0	12.4
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 5.5 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	6.1	7.5	8.9	11.3
Aug 2020	6.0	7.1	8.4	10.5
Jul 2020	6.0	7.0	8.3	10.0
Jun 2020	5.9	7.1	8.1	10.2
Sep 2019	6.8	8.3	10.6	13.3

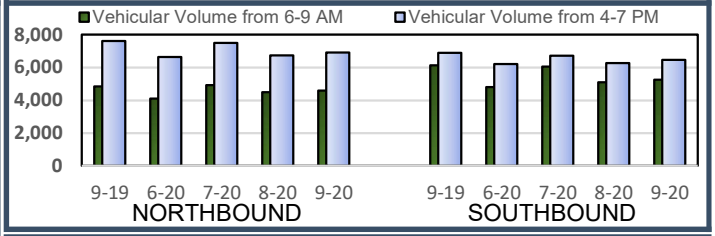




Crash Data (Source: Signal 4 Analytics)

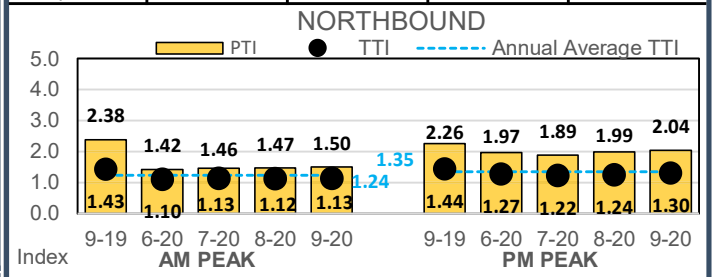


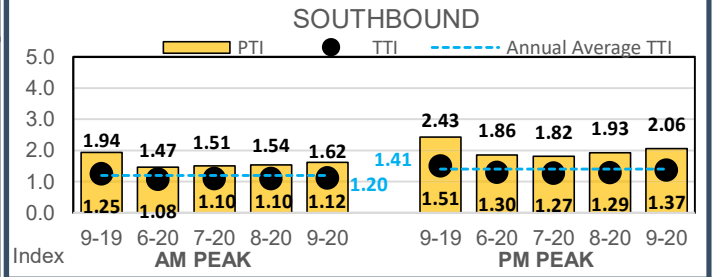
Throughput Volumes



Travel Time Reliability

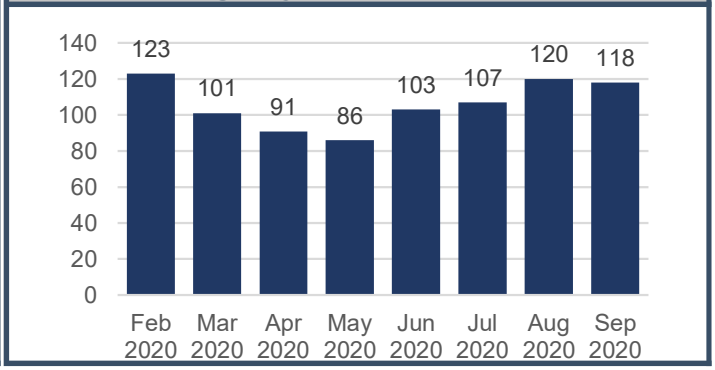
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.13	1.30	1.50	2.04
Aug 2020	1.12	1.24	1.47	1.99
Jul 2020	1.13	1.22	1.46	1.89
Jun 2020	1.10	1.27	1.42	1.97
Sep 2019	1.43	1.44	2.38	2.26
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.12	1.37	1.62	2.06
Aug 2020	1.10	1.29	1.54	1.93
Jul 2020	1.10	1.27	1.51	1.82
Jun 2020	1.08	1.30	1.47	1.86
Sep 2019	1.25	1.51	1.94	2.43





Average Travel Time Index for September 2020 = 1.23

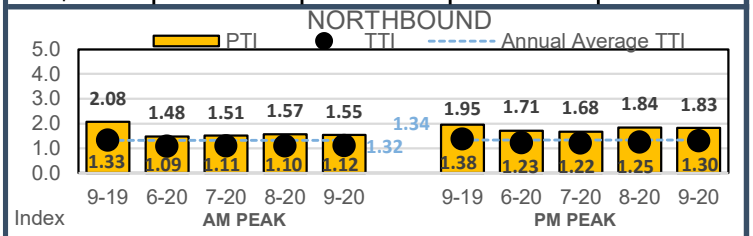
Emergency Vehicle Preemption

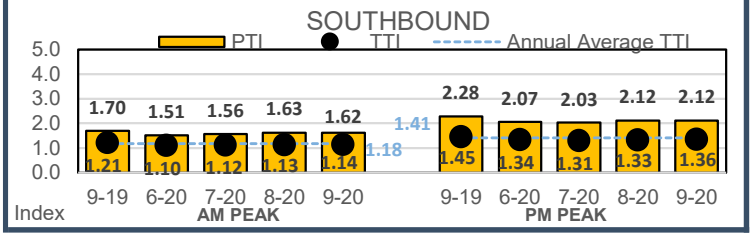


SR 436 (Semoran Blvd), North-South corridor from US 17/92 to Casselton Dr, 4.1 miles length, 14 traffic signals

US 17/92 to Red Bug Lake Rd, 1.5 miles length, 7 traffic signals

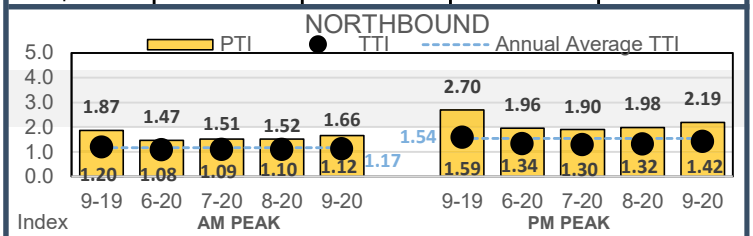
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.12	1.30	1.55	1.83
Aug 2020	1.10	1.25	1.57	1.84
Jul 2020	1.11	1.22	1.51	1.68
Jun 2020	1.09	1.23	1.48	1.71
Sep 2019	1.33	1.38	2.08	1.95
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.14	1.36	1.62	2.12
Aug 2020	1.13	1.33	1.63	2.12
Jul 2020	1.12	1.31	1.56	2.03
Jun 2020	1.10	1.34	1.51	2.07
Sep 2019	1.21	1.45	1.70	2.28

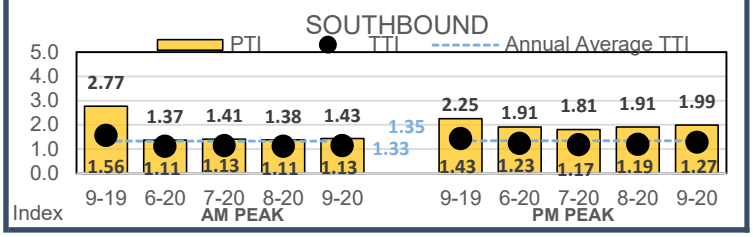




Red Bug Lake Rd to Casselton Dr, 2.6 miles length, 7 traffic signals

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.12	1.42	1.66	2.19
Aug 2020	1.10	1.32	1.52	1.98
Jul 2020	1.09	1.30	1.51	1.90
Jun 2020	1.08	1.34	1.47	1.96
Sep 2019	1.20	1.59	1.87	2.70
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.13	1.27	1.43	1.99
Aug 2020	1.11	1.19	1.38	1.91
Jul 2020	1.13	1.17	1.41	1.81
Jun 2020	1.11	1.23	1.37	1.91
Sep 2019	1.56	1.43	2.77	2.25

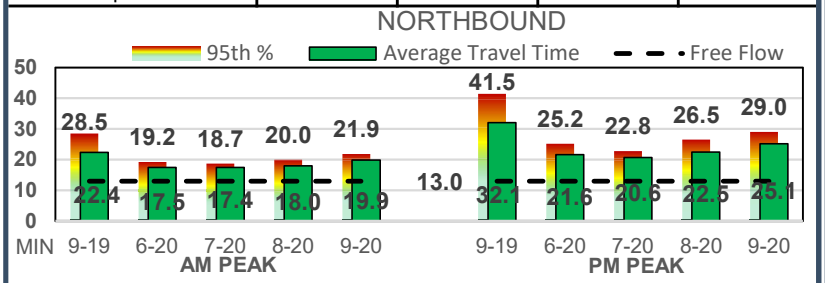


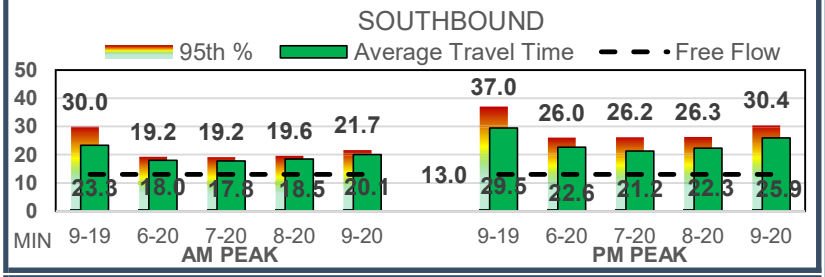


SR 436 North-South corridor from Casselton Drive to TG Lee Boulevard, 10.6 miles length, 28 traffic signals

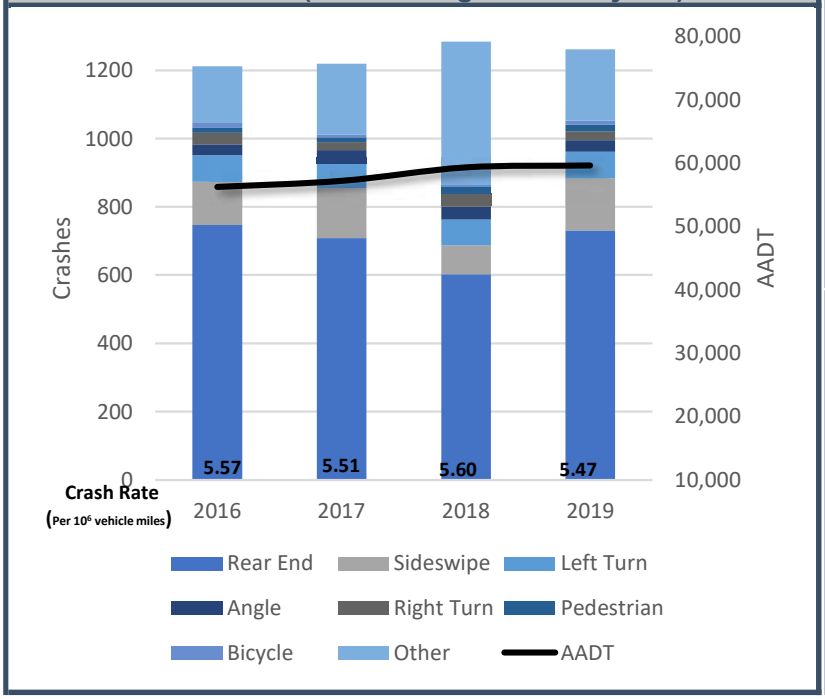
Travel Time Information (Source: BlueMAC)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 13 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	19.9	25.1	21.9	29.0
Aug 2020	18.0	22.5	20.0	26.5
Jul 2020	17.4	20.6	18.7	22.8
Jun 2020	17.5	21.6	19.2	25.2
Sep 2019	22.4	32.1	28.5	41.5
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 13 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	20.1	25.9	21.7	30.4
Aug 2020	18.5	22.3	19.6	26.3
Jul 2020	17.8	21.2	19.2	26.2
Jun 2020	18.0	22.6	19.2	26.0
Sep 2019	23.3	29.5	30.0	37.0

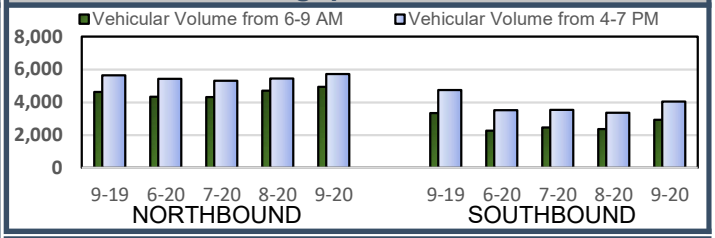




Crash Data (Source: Signal 4 Analytics)

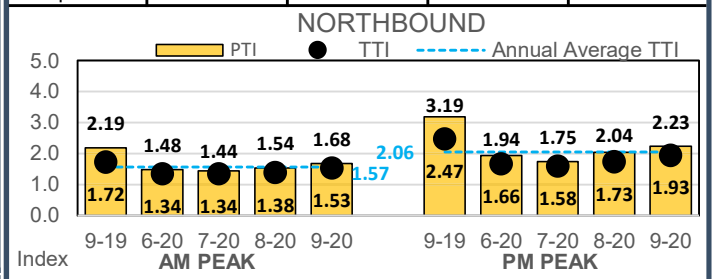


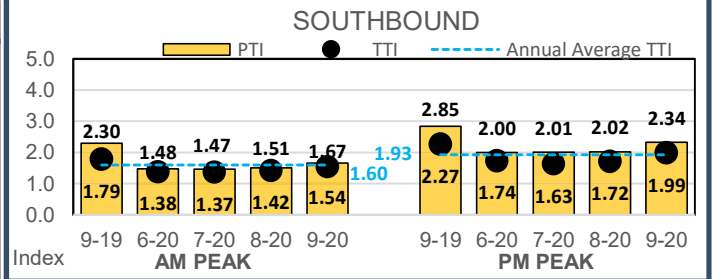
Throughput Volumes



Travel Time Reliability

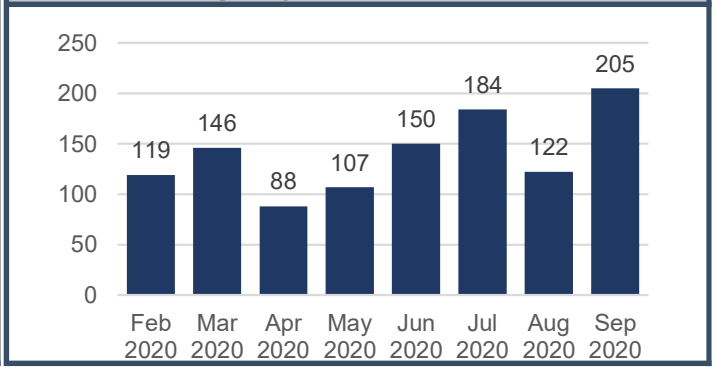
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.53	1.93	1.68	2.23
Aug 2020	1.38	1.73	1.54	2.04
Jul 2020	1.34	1.58	1.44	1.75
Jun 2020	1.34	1.66	1.48	1.94
Sep 2019	1.72	2.47	2.19	3.19
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.54	1.99	1.67	2.34
Aug 2020	1.42	1.72	1.51	2.02
Jul 2020	1.37	1.63	1.47	2.01
Jun 2020	1.38	1.74	1.48	2.00
Sep 2019	1.79	2.27	2.30	2.85





Average Travel Time Index for September 2020 = 1.75

Emergency Vehicle Preemption

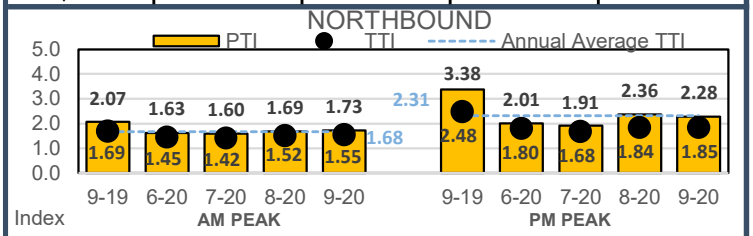


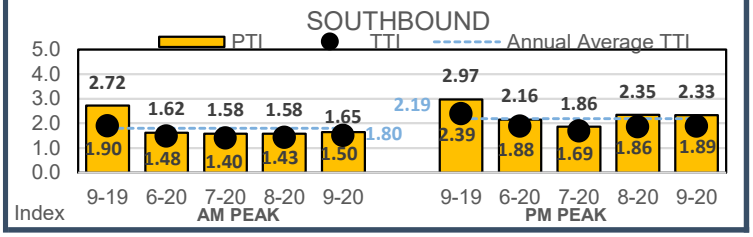
SR 436 North-South corridor from Casselton Drive to TG Lee Boulevard, 10.6 miles length, 28 traffic signals

Casselton Dr to Colonial Dr, 4.3 miles length, 9 traffic signals

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.55	1.85	1.73	2.28
Aug 2020	1.52	1.84	1.69	2.36
Jul 2020	1.42	1.68	1.60	1.91
Jun 2020	1.45	1.80	1.63	2.01
Sep 2019	1.69	2.48	2.07	3.38

Southbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.50	1.89	1.65	2.33
Aug 2020	1.43	1.86	1.58	2.35
Jul 2020	1.40	1.69	1.58	1.86
Jun 2020	1.48	1.88	1.62	2.16
Sep 2019	1.90	2.39	2.72	2.97

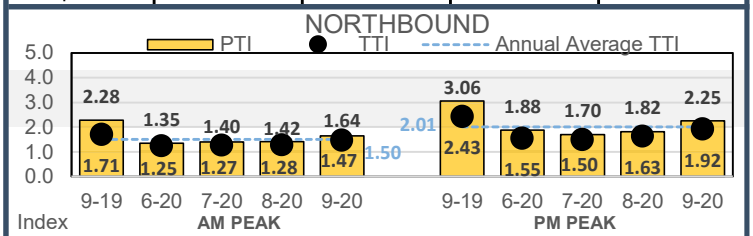


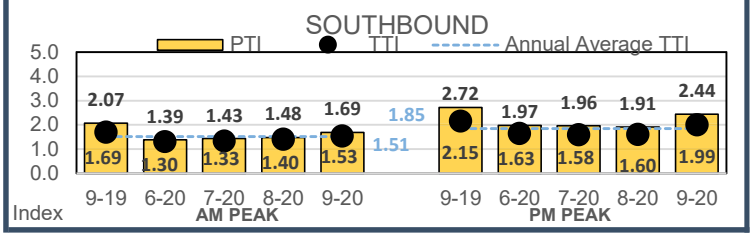


Colonial Dr to TG Lee Blvd, 6.3 miles length, 19 traffic signals

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.47	1.92	1.64	2.25
Aug 2020	1.28	1.63	1.42	1.82
Jul 2020	1.27	1.50	1.40	1.70
Jun 2020	1.25	1.55	1.35	1.88
Sep 2019	1.71	2.43	2.28	3.06

Southbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.53	1.99	1.69	2.44
Aug 2020	1.40	1.60	1.48	1.91
Jul 2020	1.33	1.58	1.43	1.96
Jun 2020	1.30	1.63	1.39	1.97
Sep 2019	1.69	2.15	2.07	2.72

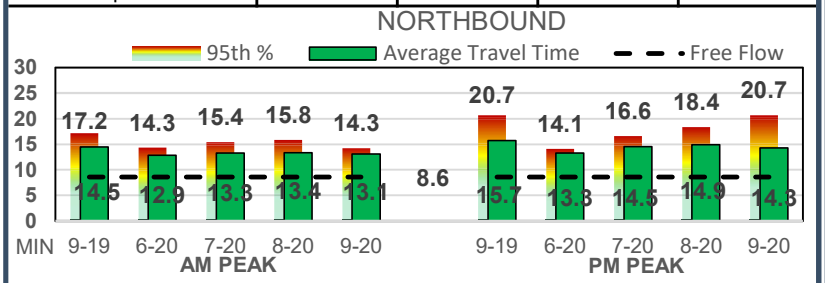


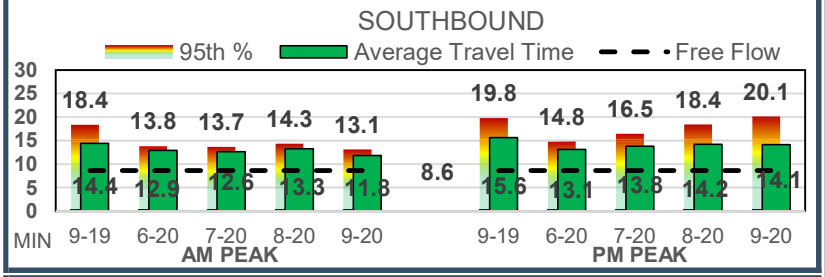


US 441 (OBT), North-South corridor from Country Club Dr to Americana Blvd, 5.4 miles length, 19 traffic signals

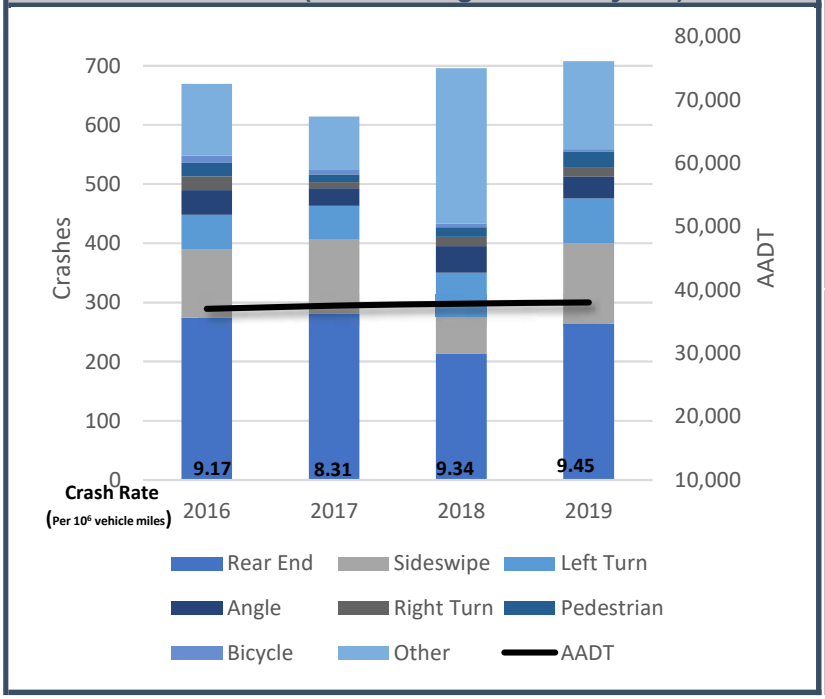
Travel Time Information (Source: BlueMAC)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 8.6 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	13.1	14.3	14.3	20.7
Aug 2020	13.4	14.9	15.8	18.4
Jul 2020	13.3	14.5	15.4	16.6
Jun 2020	12.9	13.3	14.3	14.1
Sep 2019	14.5	15.7	17.2	20.7
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 8.6 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	11.8	14.1	13.1	20.1
Aug 2020	13.3	14.2	14.3	18.4
Jul 2020	12.6	13.8	13.7	16.5
Jun 2020	12.9	13.1	13.8	14.8
Sep 2019	14.4	15.6	18.4	19.8

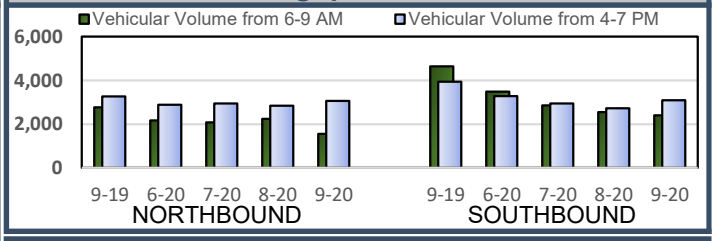




Crash Data (Source: Signal 4 Analytics)

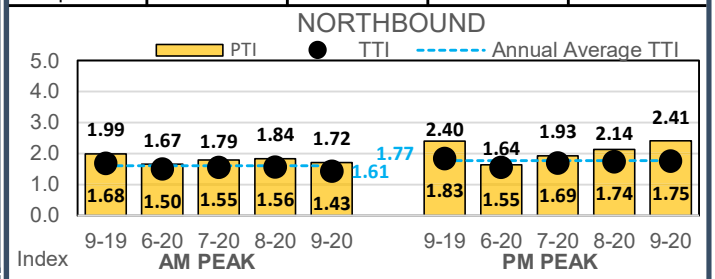


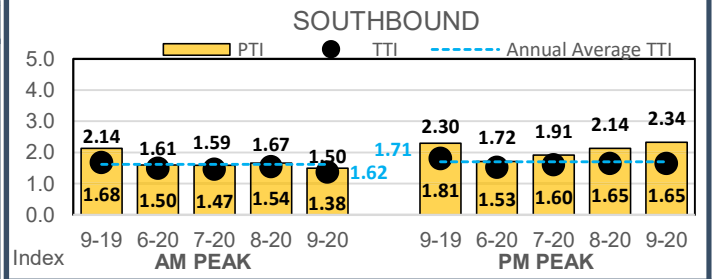
Throughput Volumes



Travel Time Reliability

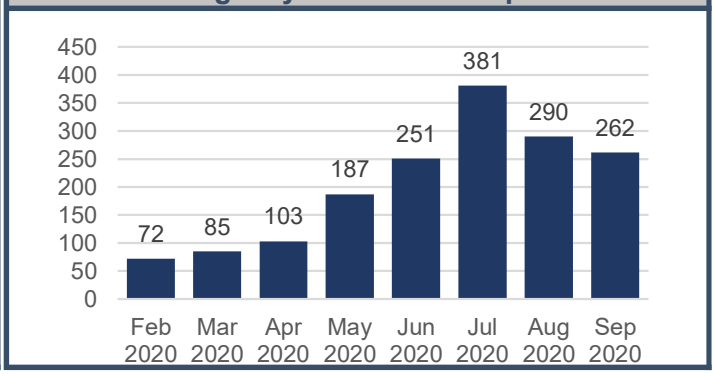
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.43	1.75	1.72	2.41
Aug 2020	1.56	1.74	1.84	2.14
Jul 2020	1.55	1.69	1.79	1.93
Jun 2020	1.50	1.55	1.67	1.64
Sep 2019	1.68	1.83	1.99	2.40
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.38	1.65	1.50	2.34
Aug 2020	1.54	1.65	1.67	2.14
Jul 2020	1.47	1.60	1.59	1.91
Jun 2020	1.50	1.53	1.61	1.72
Sep 2019	1.68	1.81	2.14	2.30





Average Travel Time Index for September 2020 = 1.55

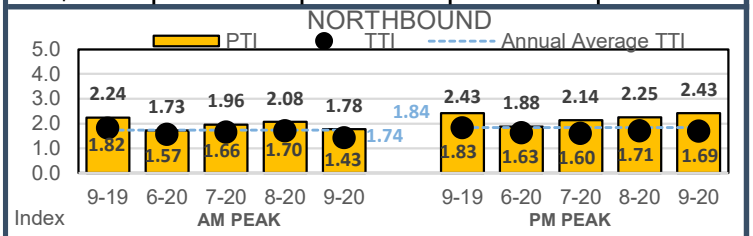
Emergency Vehicle Preemption

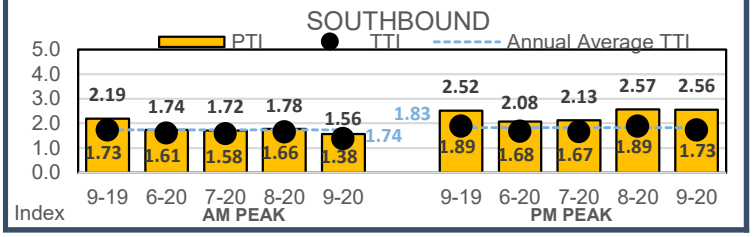


US 441 (OBT), North-South corridor from Country Club Dr to Americana Blvd, 5.4 miles length, 19 traffic signals

Country Club Dr to 35th St, 3.6 miles length, 16 traffic signals

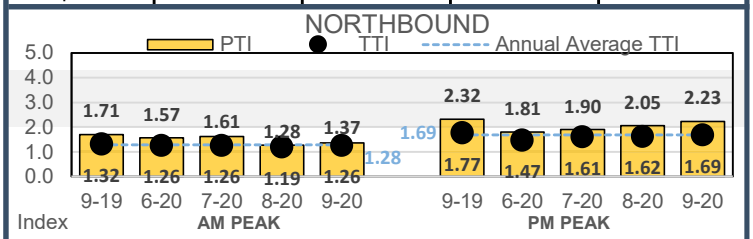
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.43	1.69	1.78	2.43
Aug 2020	1.70	1.71	2.08	2.25
Jul 2020	1.66	1.60	1.96	2.14
Jun 2020	1.57	1.63	1.73	1.88
Sep 2019	1.82	1.83	2.24	2.43
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.38	1.73	1.56	2.56
Aug 2020	1.66	1.89	1.78	2.57
Jul 2020	1.58	1.67	1.72	2.13
Jun 2020	1.61	1.68	1.74	2.08
Sep 2019	1.73	1.89	2.19	2.52

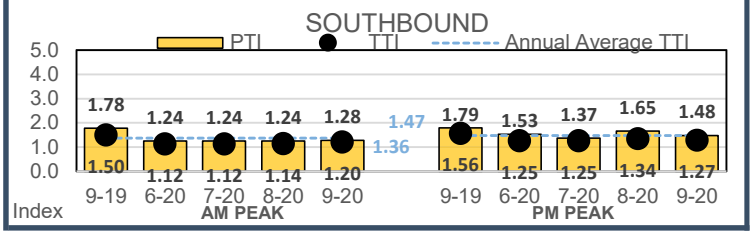




35th St to American Blvd, 1.8 miles length, 3 traffic signals

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.26	1.69	1.37	2.23
Aug 2020	1.19	1.62	1.28	2.05
Jul 2020	1.26	1.61	1.61	1.90
Jun 2020	1.26	1.47	1.57	1.81
Sep 2019	1.32	1.77	1.71	2.32
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.20	1.27	1.28	1.48
Aug 2020	1.14	1.34	1.24	1.65
Jul 2020	1.12	1.25	1.24	1.37
Jun 2020	1.12	1.25	1.24	1.53
Sep 2019	1.50	1.56	1.78	1.79

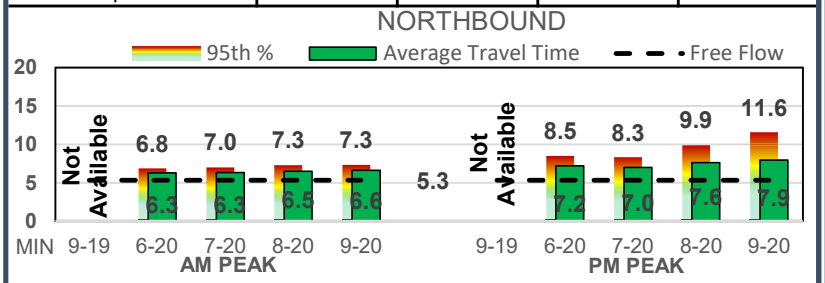


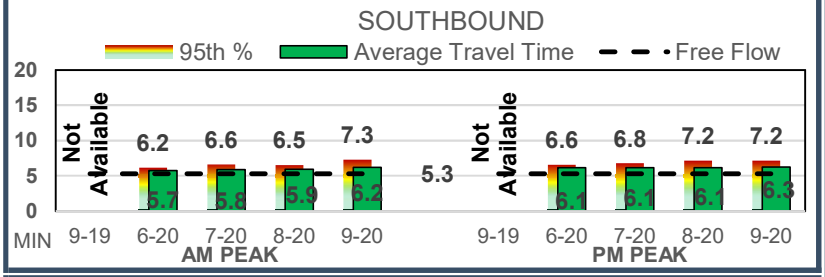


US 441 (OBT), North-South corridor from Country Club Dr to All American Blvd, 4.0 miles length, 5 traffic signals

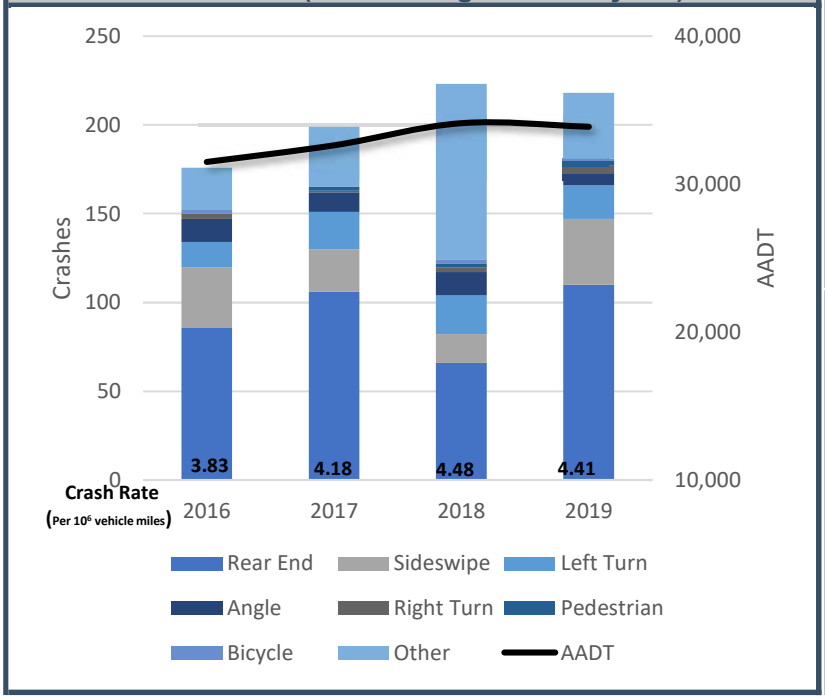
Travel Time Information (Source: BlueMAC)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 5.3 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	6.6	7.9	7.3	11.6
Aug 2020	6.5	7.6	7.3	9.9
Jul 2020	6.3	7.0	7.0	8.3
Jun 2020	6.3	7.2	6.8	8.5
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 5.3 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	6.2	6.3	7.3	7.2
Aug 2020	5.9	6.1	6.5	7.2
Jul 2020	5.8	6.1	6.6	6.8
Jun 2020	5.7	6.1	6.2	6.6
Sep 2019	N/A	N/A	N/A	N/A

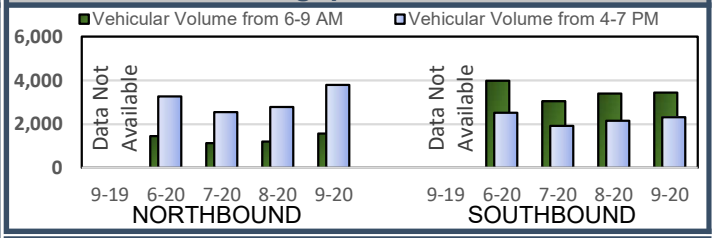




Crash Data (Source: Signal 4 Analytics)

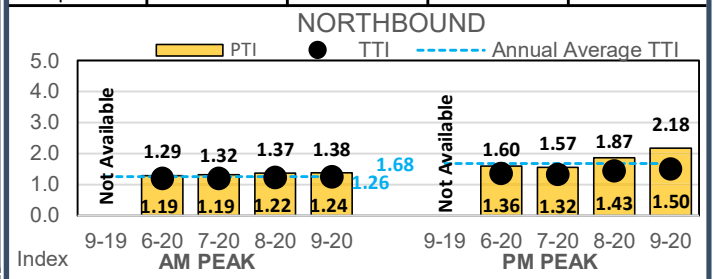


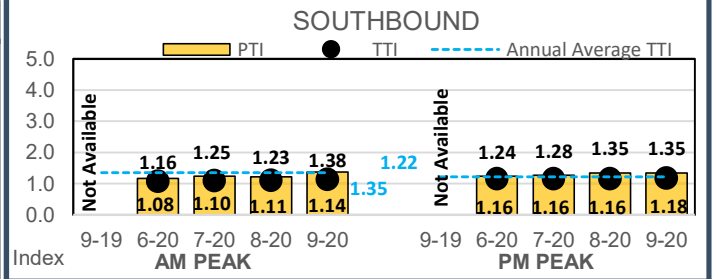
Throughput Volumes



Travel Time Reliability

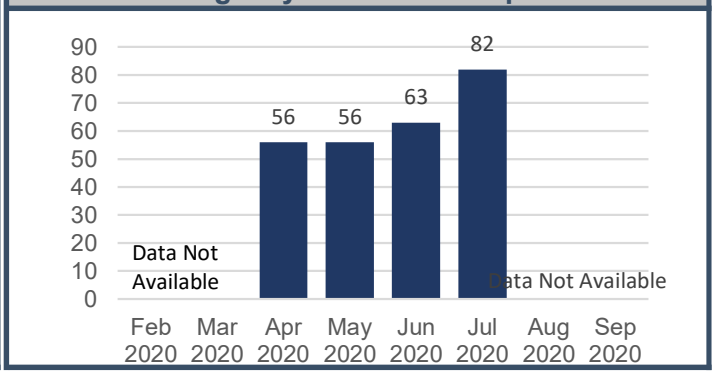
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.24	1.50	1.38	2.18
Aug 2020	1.22	1.43	1.37	1.87
Jul 2020	1.19	1.32	1.32	1.57
Jun 2020	1.19	1.36	1.29	1.60
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.14	1.18	1.38	1.35
Aug 2020	1.11	1.16	1.23	1.35
Jul 2020	1.10	1.16	1.25	1.28
Jun 2020	1.08	1.16	1.16	1.24
Sep 2019	N/A	N/A	N/A	N/A





Average Travel Time Index for September 2020 = 1.27

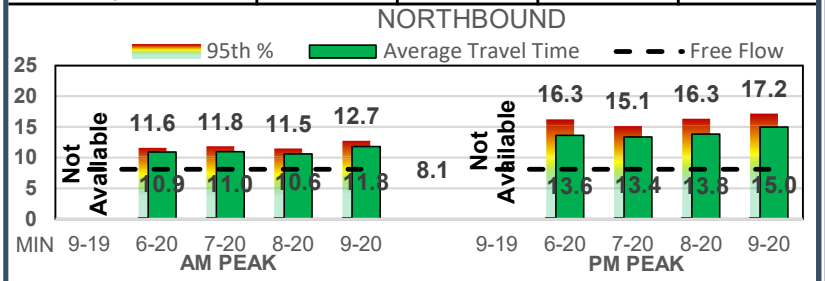
Emergency Vehicle Preemption

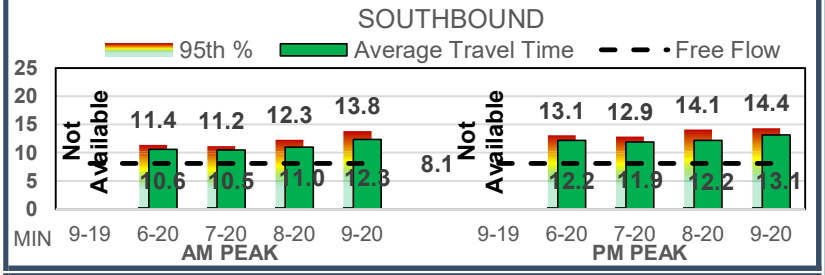


US 441 (OBT), North-South corridor from SR 414 to SR 429, 6.1 miles length, 12 traffic signals

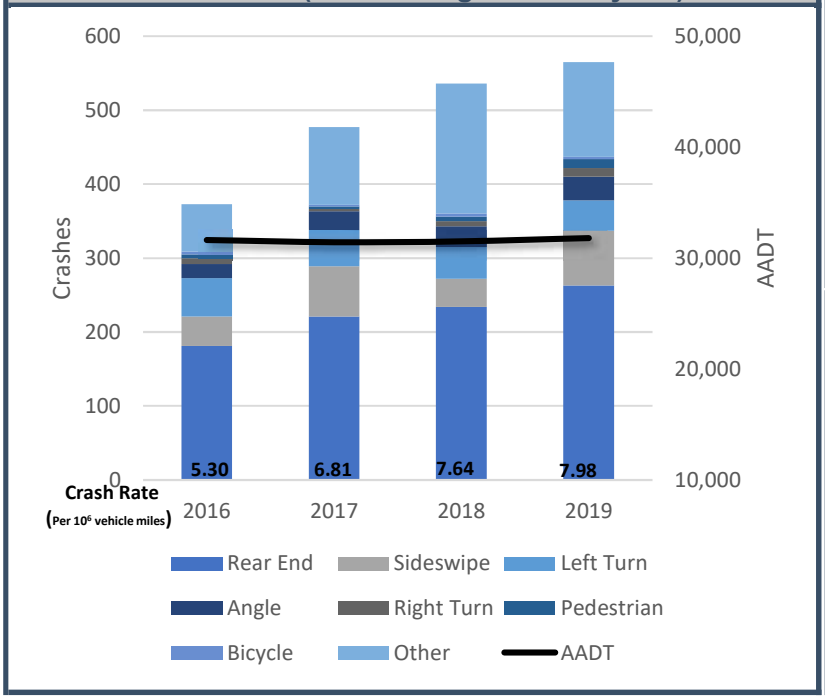
Travel Time Information (Source: BlueMAC)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 8.1 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	11.8	15.0	12.7	17.2
Aug 2020	10.6	13.8	11.5	16.3
Jul 2020	11.0	13.4	11.8	15.1
Jun 2020	10.9	13.6	11.6	16.3
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 8.1 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	12.3	13.1	13.8	14.4
Aug 2020	11.0	12.2	12.3	14.1
Jul 2020	10.5	11.9	11.2	12.9
Jun 2020	10.6	12.2	11.4	13.1
Sep 2019	N/A	N/A	N/A	N/A

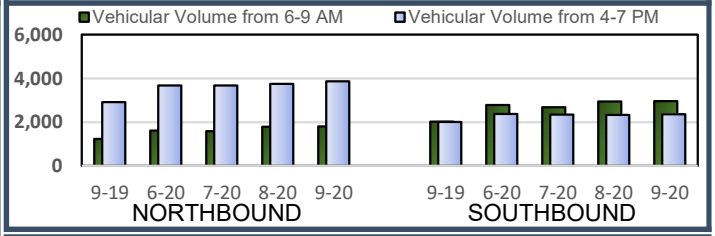




Crash Data (Source: Signal 4 Analytics)

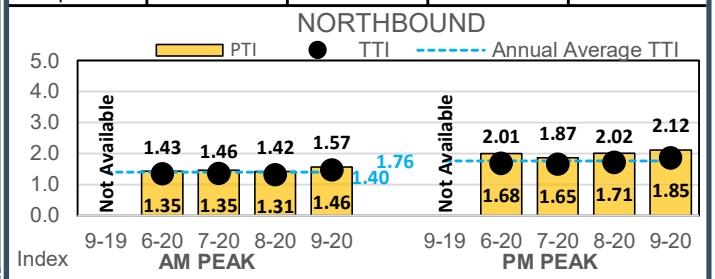


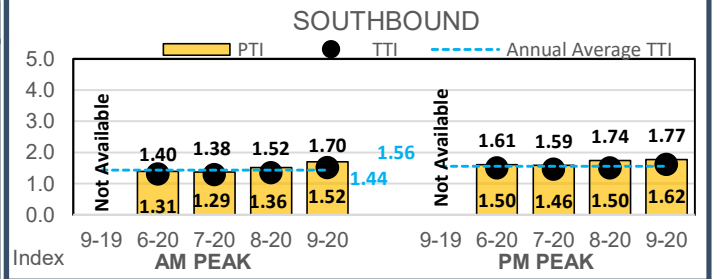
Throughput Volumes



Travel Time Reliability

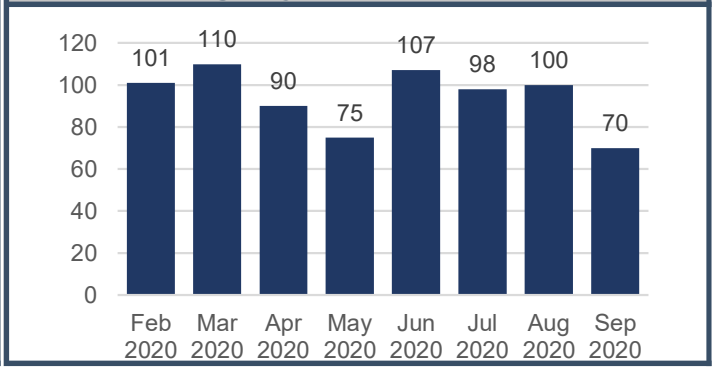
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.46	1.85	1.57	2.12
Aug 2020	1.31	1.71	1.42	2.02
Jul 2020	1.35	1.65	1.46	1.87
Jun 2020	1.35	1.68	1.43	2.01
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.52	1.62	1.70	1.77
Aug 2020	1.36	1.50	1.52	1.74
Jul 2020	1.29	1.46	1.38	1.59
Jun 2020	1.31	1.50	1.40	1.61
Sep 2019	N/A	N/A	N/A	N/A





Average Travel Time Index for September 2020 = 1.61

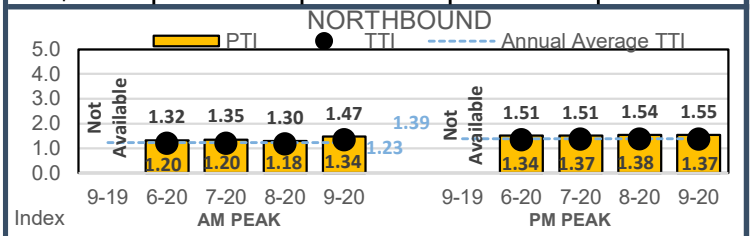
Emergency Vehicle Preemption

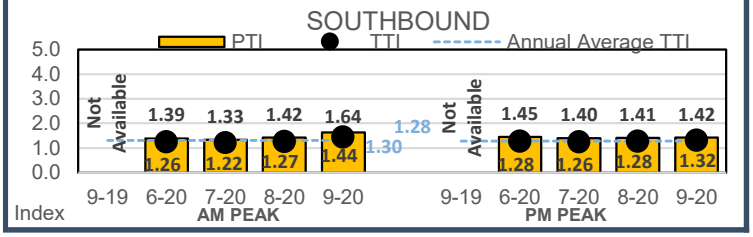


US 441 (OBT), North-South corridor from SR 414 to SR 429, 5.4 miles length, 12 traffic signals

SR 414 to Roger Williams Rd, 3.0 miles length, 5 traffic signals

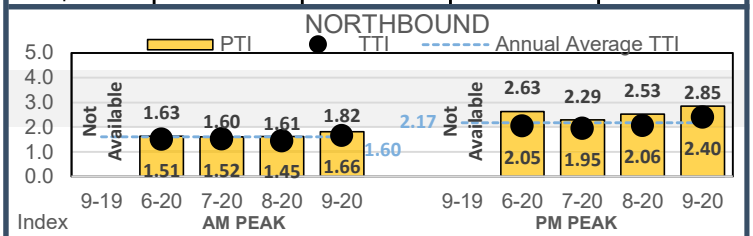
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.34	1.37	1.47	1.55
Aug 2020	1.18	1.38	1.30	1.54
Jul 2020	1.20	1.37	1.35	1.51
Jun 2020	1.20	1.34	1.32	1.51
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.44	1.32	1.64	1.42
Aug 2020	1.27	1.28	1.42	1.41
Jul 2020	1.22	1.26	1.33	1.40
Jun 2020	1.26	1.28	1.39	1.45
Sep 2019	N/A	N/A	N/A	N/A

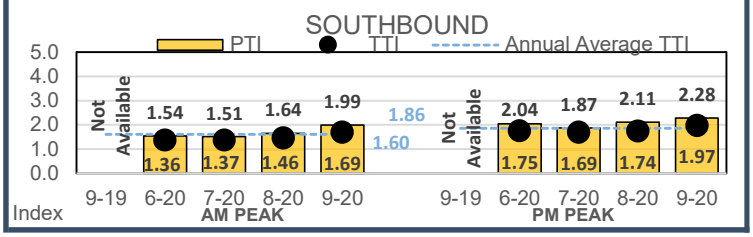




Roger Williams Rd to SR 429, 3.1 miles length, 7 traffic signals

Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.66	2.40	1.82	2.85
Aug 2020	1.45	2.06	1.61	2.53
Jul 2020	1.52	1.95	1.60	2.29
Jun 2020	1.51	2.05	1.63	2.63
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.69	1.97	1.99	2.28
Aug 2020	1.46	1.74	1.64	2.11
Jul 2020	1.37	1.69	1.51	1.87
Jun 2020	1.36	1.75	1.54	2.04
Sep 2019	N/A	N/A	N/A	N/A

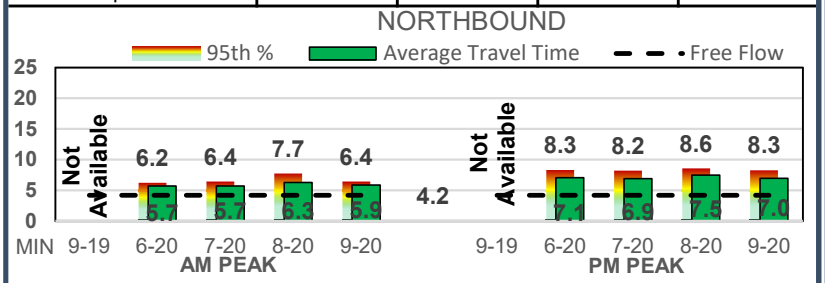


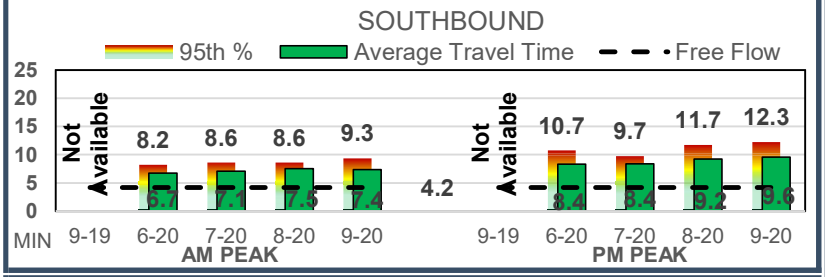


US 441 (OBT), North-South corridor from Taft Vineland Rd to Town Center Blvd, 4.1 miles length, 10 traffic signals

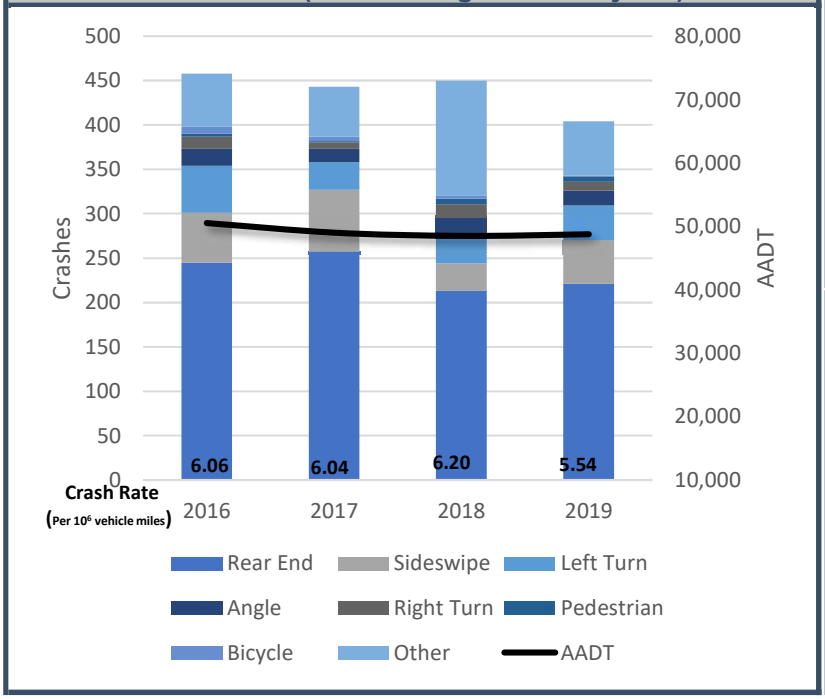
Travel Time Information (Source: BlueMAC)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 4.2 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	5.9	7.0	6.4	8.3
Aug 2020	6.3	7.5	7.7	8.6
Jul 2020	5.7	6.9	6.4	8.2
Jun 2020	5.7	7.1	6.2	8.3
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 4.2 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	7.4	9.6	9.3	12.3
Aug 2020	7.5	9.2	8.6	11.7
Jul 2020	7.1	8.4	8.6	9.7
Jun 2020	6.7	8.4	8.2	10.7
Sep 2019	N/A	N/A	N/A	N/A

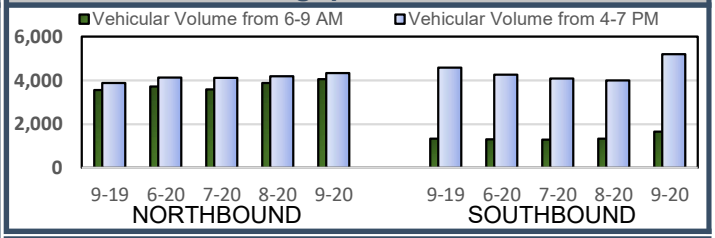




Crash Data (Source: Signal 4 Analytics)

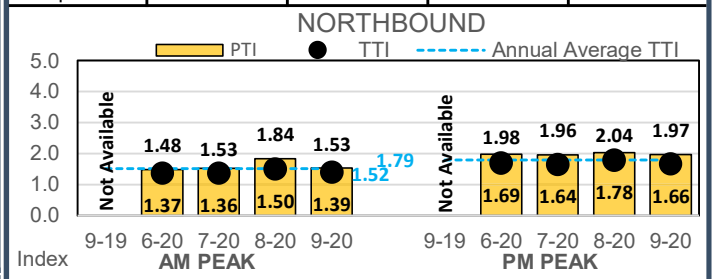


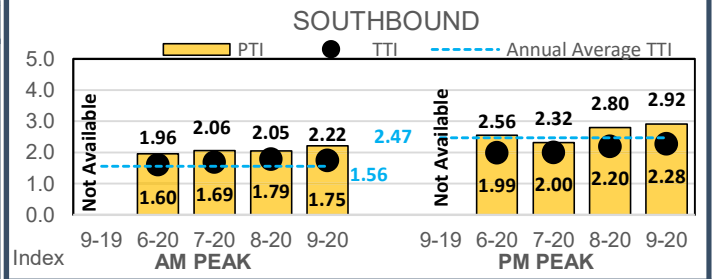
Throughput Volumes



Travel Time Reliability

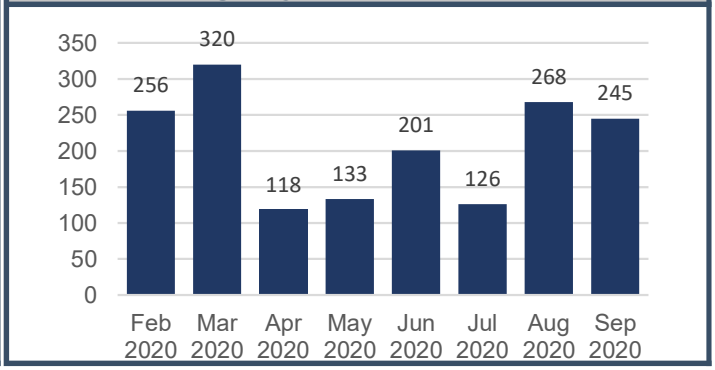
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.39	1.66	1.53	1.97
Aug 2020	1.50	1.78	1.84	2.04
Jul 2020	1.36	1.64	1.53	1.96
Jun 2020	1.37	1.69	1.48	1.98
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.75	2.28	2.22	2.92
Aug 2020	1.79	2.20	2.05	2.80
Jul 2020	1.69	2.00	2.06	2.32
Jun 2020	1.60	1.99	1.96	2.56
Sep 2019	N/A	N/A	N/A	N/A





Average Travel Time Index for September 2020 = 1.77

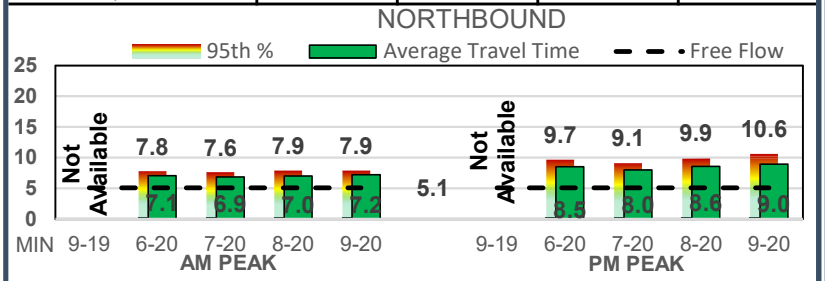
Emergency Vehicle Preemption

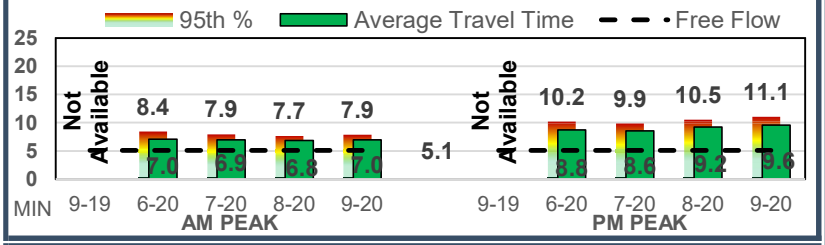


US 441 (OBT), North-South corridor from Town Center Blvd to US 192, 4.3 miles length, 9 traffic signals

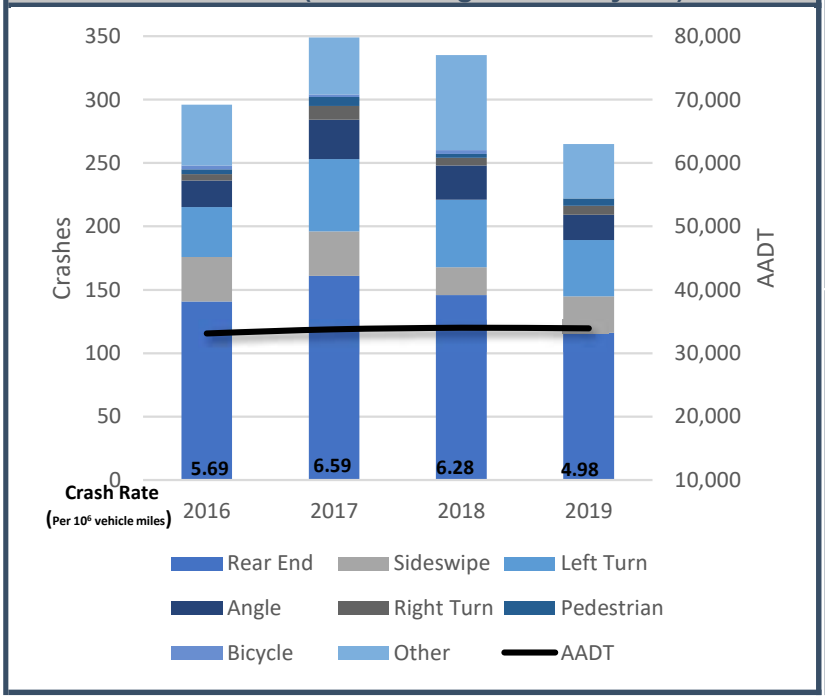
Travel Time Information (Source: BlueMAC)

Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 5.1 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	7.2	9.0	7.9	10.6
Aug 2020	7.0	8.6	7.9	9.9
Jul 2020	6.9	8.0	7.6	9.1
Jun 2020	7.1	8.5	7.8	9.7
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 5.1 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	7.0	9.6	7.9	11.1
Aug 2020	6.8	9.2	7.7	10.5
Jul 2020	6.9	8.6	7.9	9.9
Jun 2020	7.0	8.8	8.4	10.2
Sep 2019	N/A	N/A	N/A	N/A

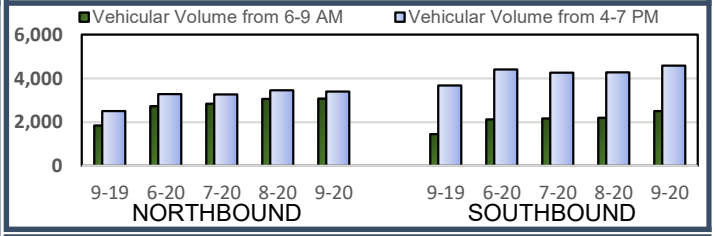




Crash Data (Source: Signal 4 Analytics)

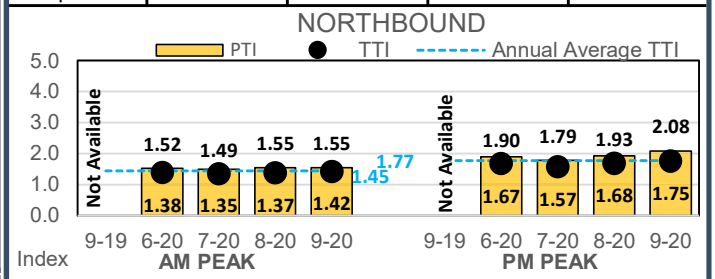


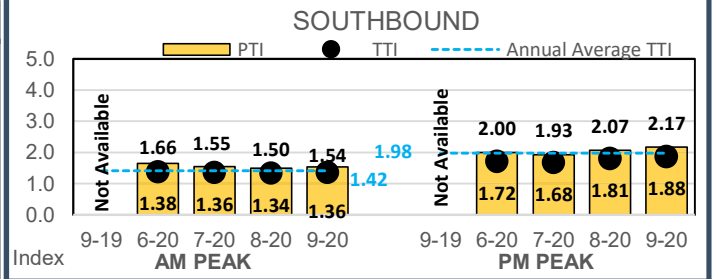
Throughput Volumes



Travel Time Reliability

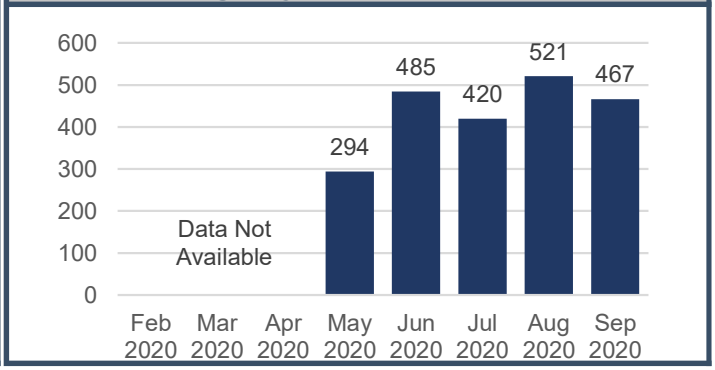
Northbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.42	1.75	1.55	2.08
Aug 2020	1.37	1.68	1.55	1.93
Jul 2020	1.35	1.57	1.49	1.79
Jun 2020	1.38	1.67	1.52	1.90
Sep 2019	N/A	N/A	N/A	N/A
Southbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.36	1.88	1.54	2.17
Aug 2020	1.34	1.81	1.50	2.07
Jul 2020	1.36	1.68	1.55	1.93
Jun 2020	1.38	1.72	1.66	2.00
Sep 2019	N/A	N/A	N/A	N/A





Average Travel Time Index for September 2020 = 1.60

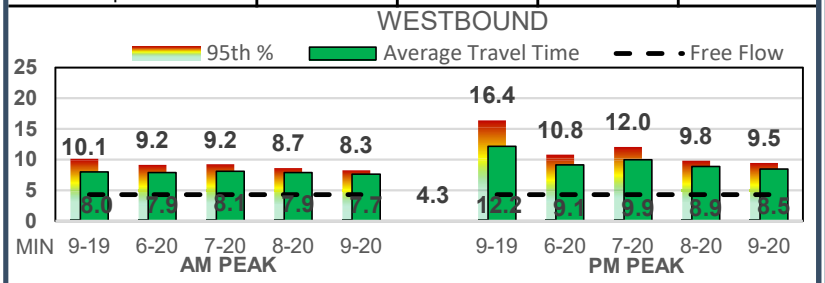
Emergency Vehicle Preemption

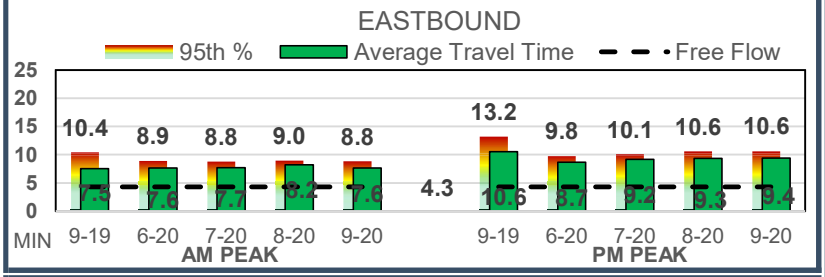


SR 482 (Sand Lake Rd), East-West corridor from Turkey Lake Rd to John Young Pkwy, 3.5 miles length, 8 traffic signals

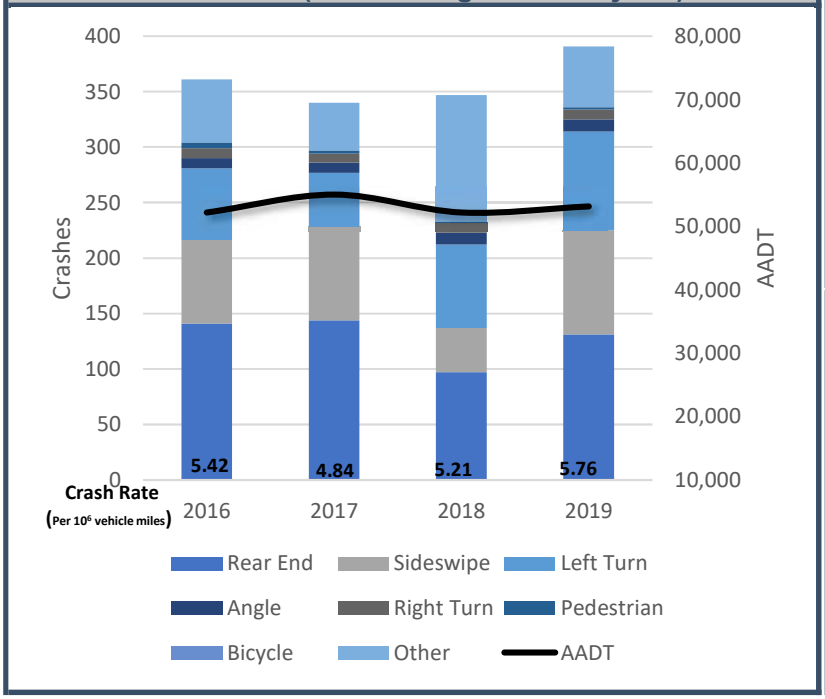
Travel Time Information (Source: BlueMAC)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 4.3 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	7.7	8.5	8.3	9.5
Aug 2020	7.9	8.9	8.7	9.8
Jul 2020	8.1	9.9	9.2	12.0
Jun 2020	7.9	9.1	9.2	10.8
Sep 2019	8.0	12.2	10.1	16.4
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 4.3 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	7.6	9.4	8.8	10.6
Aug 2020	8.2	9.3	9.0	10.6
Jul 2020	7.7	9.2	8.8	10.1
Jun 2020	7.6	8.7	8.9	9.8
Sep 2019	7.5	10.6	10.4	13.2

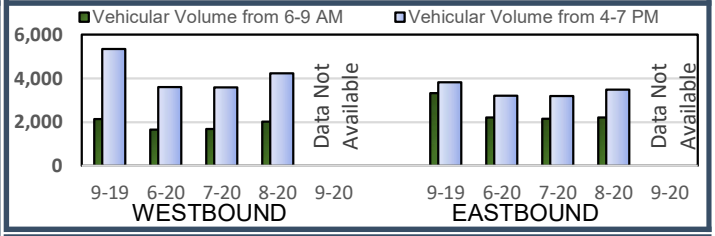




Crash Data (Source: Signal 4 Analytics)

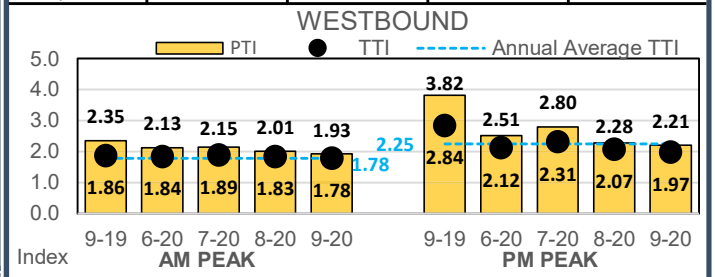


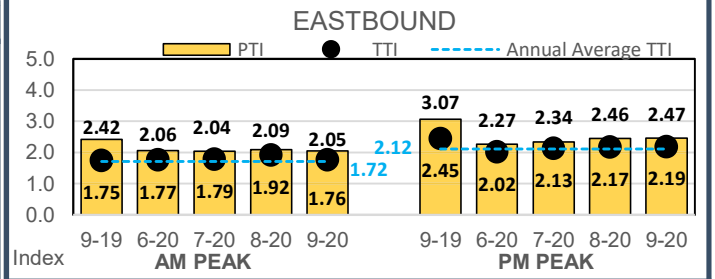
Throughput Volumes



Travel Time Reliability

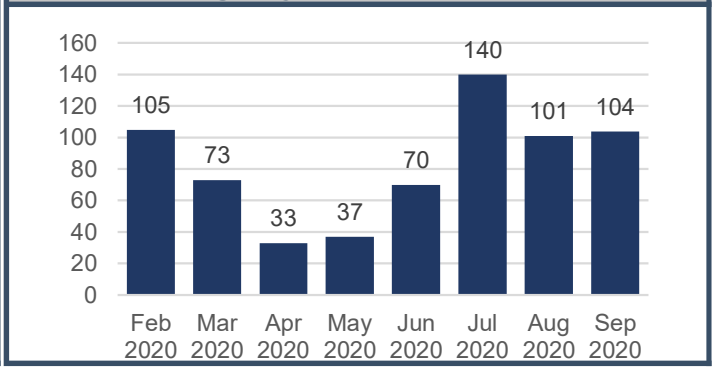
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.78	1.97	1.93	2.21
Aug 2020	1.83	2.07	2.01	2.28
Jul 2020	1.89	2.31	2.15	2.80
Jun 2020	1.84	2.12	2.13	2.51
Sep 2019	1.86	2.84	2.35	3.82
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.76	2.19	2.05	2.47
Aug 2020	1.92	2.17	2.09	2.46
Jul 2020	1.79	2.13	2.04	2.34
Jun 2020	1.77	2.02	2.06	2.27
Sep 2019	1.75	2.45	2.42	3.07





Average Travel Time Index for September 2020 = 1.93

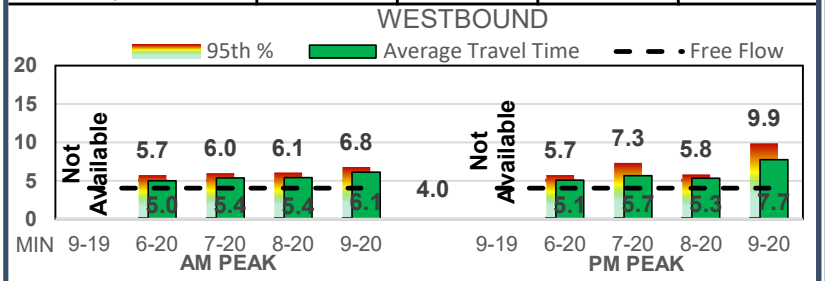
Emergency Vehicle Preemption

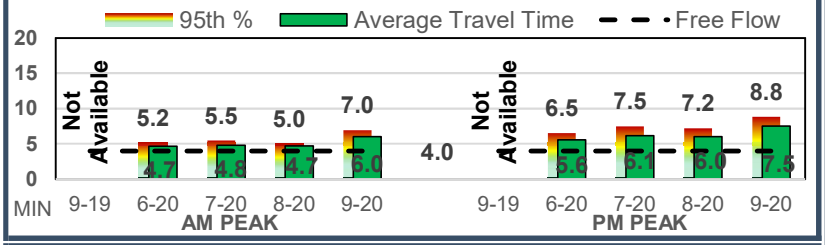


US 192, East-West corridor from Orange Lake Blvd to Griffin Rd, 3.2 miles length, 10 traffic signals

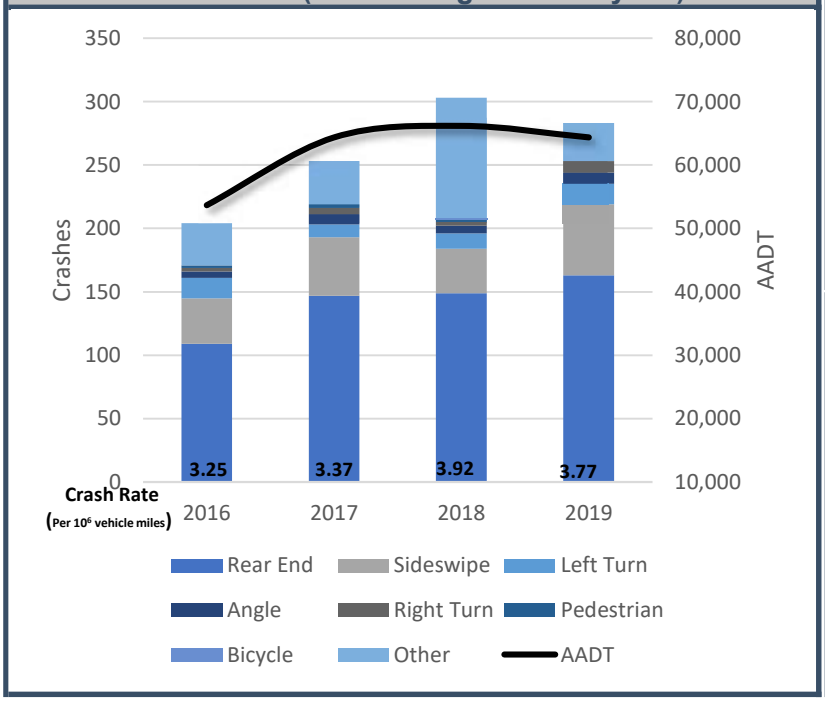
Travel Time Information (Source: BlueMAC)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 4 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	6.1	7.7	6.8	9.9
Aug 2020	5.4	5.3	6.1	5.8
Jul 2020	5.4	5.7	6.0	7.3
Jun 2020	5.0	5.1	5.7	5.7
Sep 2019	N/A	N/A	N/A	N/A
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 4 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	6.0	7.5	7.0	8.8
Aug 2020	4.7	6.0	5.0	7.2
Jul 2020	4.8	6.1	5.5	7.5
Jun 2020	4.7	5.6	5.2	6.5
Sep 2019	N/A	N/A	N/A	N/A

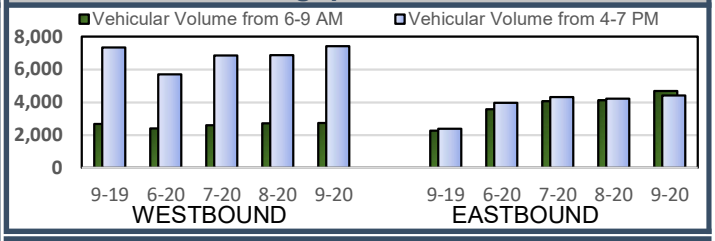




Crash Data (Source: Signal 4 Analytics)

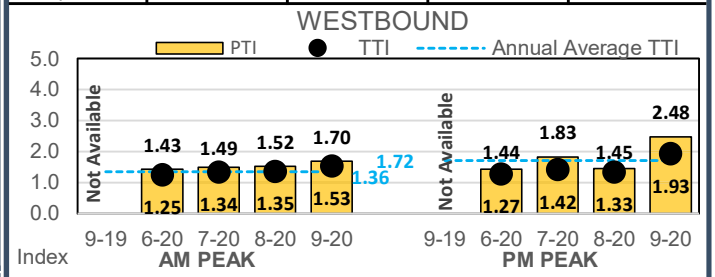


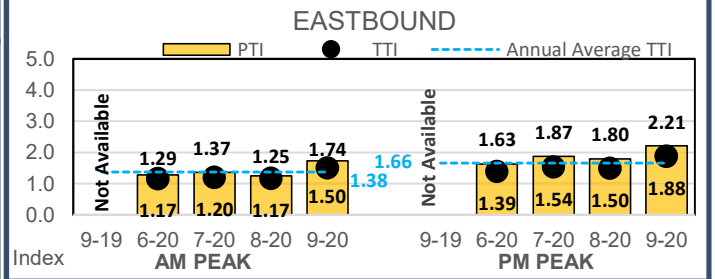
Throughput Volumes



Travel Time Reliability

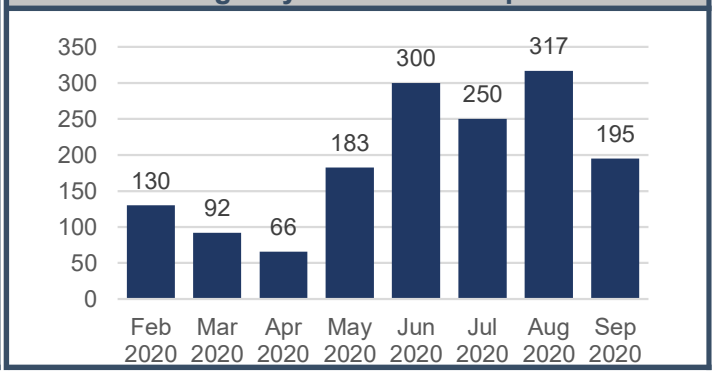
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.53	1.93	1.70	2.48
Aug 2020	1.35	1.33	1.52	1.45
Jul 2020	1.34	1.42	1.49	1.83
Jun 2020	1.25	1.27	1.43	1.44
Sep 2019	N/A	N/A	N/A	N/A
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.50	1.88	1.74	2.21
Aug 2020	1.17	1.50	1.25	1.80
Jul 2020	1.20	1.54	1.37	1.87
Jun 2020	1.17	1.39	1.29	1.63
Sep 2019	N/A	N/A	N/A	N/A





Average Travel Time Index for September 2020 = 1.71

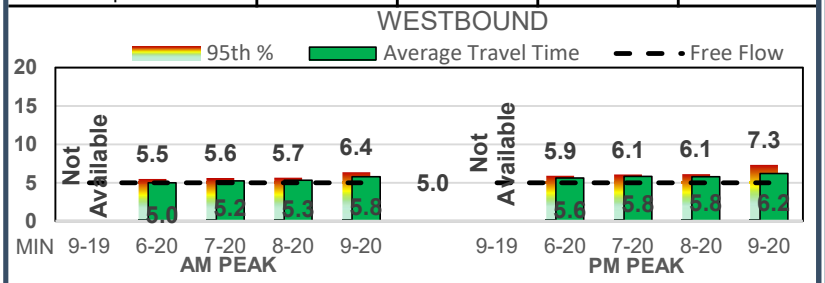
Emergency Vehicle Preemption

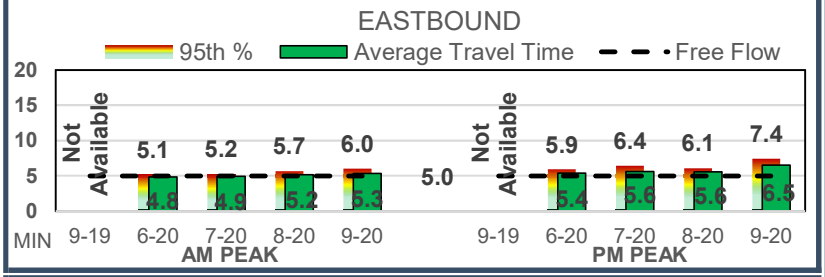


US 192, East-West corridor from Griffin Rd to Serelago Blvd, 4.0 miles length, 6 traffic signals

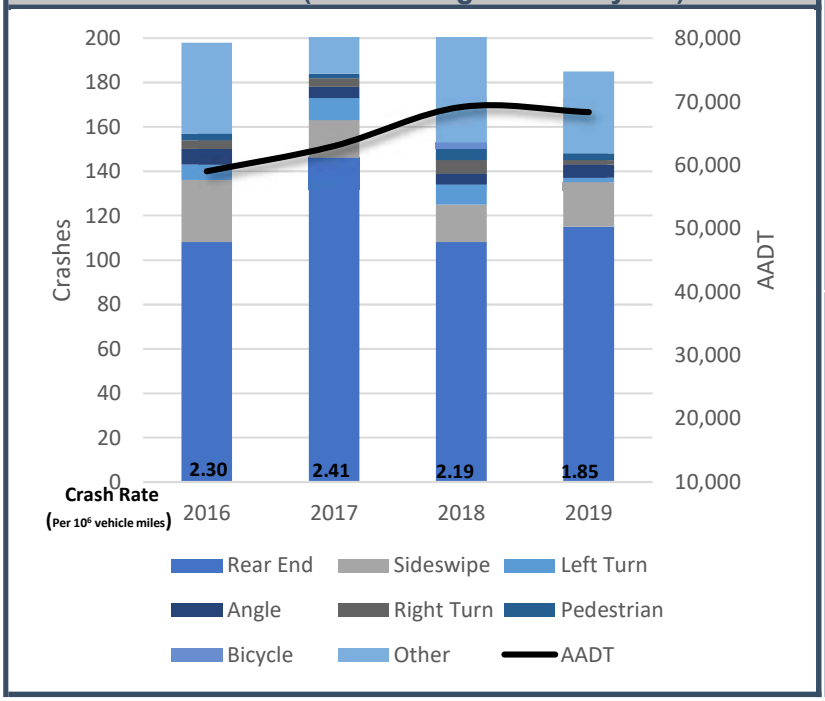
Travel Time Information (Source: BlueMAC)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 5 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	5.8	6.2	6.4	7.3
Aug 2020	5.3	5.8	5.7	6.1
Jul 2020	5.2	5.8	5.6	6.1
Jun 2020	5.0	5.6	5.5	5.9
Sep 2019	N/A	N/A	N/A	N/A
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 5 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	5.3	6.5	6.0	7.4
Aug 2020	5.2	5.6	5.7	6.1
Jul 2020	4.9	5.6	5.2	6.4
Jun 2020	4.8	5.4	5.1	5.9
Sep 2019	N/A	N/A	N/A	N/A

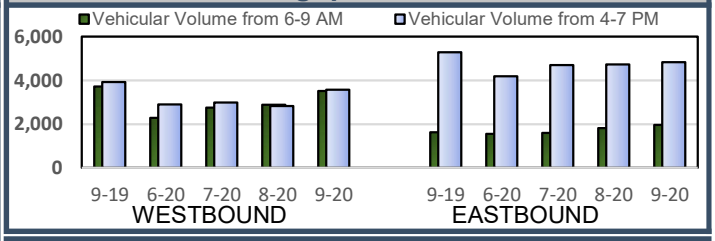




Crash Data (Source: Signal 4 Analytics)

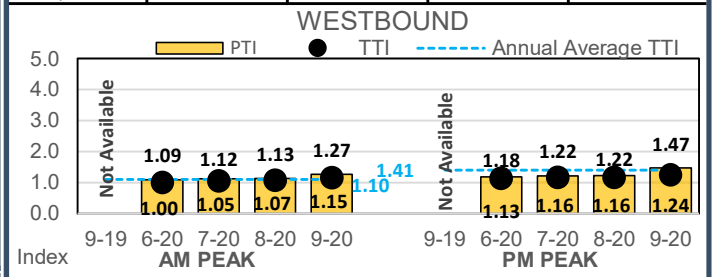


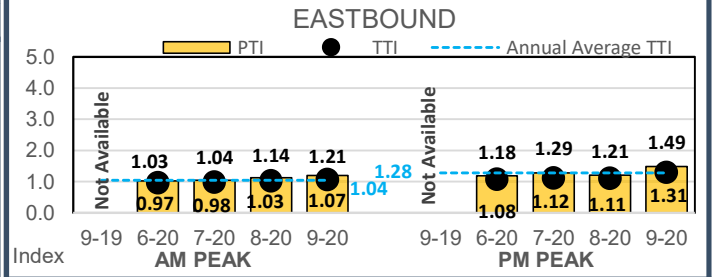
Throughput Volumes



Travel Time Reliability

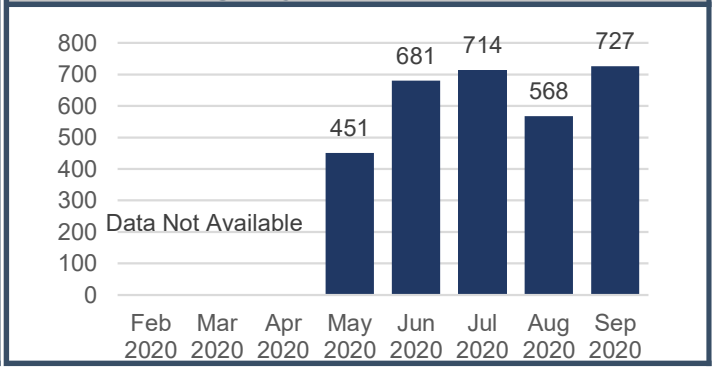
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.15	1.24	1.27	1.47
Aug 2020	1.07	1.16	1.13	1.22
Jul 2020	1.05	1.16	1.12	1.22
Jun 2020	1.00	1.13	1.09	1.18
Sep 2019	N/A	N/A	N/A	N/A
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.07	1.31	1.21	1.49
Aug 2020	1.03	1.11	1.14	1.21
Jul 2020	0.98	1.12	1.04	1.29
Jun 2020	0.97	1.08	1.03	1.18
Sep 2019	N/A	N/A	N/A	N/A





Average Travel Time Index for September 2020 = 1.19

Emergency Vehicle Preemption

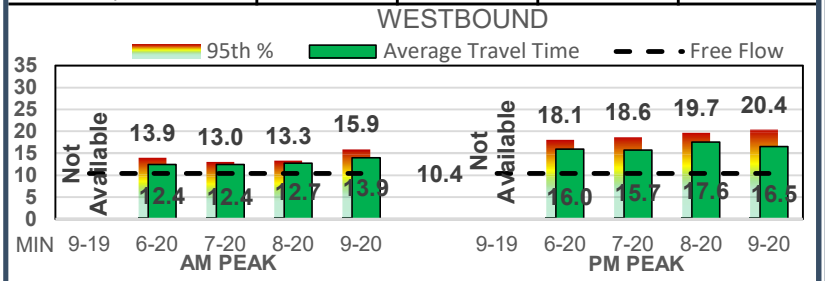


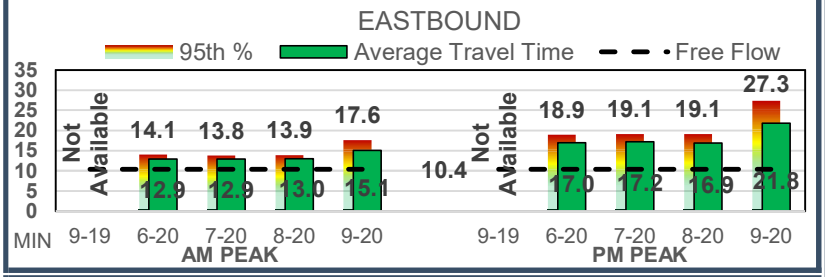
ARTERIALS

US 192, East-West corridor from Serelago Blvd to Central Ave, 7.6 miles length, 15 traffic signals

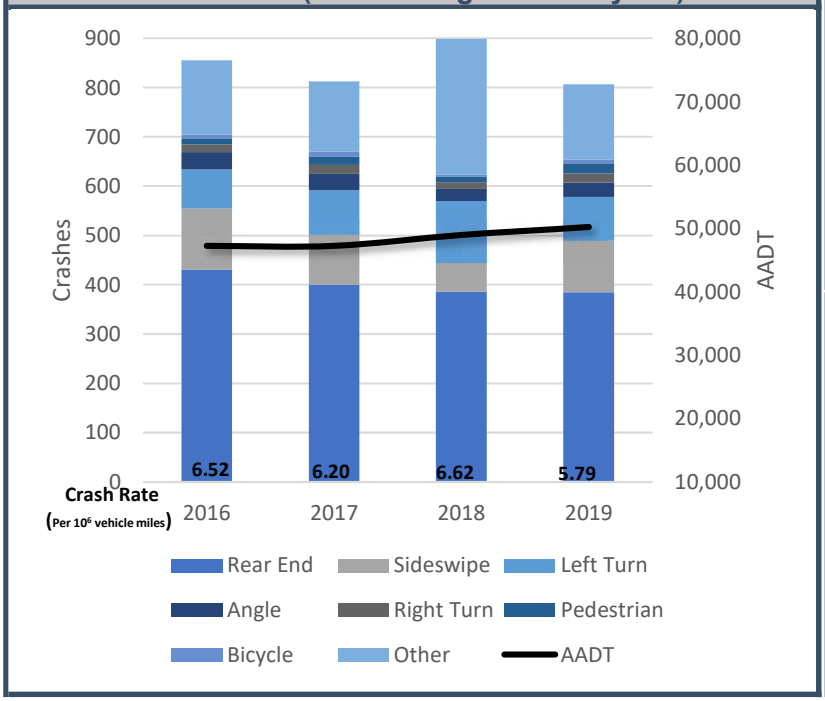
Travel Time Information (Source: BlueMAC)

Westbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 10.4 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	13.9	16.5	15.9	20.4
Aug 2020	12.7	17.6	13.3	19.7
Jul 2020	12.4	15.7	13.0	18.6
Jun 2020	12.4	16.0	13.9	18.1
Sep 2019	N/A	N/A	N/A	N/A
Eastbound	**Avg Travel Time (mins)**		**95th Percentile (mins)**	
Free Flow: 10.4 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	15.1	21.8	17.6	27.3
Aug 2020	13.0	16.9	13.9	19.1
Jul 2020	12.9	17.2	13.8	19.1
Jun 2020	12.9	17.0	14.1	18.9
Sep 2019	N/A	N/A	N/A	N/A

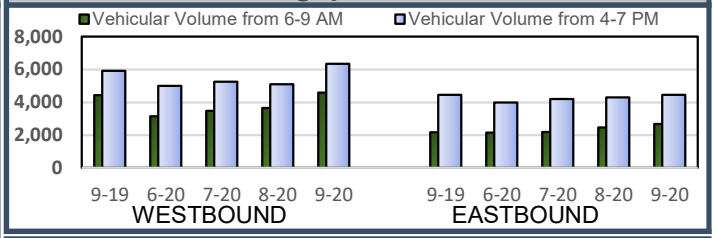




Crash Data (Source: Signal 4 Analytics)

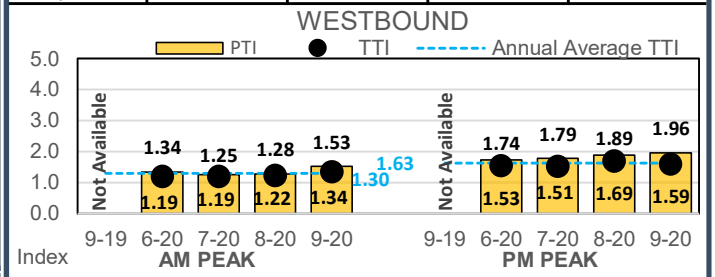


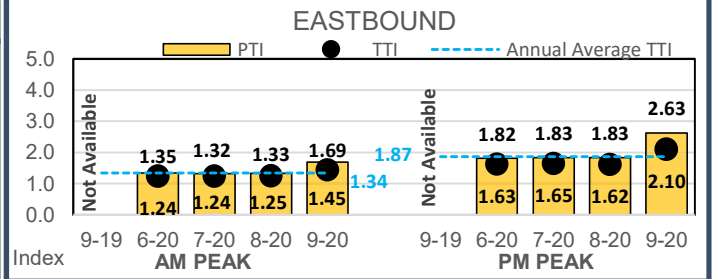
Throughput Volumes



Travel Time Reliability

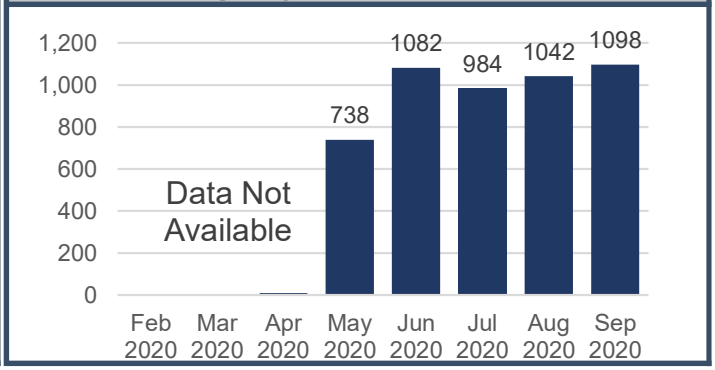
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.34	1.59	1.53	1.96
Aug 2020	1.22	1.69	1.28	1.89
Jul 2020	1.19	1.51	1.25	1.79
Jun 2020	1.19	1.53	1.34	1.74
Sep 2019	N/A	N/A	N/A	N/A
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.45	2.10	1.69	2.63
Aug 2020	1.25	1.62	1.33	1.83
Jul 2020	1.24	1.65	1.32	1.83
Jun 2020	1.24	1.63	1.35	1.82
Sep 2019	N/A	N/A	N/A	N/A





Average Travel Time Index for September 2020 = 1.62

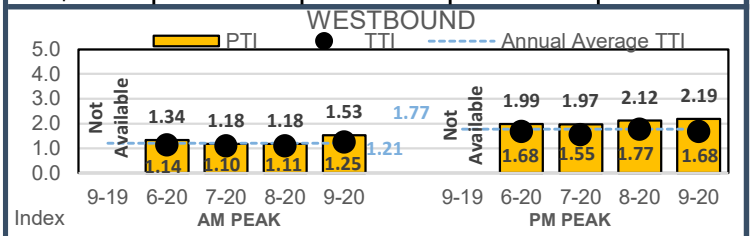
Emergency Vehicle Preemption

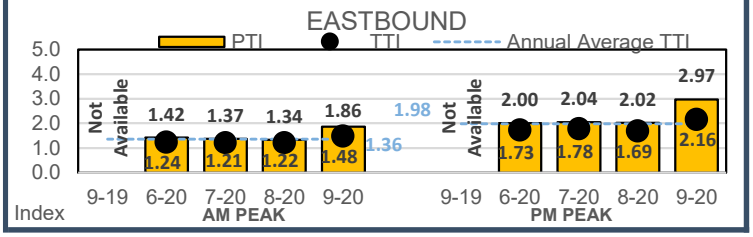


US 192, East-West corridor from Serelago Ave to Central Blvd, 7.6 miles length, 15 traffic signals

Old Vineland Rd to Serelago Ave, 4.6 miles length, 7 traffic signals

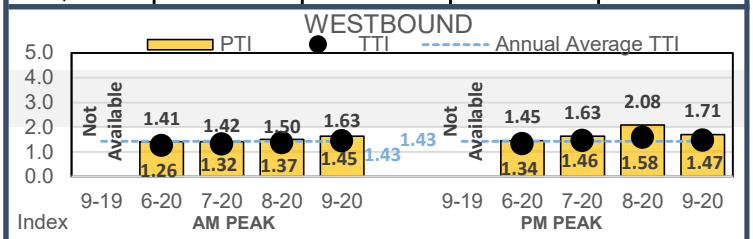
Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.25	1.68	1.53	2.19
Aug 2020	1.11	1.77	1.18	2.12
Jul 2020	1.10	1.55	1.18	1.97
Jun 2020	1.14	1.68	1.34	1.99
Sep 2019	N/A	N/A	N/A	N/A
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.48	2.16	1.86	2.97
Aug 2020	1.22	1.69	1.34	2.02
Jul 2020	1.21	1.78	1.37	2.04
Jun 2020	1.24	1.73	1.42	2.00
Sep 2019	N/A	N/A	N/A	N/A

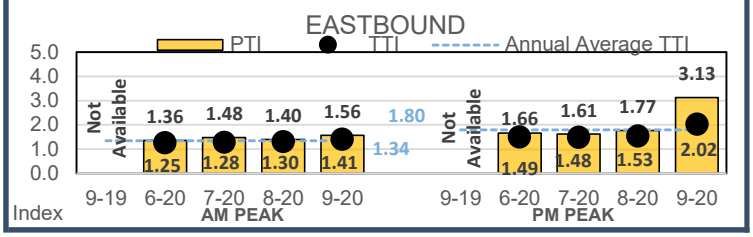




Old Vineland Rd to Central Blvd, 3.0 miles length, 8 traffic signals

Westbound	Travel Time Index (TTI)		Planning Time Index (PTI)	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.45	1.47	1.63	1.71
Aug 2020	1.37	1.58	1.50	2.08
Jul 2020	1.32	1.46	1.42	1.63
Jun 2020	1.26	1.34	1.41	1.45
Sep 2019	N/A	N/A	N/A	N/A
Eastbound	**Travel Time Index (TTI)**		**Planning Time Index (PTI)**	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Sep 2020	1.41	2.02	1.56	3.13
Aug 2020	1.30	1.53	1.40	1.77
Jul 2020	1.28	1.48	1.48	1.61
Jun 2020	1.25	1.49	1.36	1.66
Sep 2019	N/A	N/A	N/A	N/A





Appendix Z

District 5
Example External Annual Report

ANNUAL REPORT

Fiscal Year 2018-2019

A message from the

DISTRICT SECRETARY

James Wolfe, P.E.
District Six Secretary of the Florida Department of Transportation

The Future is Now. We have heard foretelling of the future in transportation for many years. Although I am still waiting for my flying car, the Florida Department of Transportation District Six and its Transportation Systems Management and Operations (TSM&O) office are on the cusp of embracing and implementing several new initiatives.

Fiscal Year 2018–2019 saw the first full year of operation for our adaptive signal control technology (ASCT) system along SW 8 Street and our advanced traffic management system (ATMS) along US 1 in Monroe County. The ASCT system was installed along SW 8 Street on 30 signalized intersections from SW 142 Avenue to SW 67 Avenue. The results show that along SW 8 Street, vehicle throughput increased by 5%, total delay decreased by 11.8%, and crash frequency decreased by 9.75%. The ATMS along US 1 includes 17 signalized intersections along 105 miles of the Overseas Highway. Having all intersections connected to our ATMS located at the SunGuide Transportation Management Center (STMC) facilitates more consistent operation, enables motorist concerns to be addressed efficiently, and increases uptime as alerts and system messages are received by operators at the STMC.

US 1 in the Florida Keys will be the test bed for the District's first connected vehicle (CV) project: Keys COAST or Keys Connecting Overseas to Advance Safe Travel. CV technologies enable cars, trucks, buses, and other vehicles to communicate to and with each other through in-vehicle devices to share important travel and safety information. The Keys COAST project will establish a CV corridor from Key Largo to Key West with the goal of improving traffic signal operations, traveler information, and commercial freight operations. We are very excited to be part of this important project.

The STMC and the TSM&O office play an integral part in these advancements serving as the data integrator, communication hub, and information disseminator. Operators at the STMC will be able to utilize information from the Keys COAST project and others like it to make intelligent decisions on operations that will affect customers on a daily basis.

District Six continues to prepare for expansions to its transportation network. Work has progressed on the new Golden Glades Multimodal Transportation Facility. With express lane systems firmly in place along I-95, I-75, and I-595, the district prepared for the opening of express lanes along the Palmetto Expressway. With the express lanes projects comes the opportunity for enhanced transit service and partnering with our regional transit agencies in Miami-Dade and Broward counties.

The District Six TSM&O Core Group has held bi-monthly meetings with several department managers to discuss latest projects and initiatives. The meetings are helpful for integrating intelligent transportation systems and TSM&O concepts throughout the district. The TSM&O office was also active with the Regional Transportation Technical Advisory Committee for the Southeast Florida Transportation Council.

Our traditional services, such as Road Rangers and incident management, are still vital to the health of our freeway system. Despite the advancements in technology, the incident management team helps to keep our roadways safe and incident free. Our roadway incident clearance time this fiscal year averaged 25.7 minutes, representing a 49% reduction over the 2005 baseline of 50 minutes. Road Rangers responded to over 63,000 activations. We attribute these excellent results to the continued dedication of our Road Rangers and first responders.

We continue to see positive trends from the safety measures that the Department introduced in the summer of 2016 along 95 Express. New express lane markers (ELMs) were installed from State Road (SR) 112 to the I-95 flyover followed by the opening of five emergency stopping sites (ESSs) along the median of 95 Express between NW 62 Street and NW 131 Street in 2018. Three northbound and two southbound ESSs provide a safe temporary refuge for disabled vehicles and first responders. As of the end of June 2019, ELM replacement was down 89%, illegal lane changing was down 93%, and crashes within 95 Express were down 37%.

Now more than ever, cooperation with our local partnering agencies is a critical component to the overall regional transportation network. Having the Miami-Dade Expressway Authority Transportation Management Center (TMC), Florida Highway Patrol regional dispatch, and the Florida Wildlife Commission co-located at the STMC helps with intercoordination. Plans are moving ahead for two new tenants at the STMC: the City of Miami Beach and Miami-Dade County.

In the coming year, we are expecting to begin the operation of new express lane projects along SR 826 and I-75. We will also be providing technical support to our partners at District Four, District Two, and the Florida's Turnpike as express lane operations and deployments continue throughout the state.

I invite everyone to join us in this future quest as we continue striving to make our transportation system the best in the nation... if not the galaxy.

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A Look Ahead 26
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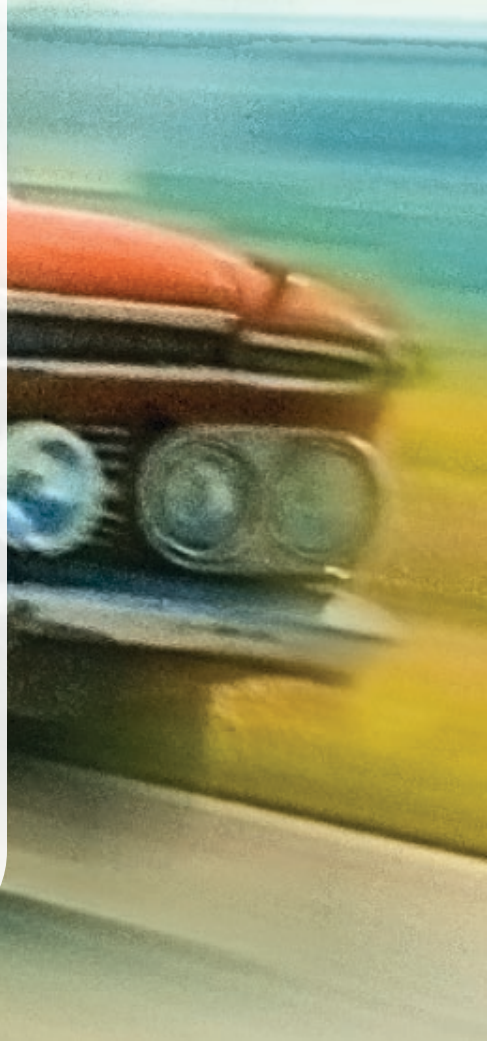


INTRODUCTION

LOOKING SOUTH I-75 AND HEFT INTERCHANGE

The theme for this year's annual report is The Future is Now. The nation's transportation system is heading for a system-wide shift as a result of technological advancements changing the way we think about mobility. We are still some time away from getting our flying cars but car manufacturers have been developing their systems for self-driving or autonomous cars. This technology has much potential but is still some time away from a full rollout.

However, innovative new services, such as ride sharing, transit options, bicycle and scooter programs, and navigation applications, have supplemented our transportation experience. The nation now moves forward with initiatives in Connected Vehicles (CV) making it possible for the individual vehicle to talk to the transportation system and the other vehicles around it.

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS

Our Mission:

Identify, prioritize, develop, implement, operate, maintain, and update TSM&O strategies and measure their effectiveness for improved safety and mobility.

Our Vision:

TSM&O will increase the delivery rate of fatality-free and congestion-free transportation systems supporting the FDOT vision and Florida Transportation Plan goals.

As the country continues to evaluate and improve its infrastructure, emerging technologies such as CV, autonomous vehicles, and last-mile solutions work to make the existing roadways more efficient. District Six has already implemented several efficiency improvements over the years, including:

- Express lanes
- Ramp signaling
- Adaptive Signal Control Technology (ASCT)
- Advanced Traffic Management System (ATMS)
- High definition (HD) closed-circuit television (CCTV) cameras
- Full matrix color dynamic message signs
- Multiplatform use of "big data"

The advancements being seen now cannot be completed by Florida Department of Transportation (FDOT) alone. The District Six regional partners help make this a reality.

Some of the latest accomplishments of the Transportation Systems Management and Operations (TSM&O) office this fiscal year include:

- Selection of the hurricane response action plan as a national case study for successful emergency planning by the National Operations Center of Excellence.
- Successful implementation of an ATMS along US 1/ Overseas Highway, including upgrades to traffic signal equipment and connectivity to the SunGuide Transportation Management Center (STMC) network.
- Initiation of the 95 Express warning gate system (WGS)
- Launch of a refreshed project website: sunguide.info.
- Utilization of multi-platform data into useful interactive dashboards.

The TSM&O concept embraces all of the resources available throughout the entire project lifecycle process including planning, design, construction, operations, and maintenance.

This FDOT District Six TSM&O Annual Report covers the fiscal year (FY) from July 1, 2018 to June 30, 2019 (FY 2018–2019) and aligns with the program's five primary functional areas listed below.

Intelligent Transportation Systems (ITS) Deployments. ITS field devices provide the necessary data for STMC operations. The TSM&O office provides planning, design, and procurement of ITS equipment, including CCTV cameras, dynamic message signs (DMS), vehicle detectors, arterial systems, and communications.

Transportation Management Center (TMC) Operations. The STMC provides the central location and clearinghouse for data collection and dissemination. It is the command center for managing traffic incidents and providing proactive operations through express lanes, ramp signaling, arterial operations, and other active traffic management strategies.

Incident Management. This functional area dispatches Road Rangers and other incident management resources to safely and quickly clear lane-blocking events and also assists motorists. An important part of the program is coordination with first responders to identify, develop, and implement solutions to improve incident management.

Information Technology (IT)/ITS Maintenance. This functional area handles the critical tasks of maintaining the indoor STMC IT system and outdoor ITS devices, as well as providing software support to ensure system availability and stability.

Traveler Information. This functional area provides real-time traveler information services through various sources, such as the telephone, internet, smartphone applications, and social media.

This is the fourteenth edition of District Six's TSM&O Annual Report. The report contains informative details about the TSM&O program. We welcome you to join District Six as we strive to improve the reliability of the Southeast Florida multimodal transportation systems.

ITS DEPLOYMENTS

The TSM&O office has been preparing for the next wave of ITS and TSM&O equipment deployment to support new and upcoming emerging technologies. The ITS devices that are installed along the district's roadways provide information to the STMC and in turn allow the STMC to send information to motorists. Emerging technologies such as CV will change how data is shared with motorists and at the STMC.

FDOT District Six continued improving the ITS infrastructure to achieve its transportation goals of improving traffic safety, incident management, mobility, and reliability. These improvements include expanding the ITS infrastructure to fill the gaps in terms of providing additional CCTV cameras, DMS, and vehicle detectors, as well as accommodating new projects such as the Palmetto Express/75 Express and I-95 Pavement Rehabilitation. A summary of active FDOT District Six TSM&O projects being built or completed during FY 2018–2019 follows.

Palmetto Express and 75 Express Miami-Dade Deployments. The Palmetto Express and 75 Express projects are a major expansion to the regional express lane network. Express lanes will be continuous from I-595 in Broward County along I-75 in Broward and Miami-Dade counties, to the Palmetto Expressway from NW 154 Street to Coral Way. These express lane projects began construction in 2014. The District Four component, which includes a portion of 75 Express to NW 170 Street was opened to traffic in early 2018. The 75 Express portion south of NW 170 Street and Palmetto Express are scheduled to open in the fall of 2019 with completion scheduled for early 2020. ITS devices, such as CCTV cameras, DMS, vehicle detectors, ramp signaling, and other infrastructure equipment, are being installed to support these express lanes. In total, the project spans 10 miles along the State Road (SR) 826 corridor and 3 miles along the I-75 corridor.

SOUTHBOUND 75 EXPRESS

In the future, express lanes will be added along both directions of SR 826 from Coral Way to US 1. Express lanes are also being designed along SR 826 from NW 154 Street to I-95. When fully completed, these projects will bring express lanes from Kendall to I-595.

I-95 Pavement Rehabilitation from NW 29 Street to NW 131 Street. This project is replacing the concrete pavement in both directions of I-95 from NW 29 Street to NW 79 Street. Along with ITS equipment deployment, the project created new emergency stopping sites (ESSs) in the median of I-95 to allow enforcement and motorist refuge areas along the express lanes. Three northbound and two southbound ESSs between NW 62 Street and NW 131 Street opened for use in May 2018. The entrance to the northbound 95 Express was modified to allow pavement construction to progress while accommodating necessary lane closures. The project began in February 2017 and is scheduled for completion in early 2020.

I-395/SR 836/I-95 Design Build Project. This project began in January 2019 and will completely reconstruct the existing interchange and create a signature bridge that will span 1,025 feet over NE 2 Avenue and SR 5/Biscayne Boulevard. This project fully embraces the TSM&O vision by providing additional roadway capacity and improved mobility while incorporating extensive pedestrian improvements, community access, and ITS solutions. The signature bridge with its high vertical clearance will transform the area beneath I-395 into 55 acres of vibrant open communal spaces for nearby communities and visitors. The project will add capacity to I-395 with three through lanes in each direction and provide separate connector ramps for traffic to and from I-95. The limits on I-395 are from the SR 836/ I-95/I-395 Interchange to the MacArthur Causeway, approximately 1.4 miles long. The project also includes work on SR 836 from NW 17 Avenue to the SR 836/ I-95/I-395 Interchange. The improvements on SR 836 include the construction of an elevated bridge that begins just east of the toll gantry at NW 17 Avenue, rising over the center of SR 836 and allowing drivers to bypass the I 95 Interchange touching down at I-395 east of I-95.

STMC staff closely monitor the overlap of this project with the I-95 Pavement Rehabilitation project to the north.

I-95 Express DMS and Toll Sign Panel Replacement and Warning Gate System Project. This project to retrofit existing express lane toll signs, DMS, and confirmation cameras along I-95 began in FY 2015–2016 and was completed early in FY 2018–2019. The ITS equipment was upgraded to HD cameras and full matrix color DMS. This project also installed a WGS for 95 express entrances. The WGS was installed as a pilot project to expedite the closure of several entrances to 95 Express. The gates are used to close the northbound entrances at SR 112 and NW 10 Avenue as well as the southbound entrance from the Golden Glades Park-and-Ride lot.

I-395 SIGNATURE BRIDGE

FUTURE ELEVATED SECTION OF SR 836

Districtwide ITS Replacement Project (Miami-Dade and Monroe Counties). This project began in February 2017 and includes replacement of 170 cameras with HD cameras. Many of these cameras are along US 1 in the Florida Keys, which were damaged by Hurricane Irma. This project essentially completes the conversion of all cameras to HD video. This will not only improve the quality of video for TMC control room operators but will also allow improved images for public facing applications such as FL 511. This project also replaced all ramp signal traffic lights along I-95, replaced four arterial DMS and one freeway DMS, and added microwave vehicle detectors in the Golden Glades Interchange area. This project is expected to be completed in the third quarter of FY 2019–2020.

The following table illustrates the increase in deployed ITS devices from 2005 to 2019.

ITS DEVICE	2005	2019
CCTV Cameras	69	412
DMS	22	207
Detectors	205	502
Ramp Signals	0	22
ASCT Cameras	0	106
ASCT Intersections	0	30

WARNING GATE AT GOLDEN GLADES INTERCHANGE TO SOUTHBOUND 95 EXPRESS

AMAZING MARVELS OF TOMORROW

FLYING SAUCERS FOR EVERYBODY!

Within ten years you may be commuting by plastic saucer, flying from your backyard.

By Frank Tinsley

SAUCER rises vertically, flies conventionally.

COVER STORY

IT IS a bright morning in 1965. At precisely eight a. m. Joe Lees emerges from the back door of his lakeside cottage, only 75 miles from his job in the city. In the graveled center of his backyard his jaunty new plastic saucer rests lightly on three tiny balloon tires.

Greeting his neighbor who rides with him, Joe lifts a flush flap in the saucer's rounded nose. He turns a recessed locking handle and throws back the bubble-like windshield. Spring loaded, like the hoods of today's cars, the enclosure lifts easily. As it does, the interlinked nose cone swings down to form a handy step.

Joe's neighbor steps up over the low instrument pedestal and then across the folded pilot's seat to his perch in the rear. Joe follows, slams the windshield shut and

TMC OPERATIONS

TMC Operations has prepared for the future by upgrading communication systems, replacing ITS equipment, and embracing active traffic management. The latest CV technologies will provide new ways for vehicles to interact with their surrounding environment. Vehicles will communicate with other nearby vehicles, with the surrounding infrastructure, and with the traffic control and monitoring systems.

For the last 20 years, ITS has been the catch-all for emerging technologies. The landscape has expanded to beyond equipment and into holistic solutions, such as Smart Cities. The Smart City concept leverages the Internet of Things (IoT) to connect functions, improving the lives of citizens and visitors. On the transportation side, this means using sensor data and communications to manage traffic, suggest alternate modes of commuting, and improve efficiency of traffic operations.

In the short term, high-speed wireless data using short-range communications and fifth generation cellular (5G) will open a new world to vast amounts of useful data. Advancements in high-speed communications will drive the use of CV. Interactions of vehicle-to-vehicle, vehicle-to-infrastructure, and vehicle-to-other systems will generate synergistic data used by the transportation management centers to disseminate information, manage traffic, and coordinate with partnering agencies. Further in the horizon, autonomous cars will eventually begin to enter the traffic stream, but possibly initially through dedicated lanes for autonomous vehicles. Regardless, TMC operators will continue to have a wealth of information at their disposal to make critical assessments and decisions.

The STMC operates 24 hours a day, 7 days a week. The STMC serves as the command and control center for traffic management (including express lanes, ramp signaling, and arterial operations) as well as its core functions of incident, work zone, emergency, and special event management. Operators at the STMC coordinate with emergency responders, Road Rangers, and other incident management resources to clear incidents as quickly and safely as possible from South Florida's roadways. This coordination is enhanced by the co-location of the Miami-Dade Expressway Authority TMC Operations staff and the Florida Highway Patrol (FHP) dispatch within the STMC.

Arterial Operations

The STMC continued operations of the ASCT system along SW 8 Street. This system includes 30 signalized intersections from SW 142 Avenue to SW 67 Avenue, including interchanges with the Florida's Turnpike and the Palmetto Expressway. The ASCT system optimizes individual signalized intersections, based on real-time data, while improving the traffic flow throughout the corridor.

The STMC arterial operations began operating the ASCT system in April 2017 as a 2-year pilot project. This fiscal year saw the first full year operation of the ASCT system.

ASCT ALONG SW 8 STREET

Arterial Operations staff are working with Florida International University (FIU) for the operational assessment. The results over the past year from the FIU *SW 8th Street Adaptive Signal Control Evaluation* are positive, with analysis showing vehicle throughput increased by 5%, total delay was reduced by 11.8%, and crash frequency reduced by 9.75%. STMC arterial operators monitor the ASCT system, record motorist comments, track equipment availability, and coordinate signal timing changes with Miami-Dade County.

Since July 2018, Arterial Operations staff have been operating and maintaining 17 signalized intersections, with eight emergency signals, two drawbridge signals, and 26 flashing beacons in Monroe County along US 1/Overseas Highway from Stock Island to Key Largo. Arterial Operations staff work closely with the ITS Maintenance staff. Given the geographic coverage of the Monroe County Traffic Signal System, responding to traffic signal problems and maintenance requests is challenging. However, the partnership with the Monroe County Sheriff's Office helps with confirmation and initial troubleshooting of these issues.

Express Lanes Operations

95 Express. The STMC continued operations of 95 Express for 21 miles from SR 112 to I-595. The project has completed its 10th full fiscal year in operation and has seen a continued increase in usage since inception. 95 Express continues to be regarded as one of the most successful and highly used express lane facilities in the United States. The success of 95 Express has led to other express lane projects in the region and statewide.

The STMC began operating a WGS to close some of the entrances to 95 Express during incidents. The entrances include eastbound SR 112, eastbound on the ramp from NW 10 Avenue, and the southbound entrance from the Golden Glades Park-and-Ride. This system has supplemented the current hard closure procedure, freeing incident management resources to be used elsewhere.

Palmetto Express and 75 Express. District Six continued preparing for the operation of the next express lanes piece in the regional network for South Florida: Palmetto Express and 75 Express. The project limits are SR 826 from Coral Way to NW 154 Street continuing along I-75 from SR 826 to I-595 in Broward County. The overall project length within District Six is approximately 15 miles.

MEDIAN ESS ALONG 95 EXPRESS

The STMC has trained staff, developed new standard operating guidelines, and coordinated deployment efforts with regional team members. In addition to the physical geometric improvements, the Palmetto Express and 75 Express will also include system components, such as DMS, vehicle detection, CCTV cameras, ramp signals (SR 826 only), electronic toll collection, and incident management. Operation of the Palmetto Express and 75 Express will be a joint effort among the TMCs in District Six, District Four, and the Florida's Turnpike. Incident management will be coordinated among the three districts. District Six hosted meetings with the districts and local first responders to determine how the regional team would function. FHP and local police/fire rescue agencies will provide emergency response. The FHP will also be responsible for enforcement.

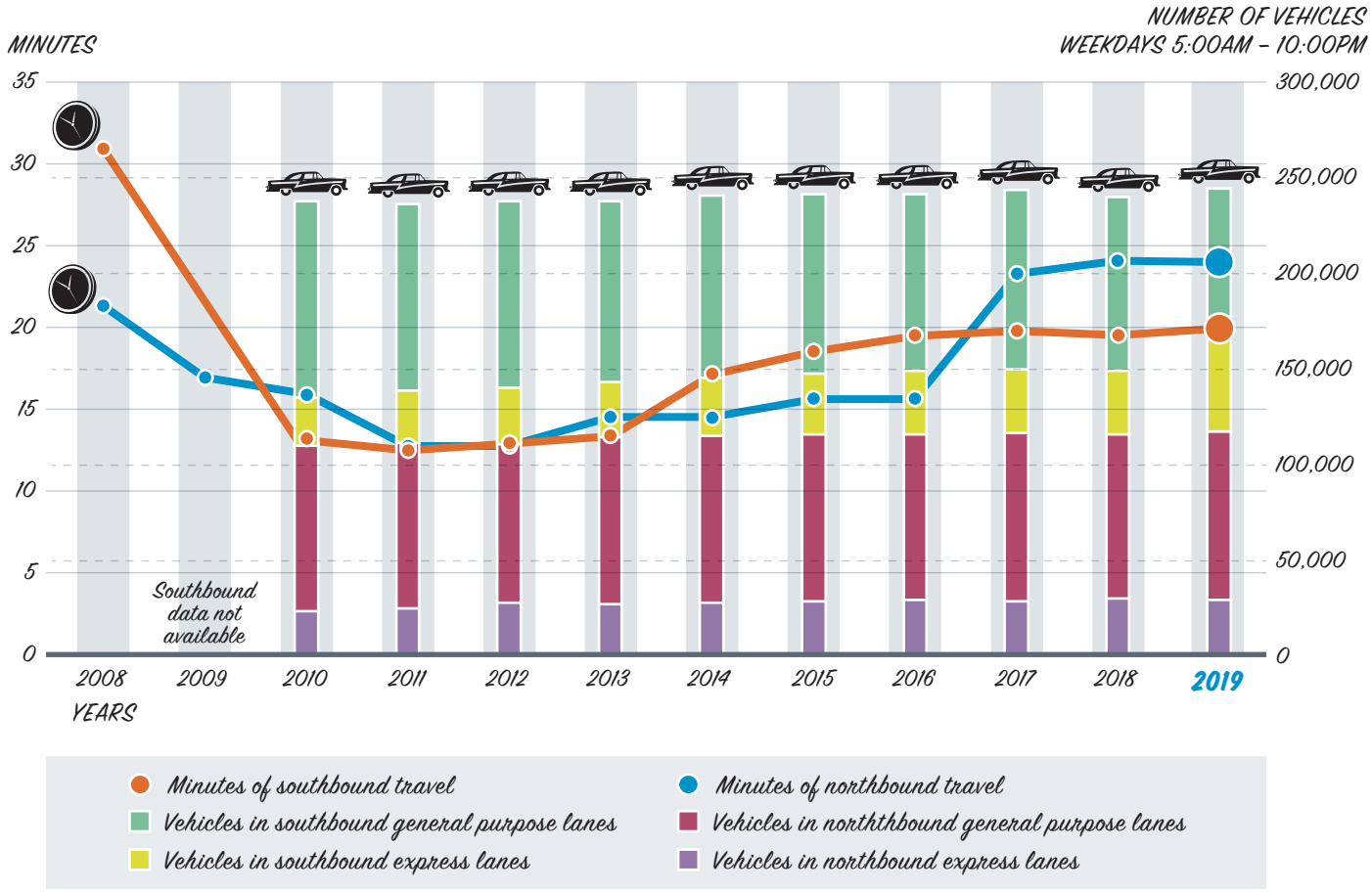
Ramp Signaling Operations

Ramp signals along I-95 entered a ninth full year of operation and continued to be an important tool for managing traffic along this busy corridor. There are 22 ramp signals along both directions of I-95 from NW 62 Street to Ives Dairy Road. The system improves operations along I-95 by regulating the flow of vehicles entering the roadway during peak periods of travel. STMC operators can also activate the ramp signaling system in the case of congestion during non-peak periods or to assist during an incident or special event. As demand along the

freeway increases in the future, ramp signaling will continue to be one of the tools helping District Six continue to be proactive in managing congestion. The graph below shows the average travel times along I-95 from before the ramp signaling system's implementation in 2008. The graph does indicate a trend of increasing travel times over the last few years, mainly due to increased traffic volumes and continued road construction along the I-95 corridor. STMC operations are being expanded to include the ramp signals being installed along the Palmetto Expressway.

RAMP SIGNAL ALONG I-95

AVERAGE TRAVEL TIMES AND VOLUME ON I-95 *FROM NW 62 STREET TO IVES DAIRY ROAD*



Construction and Special Event Coordination

An increasing challenge for STMC Operations is coordinating with multiple agencies to ensure all planned and unplanned lane blockage events are dealt with in the most efficient manner possible. During FY 2018–2019, coordination between the STMC Operations staff and these various agencies increased as several construction projects continued to affect District Six roadways.

Construction Coordination. Roadway construction projects continue to pose a challenge for STMC Operations. Large projects along I-95, SR 826, I-75, and I-395 create different traffic patterns and dynamics during the overnight/early morning hours. STMC Operations staff coordinated with the project leads of several construction projects to create pre-event information plans that would advise the motoring public of upcoming construction-related closures. The STMC Operations staff developed these plans for I-95 Pavement Rehabilitation, Palmetto Express and 75 Express, and I-395/SR 836/I-95 Interchange Reconstruction Project among others.

Special Event Coordination. STMC Operations staff coordinated with representatives from several special events. Special event traffic can cause temporary abnormal traffic congestion along District Six roadways. STMC Operations staff coordinate with these events to help ensure traffic can move as safely and efficiently as possible. This year a major tennis tournament was moved from Key Biscayne to the stadium in North Miami. The stadium also hosed international soccer, professional and college football, and music concerts. Other events, such as professional basketball and baseball games in downtown Miami, downtown Miami entertainment events (e.g., weekend-long music festivals), and running marathons in Miami and Monroe Counties are just a few examples of events handled by STMC Operations staff.

SUNGUIDE TMC OPERATORS

Software Enhancements

During FY 2018–2019, STMC Operations software development continued to focus on enhancing and supporting the Statewide Express Lanes Software (SELS). SELS was developed by District Six originally for the dynamic toll system for Segment 1 of 95 Express. SELS is the statewide software for all express lanes systems and District Six continues to support this effort.

SELS “lives” in our Operations Task Manager (OTM) software serving as an extension of the statewide SunGuide software. OTM includes 12 modules that handle functions such as express lanes, ramp signaling, ITS device maintenance tracking, rapid incident scene clearance, operator quality control, and reporting. During FY 2018–2019, SELS was enhanced to support new express lanes state legislation.

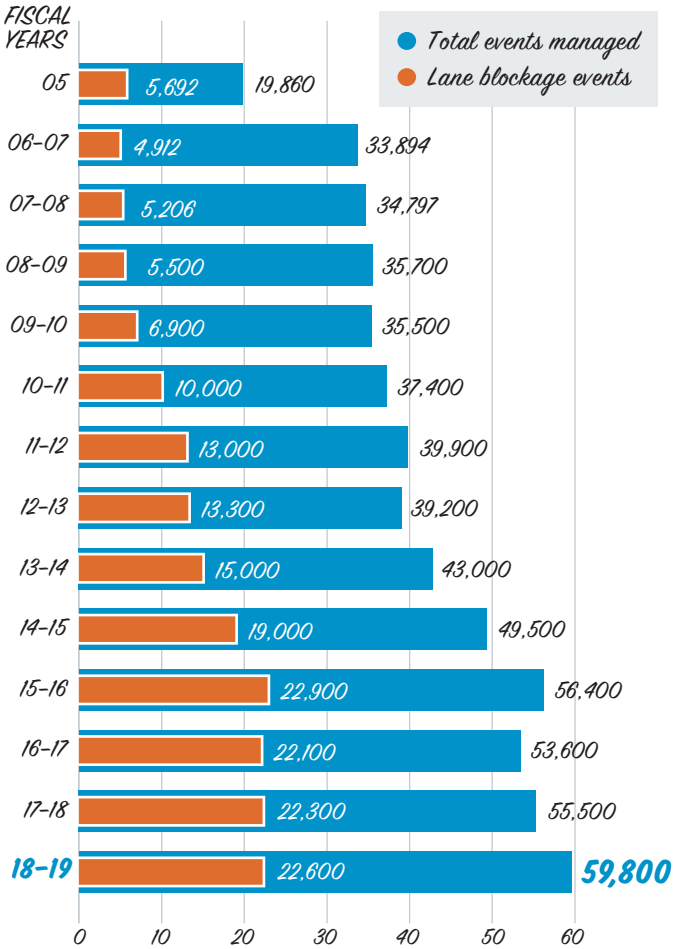
OTM will eventually be supported by the Florida’s Turnpike Enterprise. However, until that happens, District Six is enhancing and maintaining the software based on district needs. The SELS change management team (CMT) continued to be active as this transition begins to take place. The CMT representatives come from all districts and the Central Office. The group tracks the progress of other express lanes projects, coordinates software changes to meet project schedules, and manages by consensus any proposed changes to SELS.

Performance Measures

In December 2007, District Six set targets for key operational performance measures that have the greatest impact on the public. During FY 2018–2019, STMC Operations staff exceeded those targets, thanks to quality control procedures and dedicated staff that provide continual guidance and training to operators and (with assistance from OTM) check all lane blocking and non-lane blocking events. The new fiscal year brought new performance measures.

The table on page 12 shows the performance measures average results and targets. STMC Operations continues to exceed these goals, as operators managed 59,800 total events and 22,600 lane blocking events during FY 2018–2019. The graph to the right shows the number of events compared to previous years.

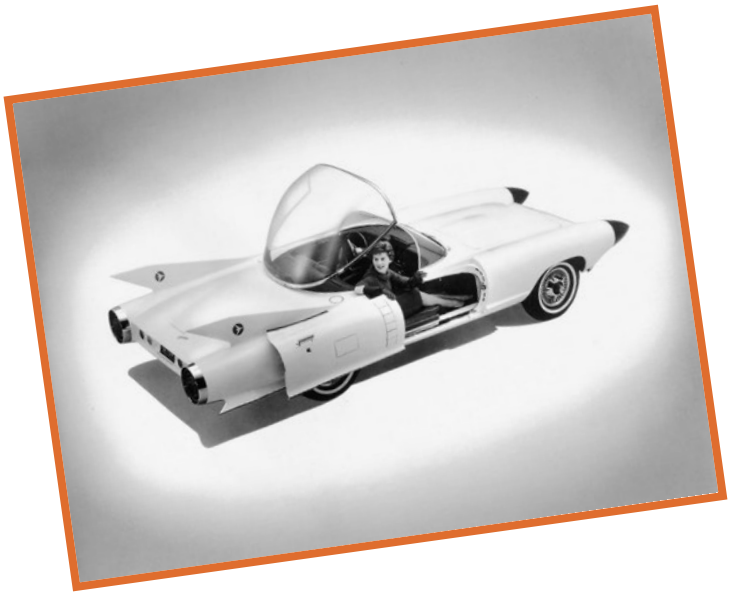
FDOT DISTRICT SIX EVENTS MANAGED



PERFORMANCE MEASURES

	FISCAL YEAR AVERAGES										
	09–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	**18–19**	Target
DMS Efficiency Percentage (GPL)	99.72%	99.82%	99.77%	99.87%	99.78%	99.74%	99.77%	99.86%	99.90%	**99.82%**	≥95%
DMS Efficiency Percentage (EL)	–	–	–	–	–	–	–	100%	100%	**100%**	≥100%
Operator Error / Event (GPL) (LB)	0.15	0.11	0.10	0.12	0.13	0.15	0.15	0.14	0.17	**0.17**	≤0.20
Operator Error / Event (EL) (LB)	–	–	–	–	–	–	–	0.06	0.06	**0.07**	≤0.10
Operator Error / Event (GPL) (NLB)	0.15	0.11	0.10	0.12	0.13	0.15	0.15	0.08	0.10	**0.07**	≤0.20
Operator Error / Event (EL) (NLB)	–	–	–	–	–	–	–	0.06	0.08	**0.07**	≤0.10
Minutes to Dispatch Road Rangers (GPL)	1.08	0.93	0.73	0.73	0.73	0.75	0.77	0.63	0.48	**0.28**	≤2.00
Minutes to Dispatch Road Rangers (EL)	–	–	–	–	–	–	–	0.35	0.30	**0.20**	≤0.60
Minutes to Confirm an Event (GPL)	0.38	1.52	1.70	1.67	1.80	1.18	0.95	0.43	1.27	**1.26**	≤2.00
Minutes to Confirm an Event (EL)	–	–	–	–	–	–	–	0.08	0.15	**0.13**	≤1.00
Minutes to Post DMS (GPL)	3.28	2.78	2.45	2.27	2.47	2.27	2.12	1.78	1.65	**1.40**	≤3.00
Minutes to Post DMS (EL)	–	–	–	–	–	–	–	1.00	0.92	**0.56**	≤1.50
Minutes to Notify Other Agencies (GPL)	1.32	1.25	1.18	1.50	1.70	2.30	2.47	2.18	1.77	**1.33**	≤7.00
Minutes to Notify Other Agencies (EL)	–	–	–	–	–	–	–	1.50	1.20	**1.10**	≤4.00

Note:
GPL = general purpose lanes
EL = express lanes
LB = lane blockage
NLB = non-lane blockage



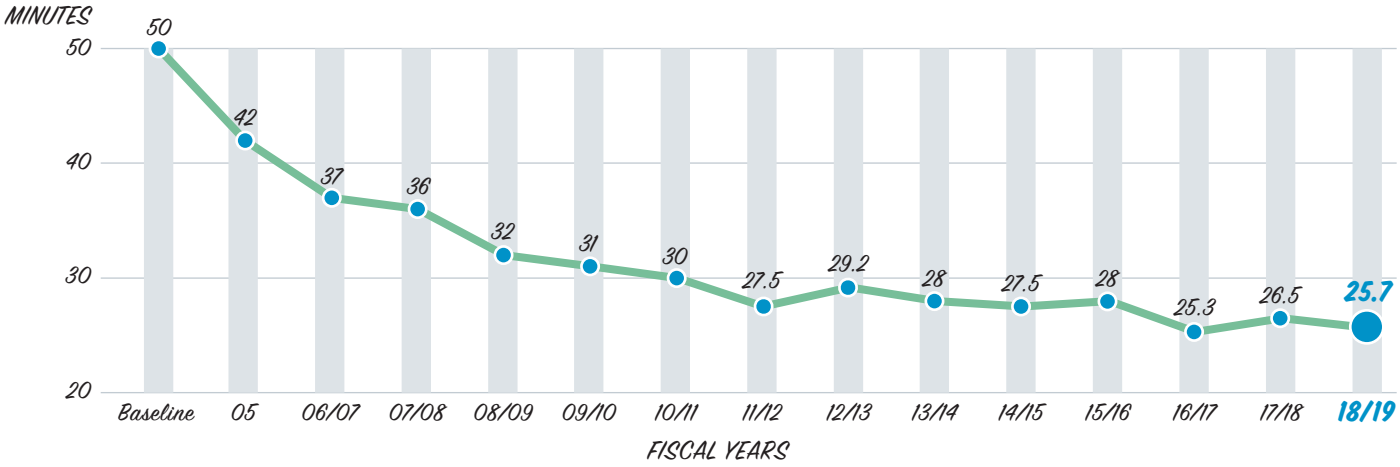
INCIDENT MANAGEMENT

Emerging technologies will will create opportunities for incident management. Improvements in communication and data usage will help responders communicate with each other and with the STMC. CV technology will provide responders with constant data than can help in selecting the quickest route, communicating with other vehicles that an emergency vehicle is traveling through the traffic stream, and communicating with other responding agencies. However, advances in automobile technologies present concerns, such as towing requirements for new model cars and fire mitigation for hybrid and electric vehicles. Preparations underway include training incident management responders on these current and upcoming changes.

District Six remained active with the Traffic Incident Management (TIM) team. Partner agencies collaborate to share information and lessons learned for improved response and recovery scenarios. The primary goal, other than being safety focused, is to support the Open Roads Policy by clearing travel lanes of incidents as quickly and safely as possible. The incident management team continues to support this as evidenced by this year's average clearance time of 25.7 minutes (see graph below). This is a 3% reduction over last year and an overall 48.6% reduction since the benchmark of 50 minutes in 2005.

Being able to strategically deploy incident response resources throughout the coverage area is critical to incident clearance. Incident response staging areas can change throughout the day with the change in traffic patterns. A new staging area was created at the I-95 and SW 8 Street interchange. This staging area is paved and well illuminated at night creating a safe place for incident management resources to quickly access I-95.

AVERAGE ANNUAL ROADWAY CLEARANCE DURATION IN MINUTES



SW 8 STREET STAGING AREA

TIM TEAM MEETING

ROAD RANGER ALONG 95 EXPRESS

TIM. TIM team meetings continued this fiscal year. These meetings are important, from a regional perspective, to increase awareness of participating agencies on construction and special events, trends in incident management procedures, and lessons learned from incident management event clearance. Meetings were arranged with agencies within the TIM team, including FHP, Road Ranger contractors, roadway maintenance contractors, transit agencies, and fire rescue representatives. The group discusses upcoming FDOT projects and conducts post-incident analyses of recent large-scale events to apply lessons learned.

TIM meetings are held in Miami-Dade and Monroe Counties. Recent meetings in Miami-Dade County have included express lane system expansion and construction coordination. Monroe County meetings tend to focus on hurricane preparation, special events, and coordination. Because of the success of these meetings and the diverse traffic trends in the region, District Six plans to increase the number of TIM meetings using a corridor approach. The Miami-Dade County TIM team will hold additional meetings for the I-95 and Palmetto Expressway corridors. An additional TIM meeting will be held in Monroe County. The intent is to create a forum style meeting that will focus on the unique traffic concerns along these corridors.

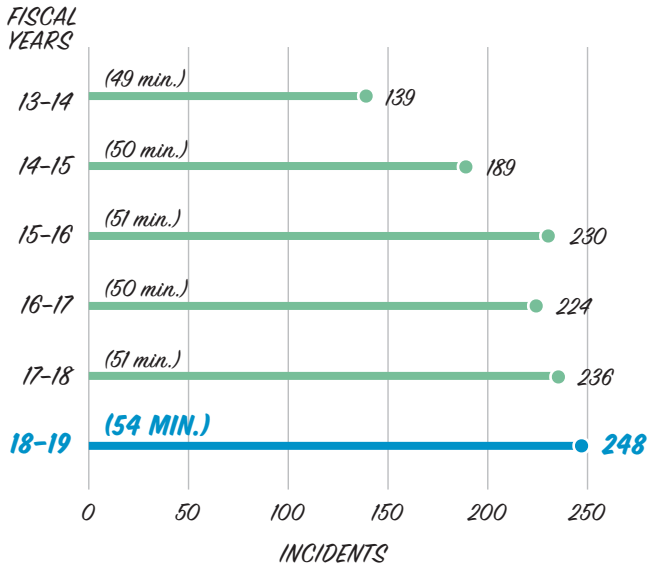
The TIM team developed short videos as part of a campaign to increase public awareness about who is a Road Ranger and how to get Road Ranger assistance.

Road Rangers. The most public facing service from the STMC is the Road Ranger program. This fiscal year began with a new Road Ranger support services contract. The transition to the new contract was smooth and continued to provide a valuable service to the motoring public.

A pilot project was conducted this fiscal year to explore the effect of response time for incidents that occur on I-95 north of NW 95 Street. The project included staging Road Ranger resources along 95 Express at the median emergency stopping site south of NW 95 Street during the PM peak period (3:00 PM to 7:00 PM). The study yielded positive results, showing a reduction in arrival time. The incident management team is investigating creating a separate staging area, thereby leaving the emergency stopping site for its intended uses by disabled vehicles and law enforcement.

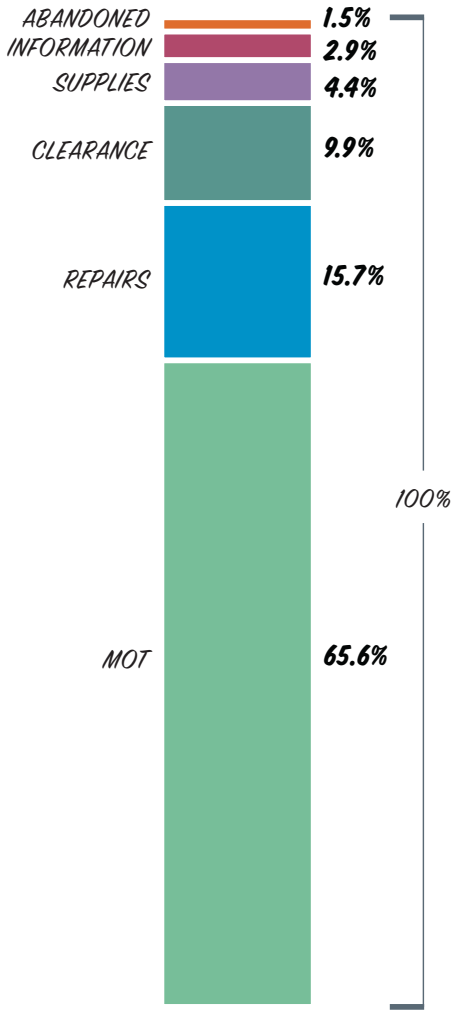
Road Rangers provide incident response and motorist assistance along I-95, I-75, SR 826, I-195, I-395, and the MacArthur Causeway. The STMC serves as the control center for dispatching and coordinating field operations for the Road Rangers. The addition of the heavy-duty wrecker still provides a benefit to the program. The following graph shows the impact on clearance times of the heavy-duty wrecker, which is used to quickly clear disabled vehicles such as transit buses, school buses, and heavy vehicles.

INCIDENTS RESPONDED TO BY HEAVY-DUTY WRECKER
WITH CLEARANCE TIMES IN MINUTES



As shown in the following graph, more than 90% of Road Ranger assists are for Maintenance of Traffic (MOT), repair, or clearance (includes tows, car pushes, and motorist transports) services.

ROAD RANGER ASSISTS BY TYPE

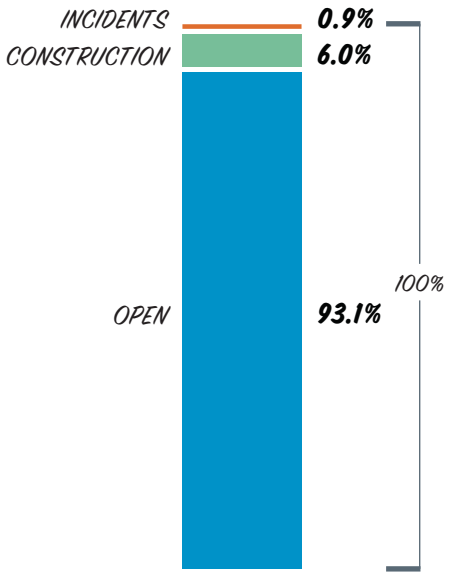


IRV OPERATOR

Incident Response Vehicle (IRV). District Six's IRV program continued its full complement of seven active IRV trucks covering 95 Express, Palmetto Expressway, and I-75. IRV operators responded to 2,161 events during FY 2018–2019. IRV operators, along with the FHP, Road Rangers, and other responders were instrumental in keeping the 95 Express lanes open and available for use 93% of the time during the fiscal year, with the facility remaining closed due to incidents 1% of the time as illustrated in the graph on the following page. The average travel lane blockage duration in the express lanes was 27.5 minutes in the northbound direction and 22 minutes in the southbound direction. Even though IRV operators focus mostly along the express lanes, they also assist motorists in the non-tolled general purpose lanes as well.

District Six continued coordination between its IRV Operations staff and the District Four incident management team. This coordination is needed because of the overlapping limits for the 95 Express and 75 Express expansions into Broward County.

EXPRESS LANES FACILITY AVAILABILITY



Rapid Incident Scene Clearance (RISC) Updates. RISC, an incentive-based program for the rapid removal of the more complex incidents that occur along District Six roadways that would normally require additional time for clearance, continues to support Florida's Open roads Policy. RISC contractors must respond with all required vehicles within 60 minutes and clear the travel lanes within 90 minutes to receive the incentive. The RISC coverage area includes all major freeways, Krome Avenue, and Okeechobee Road. During FY 2018–2019, the average RISC response time was 49 minutes, while the average RISC travel lane clearance time was 60 minutes. In total, STMC Operations staff summoned RISC resources 20 times during the fiscal year. The RISC program has responded to 146 events since its inception in 2009. The following table summarizes historical RISC response times by fiscal year.

In the next fiscal year, we will be expanding RISC service to include US 1 in Monroe County from Stock Island to Florida City.

RISC PERFORMANCE

	RISC PERFORMANCE (MINUTES)				
FISCAL YEARS	ACTIVATION TIME	RESPONSE TIME	TRAVEL LANE CLEARANCE TIME	TOTAL INCIDENT CLEARANCE TIME	TOTAL RISC EVENTS
2010-2011	21 m	37 m	60 m	128 m	12
2011-2012	10 m	39 m	88 m	161 m	9
2012-013	28 m	46 m	85 m	225 m	7
2013-2014	23 m	45 m	68 m	161 m	19
2014-2015	28 m	43 m	57 m	141 m	18
2015-2016	28 m	47 m	63 m	146 m	15
2016-2017	16 m	50 m	60 m	132 m	19
2017-2018	17 m	49 m	61 m	148 m	17
2018-2019	**19 M**	**49 M**	**60 M**	**141 M**	**20**
TARGET	–	60 m	90 m	–	–

IT / ITS MAINTENANCE

A robust and active IT/ITS Maintenance program is the backbone of STMC Operations allowing current systems and emerging technologies to work properly and reliably. The IT/ITS Maintenance program at the District Six TSM&O office has been preparing for the future by creating resilient, redundant communication systems and performing upgrades to system equipment to handle data and video requirements while remaining vigilant with respect to network security issues.

Being able to respond to problems with field equipment is critical to keeping the overall ITS functioning properly. Systems such as express lanes, ramp signals, and arterial traffic signals rely on equipment that works consistently in the field. During FY 2018–2019, the ITS Maintenance team managed more than 2,200 trouble tickets and overall a total of 6,000 tickets, which includes field equipment maintenance by contractors on active construction projects.

IT networks need to take into account the amount of data that will be received from emerging technologies such as CV and Automated Traffic Signal Performance Measures (ATSPM). The IT team is constantly reviewing current infrastructure, future needs, and equipment life cycles to project when equipment upgrades will be needed and then planning accordingly.

IT staff examined data from multiple sources and how it could be combined with data generated by the STMC. This study resulted in an effort to aggregate these data and provide interactive dashboards for key functions at the STMC. Currently, there are dashboards for inventory of ITS devices, evaluation of ITS device maintenance, incident management measures, operation measures, travel times, and ITS component availability. Most of the dashboards can be filtered for historical ranges and by roadway.

The following table shows the availability of key system components during FY 2018–2019 as compared to previous fiscal years. The cameras along US 1 in the Florida Keys were not included as they are in the process of being replaced as a result of damages sustained during Hurricane Irma.

ANNUAL AVERAGE SYSTEM AVAILABILITY

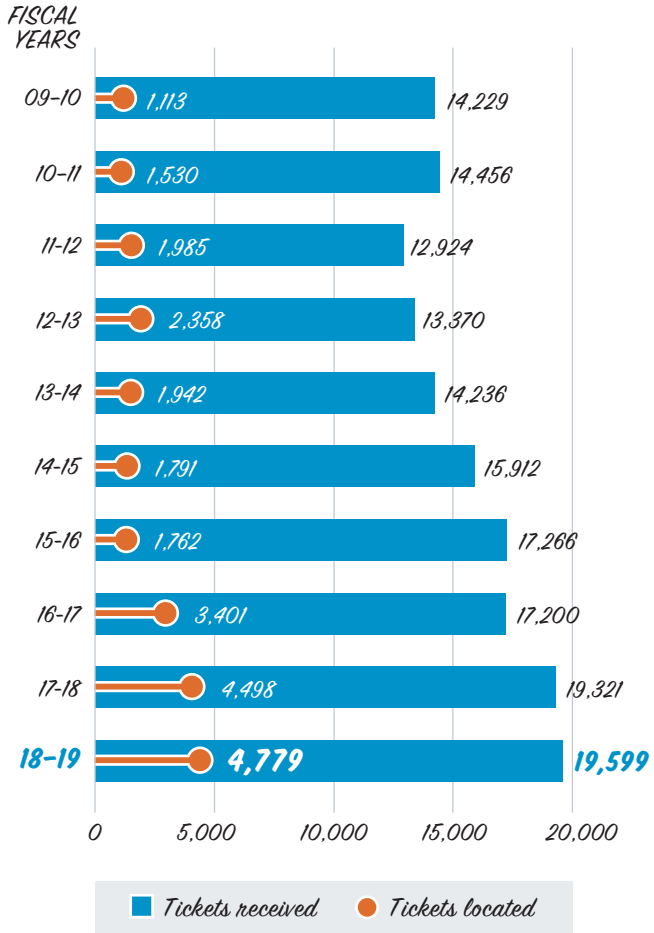
	SUBSYSTEM					
FISCAL YEAR	CCTV	DMS	VEHICLE DETECTORS	VIDEO WALL	SUNGUIDE	OTM
2012–2013	95.47%	93.85%	94.90%	97.49%	97.97%	99.85%
2013–2014	97.56%	96.66%	96.13%	97.43%	99.86%	99.97%
2014–2015	94.73%	96.15%	95.05%	98.86%	98.97%	99.68%
2015–2016	92.73%	98.25%	87.44%	99.90%	97.98%	99.98%
2016–2017	92.42%	96.66%	87.48%	99.43%	96.93%	99.99%
2017–2018	86.69%	87.00%	77.73%	98.93%	95.19%	99.61%
2018–2019	**93.53%**	**96.26%**	**89.91%**	**99.67%**	**98.51%**	**99.98%**

IT TECHNICIAN CHECKING FIBER OPTIC CONNECTIONS

Utility Infrastructure Location Services. Dependable power and communication are important to current systems and future technologies. The combination of an extensive underground infrastructure and an active construction environment can result in damages and disruptions of service. A critical function provided by the IT team is locating utilities for the District Six underground fiber optic cable and electric conductors. Locating and marking the underground infrastructure before construction begins helps to prevent damage. Notifications are received from Sunshine 811 about upcoming activity that may conflict with underground utilities. The tickets are reviewed and, when necessary, the ground is physically marked showing the location of the ITS underground infrastructure. During this fiscal year, 19,599 Sunshine tickets were received, and 4,779 Sunshine tickets were located. The following graph shows the number of locates since FY 2009–2010.

Network Security. During FY 2018–2019, the IT/ITS Maintenance staff continued to work on security measures making the overall network secure. A security test was conducted to identify potential vulnerabilities and weaknesses in the network. The IT/ITS Maintenance staff continue to work with the FDOT's Office of Information Technology to identify and minimize potential security risks.

LOCATE TICKET SUMMARY



TRAVELER INFORMATION

95 EXPRESS FLYOVER

Traveler information is poised to change with the advancement of new technology. Onboard navigation systems and enhanced notification applications can take advantage of new data from vehicles sharing data with other vehicles and the surrounding infrastructure. Providing traffic information to motorists within South Florida allows them to make more informed decisions regarding alternative routes, modes, and schedules when confronted with congestion, traffic events, or construction. FDOT provides traveler information through the statewide Florida Advanced Traveler Information System (FLATIS), commonly referred to as 511. The service publishes real-time traffic information to the public through the internet on FL511.com, a smartphone application, and a phone-based Interactive Voice Recognition system. District Six's TSM&O website, SunGuide.info, allows motorists to view live feeds of the TSM&O office's CCTV cameras in Miami-Dade and Monroe Counties.

The STMC uses several other online resources to supplement information coming in from the SunGuide system. Waze continues to provide useful notifications of possible traffic events. RITIS (Regional Integrated Information System) is used as a data aggregator of vehicle detection data. RITIS is useful in areas where ITS infrastructure does not yet have vehicle detectors.

The next wave of traveler information will be through social media. Capturing information from services such as Twitter could provide the STMC with advanced indication of a possible traffic event. This will be explored further in the next fiscal year.

Florida's Advanced Traveler Information System (FLATIS)

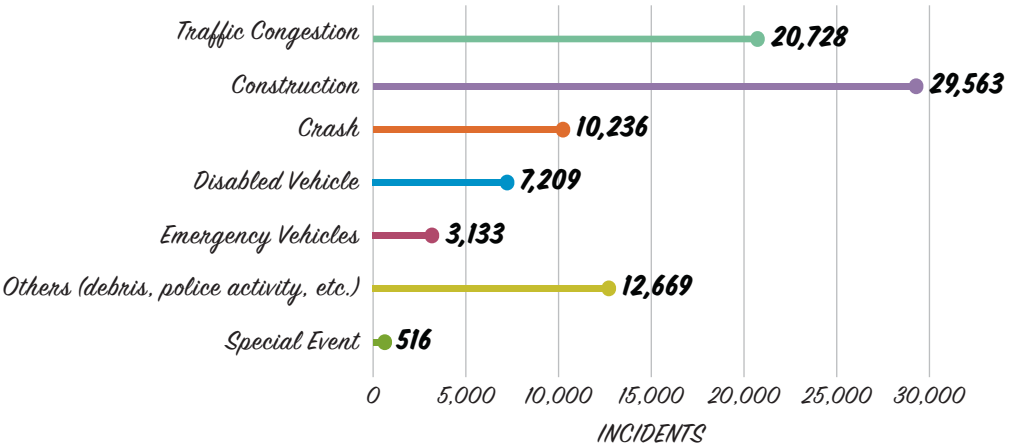
During FY 2018–2019, the 511 service continued to receive calls statewide, and users from southeast Florida made up a sizable portion of those calls. District Six STMC operators published over 84,000 event updates of lane blockage and congestion events on roadways managed by the District Six STMC. The following graph shows the different types of published events on the 511 service.

DMS Messaging

Given the improvements with information dissemination, one of the key elements of District Six's traveler information service is its system of DMSs. These signs display lane blockage information, travel times, pre-event messages, and congestion messages—all of which help motorists with their travel experience in both Miami-Dade and Monroe Counties. DMSs also display service announcements, such as child abduction alerts and silver alerts. During FY 2018–2019, more than 419,000 messages were displayed on District Six DMSs, with most messages for incidents and safety announcements. The bottom graph summarizes the types of DMS messages displayed this fiscal year.

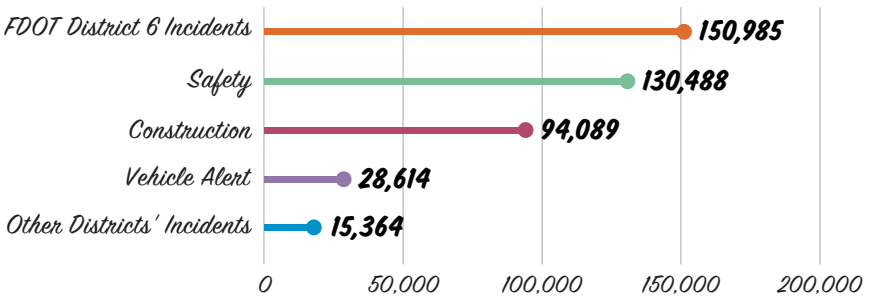
FLATIS-PUBLISHED TRAFFIC INFORMATION BY EVENT TYPE

84,054 TOTAL PUBLISHED EVENTS UPDATES

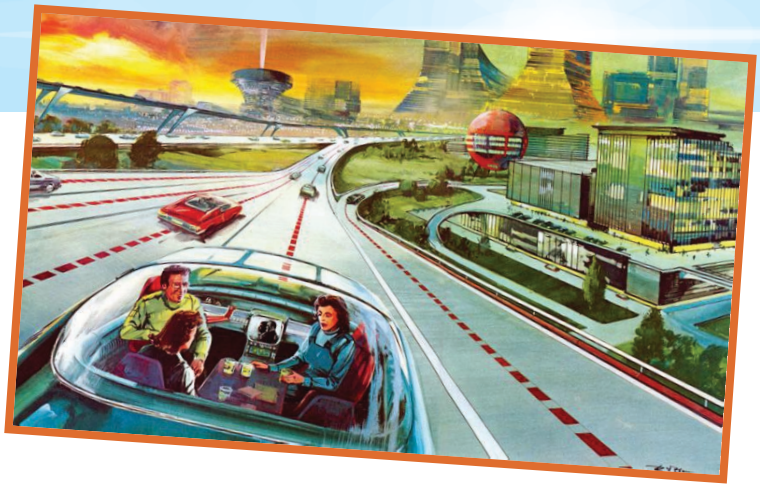


POSTED DMS MESSAGES BY TYPE

419,540 TOTAL MESSAGES



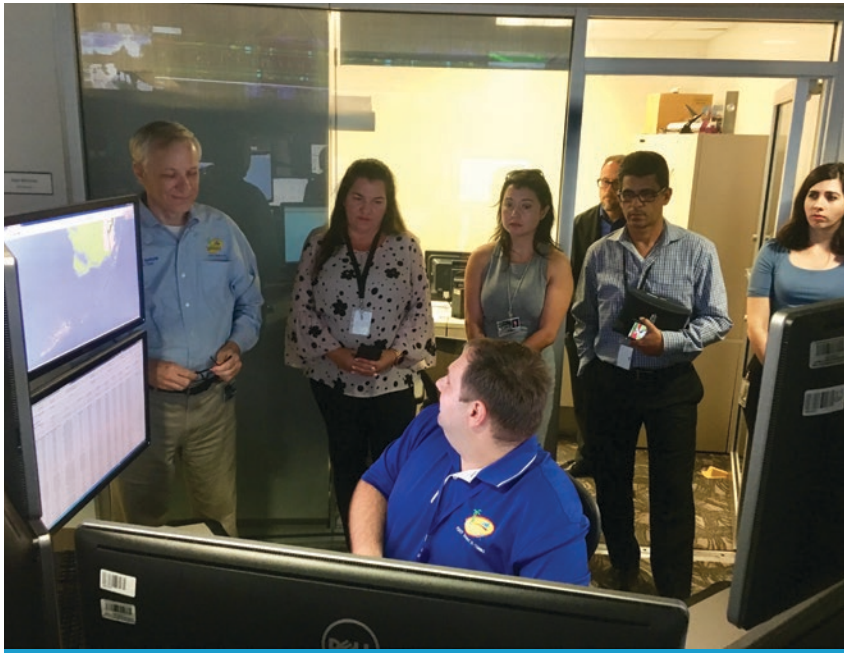
PUBLIC OUTREACH



Public Information (PI) has the opportunity to utilize new technologies to reach customers on a level not seen before. PI staff serve multiple roles as customer service for general transportation, express lanes, and arterial operations. Staff partnered with multiple agencies and the media to promote the program's public services. The STMC continually hosts tours, publishes articles, and participates in industry conferences to broaden its profile within the local community and nationally.

This fiscal year, the PI staff focused on streamlining the way customer comments are received, logged, routed, and resolved. Customer questions and comments are important as they can lead to valuable feedback into how the transportation system is servicing the public. It is important to have the correct answer so the customer is informed with the response and because it instills trust in those delivering the response. In-house customer service software, TMC Connect, had been used for this purpose. As transportation services continue to grow, customer comments may need to be routed to other service providers, such as transit agencies or other FDOT districts. Working with regional partner South Florida Commuter Services, PI staff helped to implement a new system for tracking customer comments. The new system is a cloud-based web application that provides a platform for comments to be received from multiple interfaces then routed, shared, and answered by multiple stakeholders—in essence creating a "one stop shop" for southeast Florida customer service. This new customer service interface will be crucial to help manage the anticipated inquiries from new services, such as Palmetto Express and 75 Express.

The PI staff help provide information to motorists, the media, and other agencies in our community. One of the outlets is our project website, sunguide.info. PI staff completed an update of the website, creating a fresh new look and new content while providing a more user-friendly interface. Interactive performance dashboards were added so users can see current and past performance.



STMC VISIT BY DISTRICT SIX EXECUTIVE MANAGEMENT
From Left to Right: James Wolfe, District Six Secretary; Yamilet Diaz, TSM&O Engineer-Arterials; Cindy Capdevila, District Six Transportation Support Manager; Rudy Garcia, District Six Director of Operations; Cherie Rodriguez, Senior Engineer Trainee

MOVE OVER / DRIVE SAFE PRESS CONFERENCE

Tours. The District Six TSM&O office frequently conducts tours of the STMC. Tours typically include a presentation by the TSM&O office, viewing of the control room operations, and, in some instances, a walkthrough of the control room. Staff facilitated tours during FY 2018–2019 for:

- Department of Homeland Security
- Government of Dominican Republic
- Miami-Dade and Broward Transit
- State Representative James Bush III
- Florida International University chapter of Institute of Transportation Engineers
- FDOT Job Shadow Day
- Siemens Intelligent Transportation Systems
- Smart Cohort
- Panama Empresa Nacional de Autopista

Press Conferences. The District Six TSM&O office hosted several press conferences with other programs and agencies during the fiscal year. Press conferences promote awareness for the public and news media. One highlight was the Move Over/Drive Safe press conference. This press conference shined a spotlight on a critical concern, the safety of first responders on site at a traffic event. Multiple law enforcement and incident management agencies participated, delivering a unified message. Motorists approaching a first responder or incident management provider must move over a lane or slow down to 20 miles per hour below the speed limit.

Customer Service. Customer service efforts continued to be a high priority as the District added arterial operations as part of its core services and anticipates the opening of new express lane facilities. As a result, staff processed 341 comments on a variety of topics that included tolling, transit, and data requests for academic and professional institutions. PI staff also assisted with citizen comments on the signal systems along SW 8 Street and along US 1 in the Florida Keys. There were 72 comments for SW 8 Street and 37 comments for US 1.

BENEFITS TO THE PUBLIC

Emerging technologies along with the TSM&O office's traditional services will continue to benefit to the region. Making the overall ITS network more resilient, improving the quality of CCTV camera video, disseminating information quicker to motorists and incident management responders, maintaining a fleet of efficient Road Rangers and IRVs, and coordinating with partnering agencies all contribute to positive gains. The TSM&O office also has a positive impact by providing assistance during emergency situations, such as hurricanes, large-scale events, and other regional emergencies. Key capital investment through the replacement projects and new roadway improvement projects helps keep needed infrastructure in place. Significant operations and maintenance funds are needed to keep the systems working correctly and efficiently.

The key benefit of the TSM&O office is getting the roadways cleared of events quickly so that motorists and freight can continue moving. Reducing incident duration reduces the delays to traffic

The FDOT District Six TSM&O office's budget for FY 2018–2019 included operating, maintenance, and capital improvement costs. The costs displayed in the table on page 25 are considerably less than the normal capital costs associated with expanding highways and facilities.

When the delays associated with incidents are reduced, motorists save time. This time savings can be directly translated to dollars. As shown in the benefits table, the Incident Management Program's contribution to the reduction in delay due to incidents translates into savings of $3.3 billion. The improved incident clearance time of 25.7 minutes had a significant impact during FY 2018–2019 for the 22,600 events that blocked travel lanes.

SUNGUIDE TRANSPORTATION MANAGEMENT CENTER RECEPTION

Additionally, 95 Express and the Ramp Signaling System also contributed to the reduction of delays during peak hours, translating into savings of $22.9 million. This estimate was calculated using widely accepted statistical methods for estimating the cost implications of traffic delays. The estimate only includes time saved by motorists; it does not address road user cost savings.

When comparing the total estimated benefits of the TSM&O program during FY 2018–2019 to the total annual operating expenses and capital investments (annualized over 10 years at 7%), the TSM&O program yields $33.05 in economic benefit for every dollar spent (benefit-cost ratio of 33.05:1).

FISCAL YEAR 2018-2019 COSTS

ITS Operations	$10,231,445
ITS Maintenance*	$5,623,407
Road Rangers	$8,980,309
RISC	$43,000
FDOT Cost Center Operating Budget	$4,982,968
Signal Maintenance Agreement, Miami-Dade County	$6,461,175
Signal Maintenance Agreement, City of Key West	$59,363
Other (Consultants, FTE, FHP, FIU)	$23,867,680
Total Annual Operating Costs	$60,249,347
Total Annualized Capital Costs	$40,282,664
TOTAL ANNUAL COSTS	**$100,532,011**

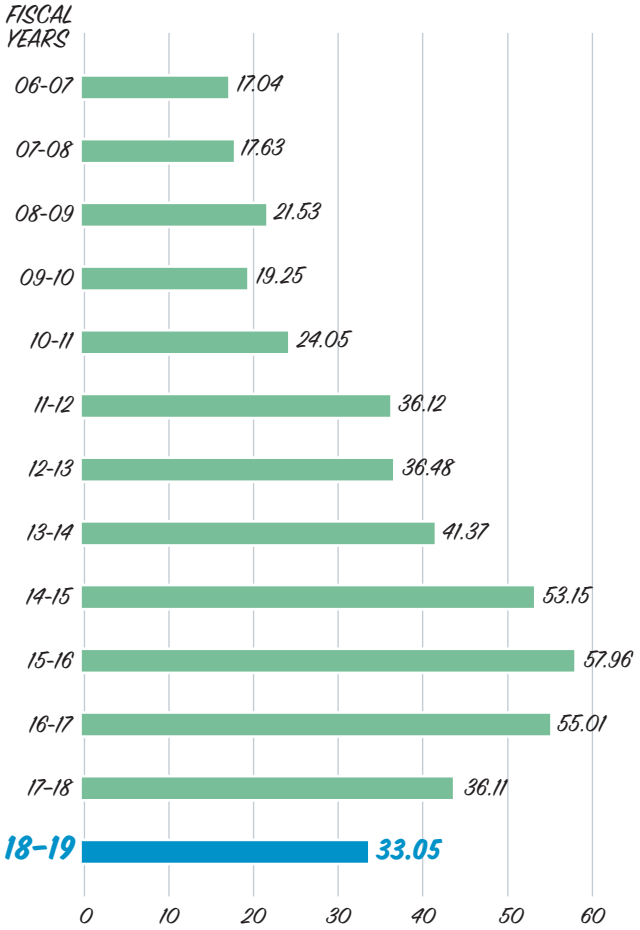
* Includes express lanes ITS maintenance and express lane marker repair

FISCAL YEAR 2018-2019 BENEFITS

Incident Management	$3,046,466,083
Express Lanes / Ramp Signals	$26,864,651
TOTAL BENEFITS	**$3,073,330,734**

The following graph shows the benefit-cost ratio for FY 2018–2019 and the previous 10 years. Although it still shows a favorable benefit-cost ratio, the decrease from the previous years is attributed to an increase in operational expenses and additional capital expenses.

BENEFIT-COST RATIO



A LOOK AHEAD

It is interesting to have the future on our doorstep knowing that technology will continue to evolve. The one constant in the foreseeable future is that traffic will continue to be there in whatever shape or form it takes as people and freight need to get from point A to point B. The FDOT District Six TSM&O office takes advantage of lessons learned. All of our standard operating guidelines and support documents are updated annually. As the roadway system changes and technology's impact increases, processes are in place to adapt and learn from these changes.

FY 2019–2020 will bring more challenges and services to the TSM&O office. The next express lanes corridor along I-75 and SR 826 will open with tolling and ramp signals. Our arterial operations program will continue to expand as the traffic signals along state roads in the City of Key West will be operated and maintained by District Six. CV will become a reality with the first project along US 1 in the Florida Keys.

RISC Services in Monroe County. The TSM&O office will begin RISC services in Monroe County in the next fiscal year. US 1 is the only road that provides access into and out of the Florida Keys. This is also a critical hurricane evacuation route. One overturned tractor trailer along US 1 can close the road for a significant length of time. Adding RISC to Monroe County will help to clear these large-scale events quicker and supports the Open Roads Policy of the State of Florida. The Monroe RISC program will cover US 1 from Stock Island to Florida City.

Traffic Signals in City of Key West. In the next fiscal year, the STMC will begin preparations to expand its signal system. In FY 2020–2021, the number of traffic signals operated and maintained by the STMC will double. Beginning in July 2020, 17 traffic signals along state roads in the City of Key West will be added to the Monroe County Traffic Signal System. The STMC will be working closely with the City of Key West on this transition and will coordinate with the City of Key West Police

US ROUTE 1 CONNECTS THE FLORIDA KEYS TO THE MAINLAND

ARTERIAL DYNAMIC MESSAGE SIGN ALONG US 1

BUS RAPID TRANSIT ALONG 95 EXPRESS

GOLDEN GLADES MULTIMODAL TRANSPORTATION FACILITY

Department to identify signal problems and conduct initial troubleshooting.

Express Lanes Projects. Express lanes projects will continue to be active in the next fiscal year. District Six is prepared to begin operation of the Palmetto Express and 75 Express. Additional express lane operators and IRV operators will help to manage these corridors. This will be the first system-to-system express lanes connection with the direct connection of the express lanes along I-75 and the Palmetto Expressway. The project will also connect the 75 Express portion in District Six with the existing system in District Four. Commuters will have a full express lane experience from 595 Express in Broward County to 75 Express and Palmetto Express in Miami-Dade County. Plans are currently being developed for additional Palmetto Express segments, eventually connecting to 95 Express to the north. Studies are being finalized for the extension of the south Palmetto Express to US 1.

Express lane activity will continue in the region with Phase 3 of 95 Express entering its third year of construction and extending this facility into Palm Beach County. Completion of this project is expected in 2022.

ITS Device Replacement Project. The ITS device replacement projects will continue in the next fiscal year. The retrofitting of remaining analog cameras with HD digital cameras will be completed in the next fiscal year. The next replacement project will include more DMS and camera replacement plus the migration of ITS devices along I-95 to new fiber optic cable.

Golden Glades Multimodal Transportation Facility. District Six started a project this fiscal year at the Golden Glades Interchange to convert the existing Park-and-Ride lot and surrounding area into a multimodal transportation facility. This approach takes advantage of the diverse modes of transportation available in this area (Tri-Rail, Miami-Dade Transit, Broward County Transit, Greyhound, freight, and connection to 95 Express) and incorporates a transit hub with retail accommodations. TSM&O concepts are evident in this project, showcasing transit by combining multiple modes of transportation at a facility that is more than just a bus station. This design-build project is anticipated to be completed in June 2021.

CONNECTED VEHICLE SYSTEM PLANNED FOR US ROUTE 1 / OVERSEAS HIGHWAY

Connected Vehicles. District Six supports the Florida Connected Vehicle Initiative. The projects from this initiative will connect transportation users to the transportation system in new ways. CV systems connect vehicle-to-vehicle, vehicle-to-infrastructure, and vehicle-to-other transportation services, providing information to the motorist and the vehicle for informed decisions as well as to the STMC for active traffic management. The Keys COAST project will be implemented along US 1/Overseas Highway in the Florida Keys. This project will also provide signal phasing and timing (SPaT) information and introduce ATSPM. Using performance measures at signalized intersections facilitates optimal signal timing and proactively corrects problems. Upgrading signal controllers to support high-resolution data allows a multitude of real-time data to be collected and used.

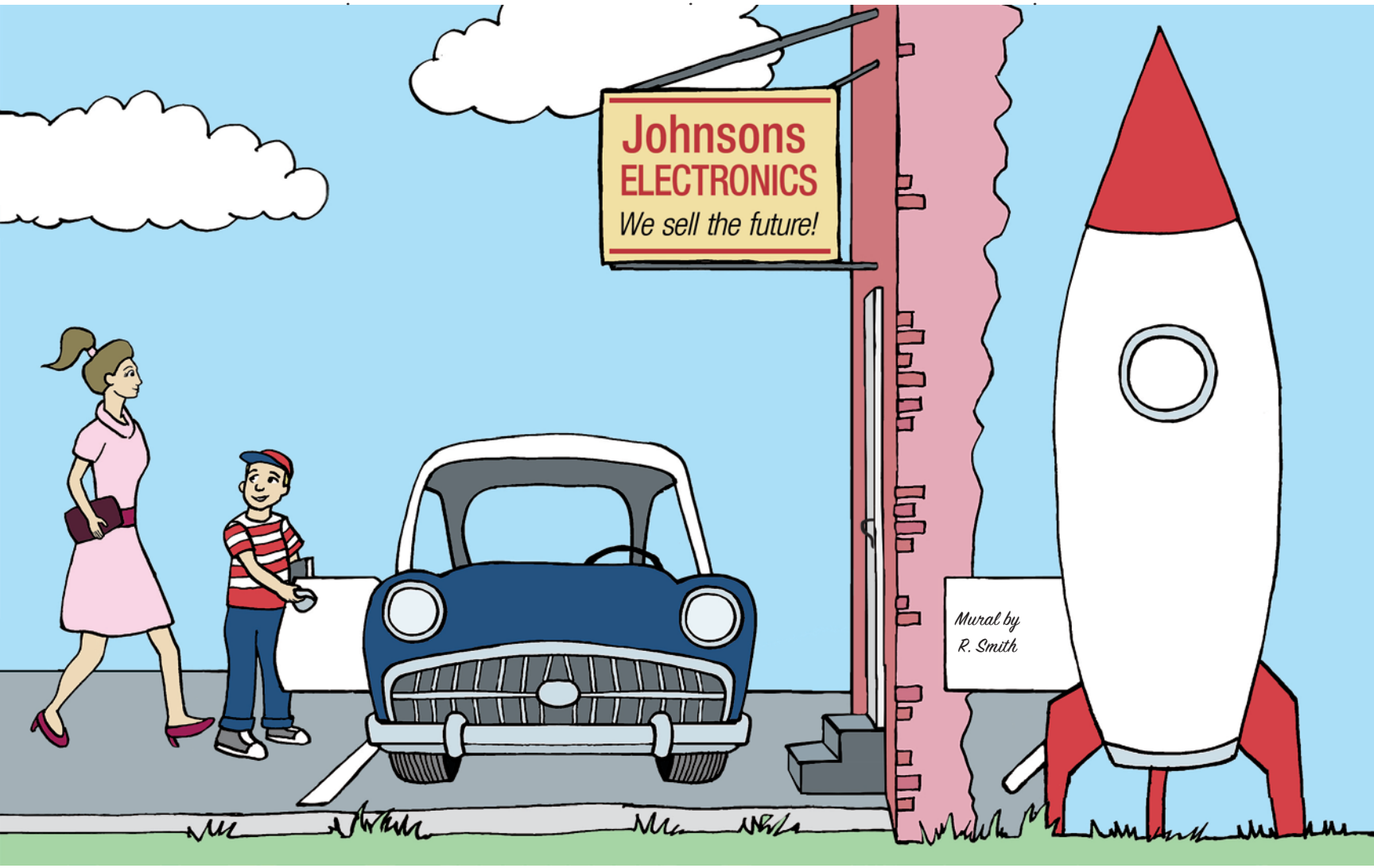
An ASCT project is near completion along NW 119 Street (SR 924) east of the Gratigny Parkway. This project includes 15 signalized intersections. Phase 1 is the deployment of an ASCT system along the corridor. Phase 2 will introduce CV. New traffic signal controllers have been installed that can transmit SPaT information to roadside equipment and vehicle onboard systems.

WHAT DOES EVERY KID WISH THEY COULD RIDE AROUND TOWN IN?

THIS ANNUAL REPORT WOULDN'T BE COMPLETE WITHOUT A FUN FDOT FOLD-OVER

Fold right side of page over left along dotted lines to match up **1** *and* **2**

1 ▶ ◀ 1



MOMS REGULARLY DRIVE THEIR KIDS ALL OVER TOWN IN THE FAMILY CAR, NEVER REALIZING WHAT THE KIDS ARE DREAMING ABOUT EVERY SINGLE TIME THEY GET IN THE CAR.

ARTIST: BILLY RUPPERT

2 ▶ ◀ 2

FDOT DISTRICT SIX
1001 NW 111th Avenue
Miami, Florida 33172
305-470-5757
www.SunGuide.info

District Traffic Operations Engineer
Omar Meitin, P.E.

District TSM&O Program Engineer
Javier Rodriguez, P.E.

Retro image sources:

Page 6: "Flying Saucers for Everybody," by Frank Tinsley, 1955, Creative Commons, https://www.flickr.com/photos/40143737@N02/3949834600

Page 11: Ken Thompson (sitting) and Dennis Ritchie at PDP-11, circa 1970, Creative Commons, https://upload.wikimedia.org/wikipedia/commons/8/8f/Ken_Thompson_%28sitting%29_and_Dennis_Ritchie_at_PDP-11_%282876612463%29.jpg

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Page 21: Alden Jewell, 1954 Oldsmobile Cutlass & F-88 Concept Cars, Flickr Creative Commons, https://www.flickr.com/photos/autohistorian/34511522594

Page 22: The Amazing Urbmobile, *Popular Science*, 1967, https://www.cartalk.com/blogs/craig-fitzgerald/driverless-car-coming-are-human-drivers-happy-about-it

Page 25: August 1950 issue of *Science and Mechanics*, page 67, "Car of the Future" by Raymond Lowey

Back Cover: General Motors 1956 Oldsmobile Golden Rocket Motorama show car

Appendix AA

District 5
Retiming Scope Details

General Requirements

The purpose of this task is to provide the DEPARTMENT with professional services for conducting traffic operational retiming and affiliated duties within Brevard, Flagler, Lake, Marion, Orange, Osceola, Seminole, Sumter and Volusia Counties upon request.

The CONSULTANT shall ensure that all tasks and required field activities are conducted professionally and in a manner that utilizes accepted safety methods and practices. The safety of the traveling public and the CONSULTANT's field staff shall be an essential goal of each field activity.

For all tasks without a defined period of performance, the CONSULTANT shall return a task schedule and/or fee estimate within one (1) week from the receipt of the DEPARTMENT's request.

Acronyms:

AADT - Annual Average Daily Traffic

CADD - Computer Aided Design and Drafting

DTOE - District Traffic Operations Engineer

FDOT - Florida Department Of Transportation

FHWA - Federal Highway Administration

MUTCD - Manual of Uniform Traffic Control Devices

MUTS - Manual of Uniform Traffic Studies

PM - Project Manager

TMC - Turning Movement Counts

Definitions

A traffic control timing pattern is a set of cycle length(s), splits and offsets for a section.

A section is a portion of a traffic control system which can be controlled by a single set of timing parameters.

Personnel

The CONSULTANT's work shall be performed by the key personnel agreed upon by the CONSULTANT and the DEPARTMENT at the onset of the contract. The DEPARTMENT shall be notified immediately of any changes in the CONSULTANT's key personnel which shall be subject to review and approval by the DEPARTMENT.

Preliminary Report

All tasks requiring a report shall have a preliminary report submitted to the PM prior to the submittal of the Final Report. The PM along with other District Traffic Operations staff shall review and comment on the preliminary report. The CONSULTANT will address and/or incorporate all the comments of the PM and the District Traffic Operations staff.

Final Report

All final reports submitted to the PM shall be signed, sealed, and dated by a Florida Registered Professional Engineer of the CONSULTANT (including all subcontracted work). The front/cover page may include the funding agencies' logos but should not include the firm's logo(s). The CONSULTANT shall provide one (1) original of the final report to the PM (electronic files in Adobe Acrobat PDF format and any associated CADD files in DGN format).

SYSTEM OPERATION REVIEW AND TRAFFIC SIGNAL EQUIPMENT INVENTORY

IMSA Level II certification is required

Review and document the type, age, condition, capability of the equipment, and existing timing plan at each intersection within the arterial, existing phasing, laneage and lane assignments, and the coordinating medium on an agency of FDOT inspection form. Report to the Project Manager and Maintaining Agency any deficiencies noted upon discovery.

ANALYSIS, IMPLEMENTATION AND DOCUMENTATION

IMSA Level II certification is required to complete this task

The CONSULTANT shall identify each intersection including current operation and the maintaining agency. If needed, the CONSULTANT will organize a kick-off meeting with all stakeholders.

The CONSULTANT shall collect existing descriptive and volume demand data, as well as prepare a System Overview Map and Link/Node Diagrams. The diagrams shall include the condition diagram, phasing sequence diagrams for all plans, existing detector locations, link data such as length and speeds and inventory. As part of the existing collection process, the CONSULTANT will verify that existing information is accurate and collect additional data as needed. The CONSULTANT will visit the intersection(s) during the AM peak period, Mid-Day peak period, PM peak period and during low-

volume period(s). The CONSULTANT should drive, walk and ride to experience the different modes of traffic.

The CONSULTANT shall determine the optimum system timing pattern(s) for the optimum cycle length during different times of the day/week. When a system analysis is performed, the necessary settings to be developed will include but are not limited to:

- Cycle Length
- Basic Signal Timings (Yellow Change, Red Clearance, Minimum Green, Maximum Green, Passage Time, Pedestrian Intervals, Dual Entry, Recalls and Memory Modes)
- Splits
- Offsets
- Force-offs
- Permissives
- TOD Plan
- Day-of-Week Plan

These parameters will be developed for the following timing plan periods if data is not available:

- Day Plan: Inbound & Outbound Peak Hour(s) and Off-Peak Hour
- Week Plan: Day plan to be implemented for each day of the week

An analysis shall consist of at least the following steps:

- Identify and justify each zone in each corridor.

- Analyze and design isolated intersection timings for each intersection.
- Analyze and design coordinated intersection (system) timings with Synchro (or a similar design tool/software that is approved by DEPARTMENT and the Maintaining Agency with Existing Phasing.
- Document existing and proposed phase sequence and lagging phase settings for each timing plan. The preferred performance measures are increased throughput, reduced traffic delays, improved travel time reliability and reduced crashes.

The CONSULTANT is responsible for selecting all input values required for the analysis. The CONSULTANT must use their own computer for all analyses to be performed under this study (the software used must be approved by the Project Manager). Electronically submit all preliminary input/output timing development runs and data files (i.e., initial and final runs); along with any link/node diagrams. The format of the timing charts will be approved by the DEPARTMENT.

The CONSULTANT will obtain from the Maintaining Agency existing controller timings.

The CONSULTANT shall provide the Project Manager and Maintaining Agency an electronic copy of the documentation for each of the timing patterns in an acceptable format. The PM along with other District Traffic Operations staff shall review and comment on the preliminary report. The CONSULTANT will address and/or incorporate all the comments of the PM and the District Traffic Operations staff. Resubmissions of the preliminary report should include comments with responses and identify any signal timing changes using a highlighter on the proposed signal timing sheets. The preliminary report shall contain, but is not limited to the following information:

- Executive Summary
- Optimum controller and coordination timing that can be implemented on existing hardware
- Master Clock Chart (Hardwire, TBC, UTCS, CLS)
- Link/node diagrams
- Electronic Data Files
- Arterial analysis and documentation
- Note for the proposed implementation date
  Note for proposed field evaluation and fine-tuning end date

After acceptance of the initial timings and patterns by the Project Manager and Maintaining Agency this task includes entering the intersection system timings, developed by the CONSULTANT, into the controller units, coordination units and master units by an IMSA - Level II signal technician. The CONSULTANT shall notify the Maintaining Agency prior to implementation and request their authorization during the implementation.

Fine tuning of implemented timing(s) for each arterial must be performed based on field observation of the traffic operation during all developed pattern peak hours. The traffic engineer will observe the operation of the arterial for each timing pattern. The traffic engineer shall be available to investigate and fine-tune any adjustments for a period of 30 days after the submittal of the final report.

Should an existing controller, coordination unit, or master unit be inoperative or additional hardware or cabinet modifications be required at an intersection, the CONSULTANT will give verbal notification of the problem to the Project Manager and the Maintaining Agency within the same day. The CONSULTANT will also document in the report the nature, extent and probable solution(s) to the problem(s) within one week.

The CONSULTANT shall provide the Project Manager and Maintaining Agency electronic copies of the final documentation for each of the timing patterns in an acceptable format. Hard copies of the timing plans must also be placed in each cabinet in the field upon implementation. The Final Report must be signed, sealed and dated by a Florida Registered Professional Engineer. The front/cover page may include the funding agencies' logos but should not include the firm's logo(s). It shall contain, but is not limited to the following information:

1. Cover Page
2. Executive Summary
3. Study Summary (MOEs, Changes, Recommendations)

4. Signal Timing Implementation Date
5. 30-Day Adjustment Period Start and End Dates
6. Table of Contents
7. System Overview Map
8. Link/node Diagrams
9. Equipment Inventory
10. Arterial Analysis and Documentation
11. Final Implemented Intersection and System Timings.
12. Master Clock Chart (Hardwire, TBC, UTCS, CLS)
13. Day Plans
14. Week Plan
15. Time-Space diagrams.
16. 24-hour, 7-day counts arrayed in an acceptable format.
17. 8-hour turning movement count arrayed in an acceptable format.
18. Appendix (Count data, field sheets, Y&R/Ped calculations, Synchro Input/Output Reports, etc.)
19. Data files through electronic document submission

8-HOUR TURNING MOVEMENT COUNT/PEDESTRIANS

An 8-Hour TMC shall be taken for those hours encompassing the morning, midday peak and afternoon traffic periods and/or peak periods during which warranting volumes exist and an off-peak period.

Each period shall normally consist of a minimum of eight (8) consecutive 15-minute intervals (2 hours) during each period which yields the highest total volume of vehicles entering the intersection. Note that the 2-hour period could begin on any quarter hour. For example, the afternoon peak could be from 4:45 PM to 6:45 PM. Vehicles must be counted by personnel or other approved automated equipment. They may use tally sheets or turning movement counter boards (mechanical/electronic) and must separately record the number of pedestrians. The need for additional personnel to count traffic may be authorized as a supplemental.

Another alternative methodology that may be used to collect 8-Hour TMC, with approval from the Project Manager, is by Intersection Movement Count (IMC) devices located at the intersections, such as Gridsmart. Provided the devices at specific locations have been verified as reliable, the traffic volume information may be used.

A sketch of sufficient detail shall be made to show the approach lanes, left and right turn lanes, and whether there is a median or other type of separation. The traffic signal head arrangement and pedestrian features should be shown. The sketch should show whether the intersection is a "T" or a "Plus" type intersection, any offset, and the approximate skew if one exists. North shall be to the top of the page.

- 8-hour TMC providing hourly volume summaries.
- 8-hour TMC providing 15-minute volume summaries.

- 8-hour truck volume summaries.
- 8-hour pedestrian movement counts providing hourly summaries.
- Sketch of lane configurations.

If this data is provided as a separate document, it should include a title page, location map, the data presented on standard FDOT forms or as approved by the Project Manager, and any narrative necessary for the understanding or interpretation of the data.

4-HOUR TURNING MOVEMENT COUNT/PEDESTRIANS

A 4-Hour TMC shall be taken for a period of 4 hours encompassing the peak periods as determined by the Project Manager, which warranting volumes exist. Each period shall normally consist of a minimum of eight (8) consecutive 15-minute intervals (2 hours) during each period which yields the highest total volume of vehicles entering the intersection. Note that the 2-hour period could begin on any quarter hour. For example, the afternoon peak could be from 4:45 PM to 6:45 PM. Vehicles must be counted by personnel or other approved automated equipment. They may use tally sheets or turning movement counter boards (mechanical/electronic) and must separately record the number of pedestrians. The need for additional personnel to count traffic may be authorized as a supplemental.

Another alternative methodology that may be used to collect 4-Hour TMC, with approval from the Project Manager, is by Intersection Movement Count (IMC) devices located at the intersections, such as Gridsmart. Provided the devices at specific locations have been verified as reliable, the traffic volume information may be used.

A sketch of sufficient detail shall be made to show the approach lanes, left and right turn lanes, and whether there is a median or other type of separation. The traffic signal head arrangement and pedestrian features should be shown. The sketch should show whether the intersection is a "T" or a "Plus" type intersection, any offset, and the approximate skew if one exists. North shall be to the top of the page.

- 4-hour TMC providing hourly volume summaries.
- 4-hour TMC providing 15-minute volume summaries.
- 4-hour truck volume summaries.
- 4-hour pedestrian movement counts providing hourly summaries.
- Sketch of lane configurations.

If this data is provided as a separate document, it should include a title page, location map, the data presented on standard FDOT forms or as approved by the Project Manager, and any narrative necessary for the understanding or interpretation of the data.

24-HOUR TRAFFIC COUNT

The CONSULTANT shall collect traffic count data on each approach to the intersection for a minimum period of 24 hours during typical weekday traffic conditions. In conducting the counts, the

CONSULTANT shall utilize an automatic traffic counter which produces a written record of the traffic volumes and the time of day, either directly or through subsequent interconnection and processing with external electronic hardware. The count data shall be presented in an acceptable tabular form showing 15-minute interval volumes and hourly summaries.

If this data is provided as a separate document it should include a title page, location map, the data presented on standard FDOT forms or as approved by the Project Manager, and any narrative necessary for the understanding or interpretation of the data.

7-DAY CONTINUOUS TRAFFIC COUNT

A count station is 1 location, 2 directions, or in the case of one-way pairs, 1 count for each direction.

To determine the volume of traffic utilizing a road, the Project Manager may authorize the collection of seven-day continuous traffic counts at select stations. In conducting the counts, the CONSULTANT shall utilize an automatic traffic counter which produces a written record of the traffic volume and the time of day, either directly or through subsequent interconnection and processing with external electronic hardware. From the count data, an acceptable tabular presentation of directional traffic volumes shall be developed showing 15-minute interval volumes and hourly summaries over the 7 consecutive day period. A graphical presentation shall be developed showing hourly interval volumes over the 7 consecutive day period. The 7-day period shall not include a holiday unless otherwise directed by the Project Manager.

If this data is provided as a separate document it should include a title page, location map, the data presented on standard FDOT forms or as approved by the Project Manager, and any narrative necessary for the understanding or interpretation of the data.

PUBLIC PRESENTATION

The CONSULTANT shall prepare and present a PowerPoint (or approved alternative) presentation to summarize the scope of the project and steps taken to perform the retiming effort. The presentation shall summarize the improvements and show benefits in forms of reduced delay to the corridor.

BEFORE AND AFTER TRAVEL TIME AND DELAY STUDIES

The Consultant shall use the latest approved version of Tru-Traffic to perform travel time runs for existing and implemented signal timings. The trip logs should be saved for each run in Tru-Traffic. The data will be collected to fine tune implemented signal timings, as well as to provide a field measured metric by which existing and implemented signal timings can be compared.

Each arterial has two (2) directions of travel. The travel time runs for each direction shall be made for AM Peak, Mid-Day Peak and PM Peak. The times of each peak will be determined by the

CONSULTANT based on volume counts and approved by the DEPARTMENT. Six (6) runs shall be made for each time period for each direction. There will be a total of 36 directional travel time runs on each arterial. The weekday travel time runs may be made on Tuesday, Wednesday or Thursday during normal conditions. The travel time runs shall not be conducted on holidays or during special events. The runs shall also be made in similar weather conditions. The dates for travel time studies shall be approved in advance by the DEPARTMENT.

The DEPARTMENT representatives may also join the CONSULTANT for the Before and After travel time and delay runs. At least one week prior to the runs, the CONSULTANT shall inform the DEPARTMENT of the day(s) to conduct runs for the System. The CONSULTANT shall obtain DEPARTMENT approval for the directions, extent and routes of the runs before conducting the runs. The CONSULTANT shall provide the DEPARTMENT with a copy of the Tru-Traffic file(s) runs at the end of each day.

RAILROAD PREEMPTION

The CONSULTANT will conduct a Railroad preemption study using DEPARTMENT approved procedures. The Yellow and All Red intervals should be updated based on the latest District 5 guidelines. All field measurements and observations necessary for the study/timing updates should be collected. Coordination with the Railroad authorities through the District's Railroad Coordinator will be necessary to collect the required information and documents needed for the study.

MODELING

The Consultant will be required to update and maintain a comprehensive Synchro network, which includes corridors throughout District 5.

The Consultant may be required to provide and update existing Synchro models, which could include developing Peak (AM, Midday and PM), Off-Peak and Weekend Patterns for State Roads.

The Consultant will be required to make any necessary file, structure or data changes to ensure retiming efforts are captured. The Synchro model must be an accurate representation of existing conditions. Coordination with the Maintaining Agency is necessary to ensure that correct node numbers are used which reflect the ATMS ID’s.

Transit Signal Priority

Transit Signal Priority (TSP) settings will be developed for deployment in controllers with existing TSP modules. The settings will be developed in accordance with industry practice, guided by policies developed by the Florida Department of Transportation, Maintaining Agencies and the Central Florida Regional Transportation Authority (LYNX).

- For each intersection included in this project, identify phases to have Enable Transit Priority selected and define the associated operating parameters. This element includes project oversight and coordination with the appropriate agencies.

- Estimate the Time of Service Desired (TSD) and Time of Estimated Departure (TED) by movement for each intersection approach with TSP. This includes field observations during the AM and PM peak periods to estimate transit vehicle approach speed, conducted by riding the transit vehicle while running Tru-Traffic for the selected pattern; the transit vehicle speeds will be measurable from the vehicle traces.

- Determine the Maximum Reduction and Maximum Extension time values by phase and by each affected pattern, for each intersection. By policy, the maximum amount of added green time for transit vehicles will be 10 seconds but will likely be less based on practicality and coordination pattern constraints. At the conclusion of this element, a Technical Memorandum will be prepared to document the three initial elements and submitted to the appropriate agencies for review and approval.

- Develop a programming sheet to allow data entry and provide for quality checks and code data for included intersections.

- Implement the TSP parameters in a test controller in the office and run diagnostics, then download to the individual field controllers.

- Work with LYNX, or other transit agency, through the FDOT for fine tuning after transit service is initiated. This effort would be limited to the staff hours included in the fee proposal.

Appendix AB

CFX

PTSU Draft Concept of Operations

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Concept of Operations for: *SR 417 Part Time Shoulder Use Project*

Version: *1.0*

Approval date:

DRAFT

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Reviewed By:	Karl Passetti, PE, PMP	12/8/2020
	Karl Passetti, PE, PMP	12/9/2020
Modified By:	Michael Eagle, PE	12/2/2020
	Pete Jenior, PE, PTOE	12/3/2020
	Michael Eagle, PE	12/4/2020
	Michael Eagle, PE	12/7/2020
	Pete Jenior, PE, PTOE	12/8/2020
	Michael Eagle, PE	12/8/2020
Approved By:		

DRAFT

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List of Acronyms and Abbreviations

ATCS.....Adaptive Traffic Control System
ATM.....Active Traffic Management
ATMS.....Advanced Traffic Management System
CAD.....Computer Assisted Dispatch
CCTV.....Closed Circuit Television
CFX.....Central Florida Expressway Authority
COIN.....Central Office Incident Notification
CONOPS.....Concept of Operations
DCS.....Data Collection Sensor
DMS.....Dynamic Message Sign
DSRC.....Dedicated Short Range Communication
FDOT.....Florida Department of Transportation
FHWA.....Federal Highway Administration
FMS.....Freeway Management System
GIS.....Geographic Information System
HAR.....Highway Advisory Radio
IT.....Information Technology
ITS.....Intelligent Transportation System
LCS.....Lane Control Signal
LED.....Light Emitting Diode
MUTCD.....Manual of Uniform Traffic Control Devices
MVDS.....Microwave Vehicle Detection System
NIMS.....National Incident Management System
PDMS.....Portable Dynamic Message System
PIO.....Public Information Officer
PTSU.....Part Time Shoulder Use
RTMC.....Regional Traffic Management Center
SME.....Subject Matter Expert
SOP.....Standard Operating Procedures
TAP.....Traffic Authorized Products
TIM.....Traffic Incident Management
TMC.....Traffic Management Center
TMP.....Traffic Management Plan
TMS.....Traffic Monitoring Sensor
VSLS.....Variable Speed Limit Sign

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1. Overview

The Central Florida Expressway Authority (CFX) is in the process of completing design plans for the widening of SR 417 from International Drive to SR 528. This portion of SR 417 currently has two lanes in each direction and a grass median. The widening will be accomplished by building inward. A third lane will be built in each direction, a 19' left shoulder will be paved, and a concrete median barrier will be added. The SR 417 corridor has seen major growth in recent years. This, coupled with ongoing major expressway projects in the area, creates uncertainty in future traffic volume forecasts and the potential for recurring congestion within the design life of the widening project. To provide operational flexibility at project opening and into the future, CFX will implement part-time shoulder use (PTSU) on the left shoulder of SR 417 in conjunction with the widening project. PTSU is also known as "hard shoulder running" and "temporary shoulder use". In the near term, PTSU will be implemented to enable opening of the left shoulder for incident management, such as crashes blocking right-side general purpose lanes. In the long term PTSU will be implemented to enable opening of the left shoulder as a congestion mitigation strategy. Lane control signals will be placed over all lanes including the left shoulder, creating the opportunity to open and close the shoulder and lanes dynamically in response to incidents on the roadway. **Figure 1** depicts the proposed typical section of SR 417 – the two outside lanes in each direction appearing in lighter gray are existing, and inside lanes appearing in darker gray are proposed.

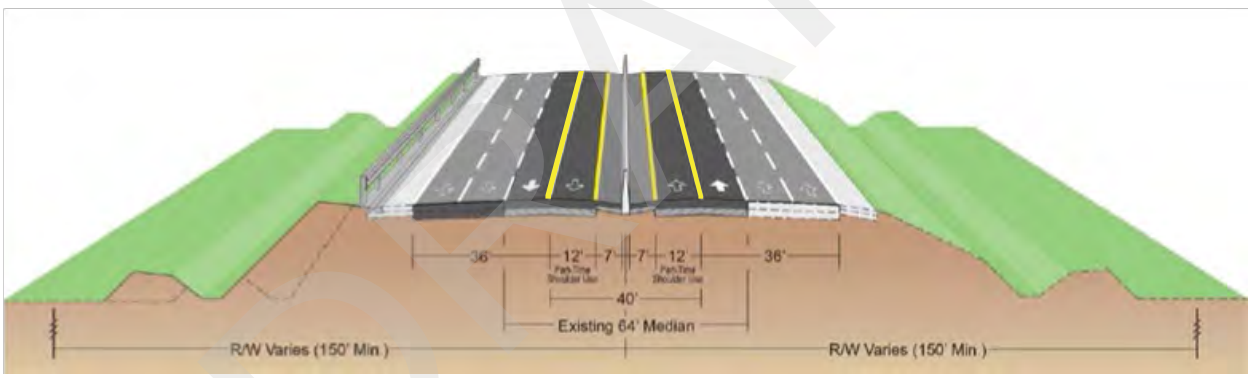
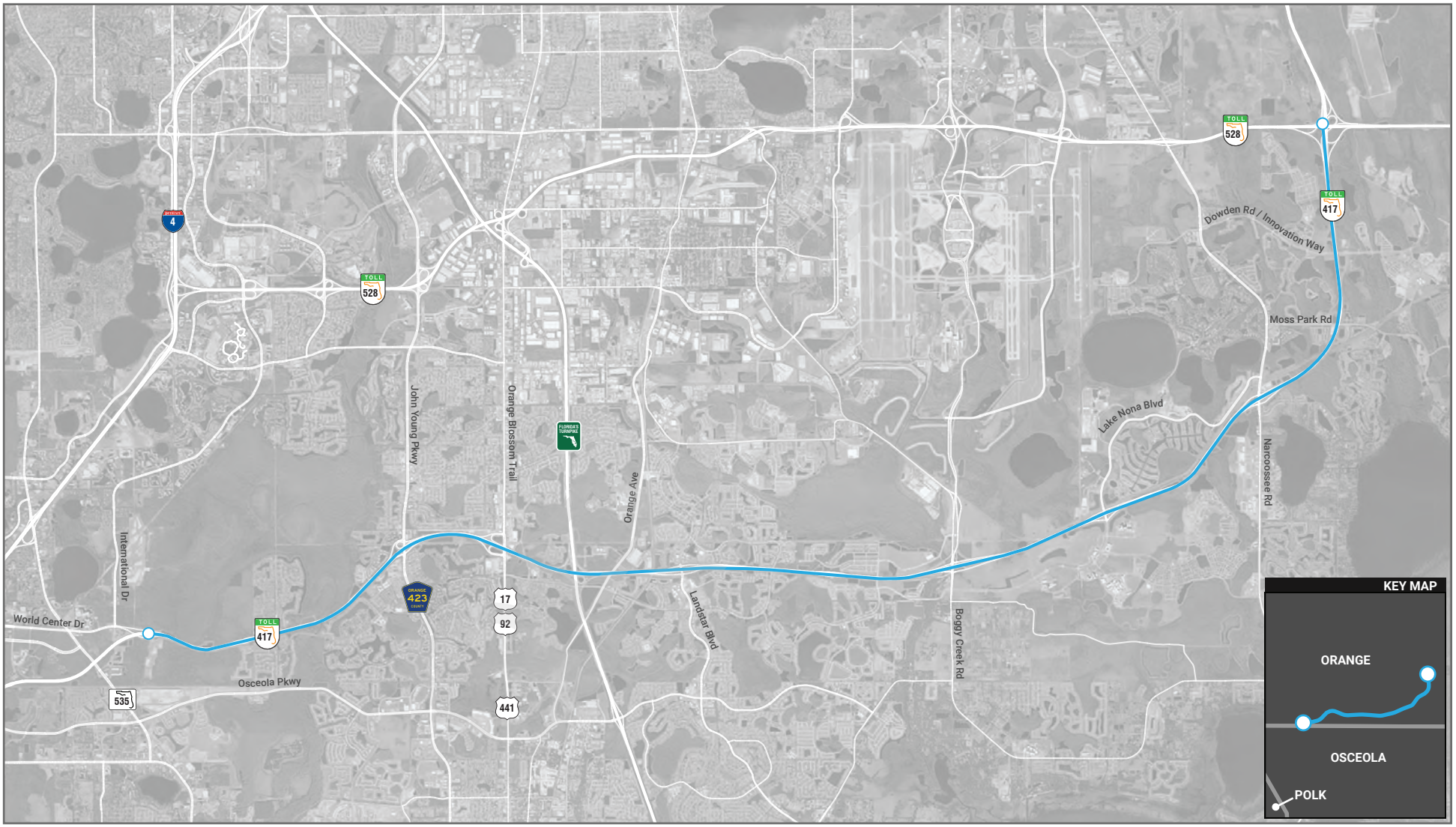


Figure 1: Proposed Typical Section

Figure 2 depicts the limits of improvements along SR 417.

This Concept of Operations (ConOps) serves to document the consensus built among the partnering agencies and is written for the project development team. As a critical component to the systems engineering process, the ConOps provides a framework for the future development of functional/design requirements.



Not to Scale

North

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

International Drive to SR 528

Figure 2

1.1 Identification

Project Name: SR 417 PTSU/Incident Management System.
Financial Project Identification: 417-141, 142, 149, 151, and 150.
Federal Aid Project Number: None.

The widening of SR 417 is currently being designed by five consultant teams under five separate CFX contracts:

- Project 417-141, from International Drive to John Young Parkway;
- Project 417-142 from John Young Parkway to Landstar Blvd;
- Project 417-149, from Landstar Boulevard to Boggy Creek Road;
- Project 417-151 from Boggy Creek Road to Narcoossee Road; and
- Project 417-150 from Narcoossee Road to SR 528.

These five projects will be bid and constructed separately, and construction of all five is expected to be completed by the end of the 2023 construction season.

These five construction projects will complete the infrastructure work necessary for PTSU, including the construction of a full-depth left shoulder, the construction of sign structures, and installation of ITS devices such as DMSs and cameras. A separate contract may be used for some systemwide PTSU elements such as Regional Traffic Management Center (RTMC) software; such a contract would likely encompass PTSU systems on both SR 417 and SR 429. A separate ConOps document was prepared for SR 429 PTSU.

1.2 Purpose and Intended Audience

The purpose of this document is to provide the project stakeholders with the operational concept for the SR 417 PTSU System. This document will communicate CFX's operational needs and presents an understanding of the operational expectations and stakeholder roles.

1.3 Document Overview

This document follows the latest version of the ConOps template established in the Florida Statewide Systems Engineering Management Plan dated March 2005. The document structure includes the following:

- Section 1: Overview
- Section 2: Current System Situation
- Section 3: Change Justification
- Section 4: Concepts for the Proposed System
- Section 5: Operational Scenarios
- Section 6: Summary of Impacts
- Section 7: Analysis of Proposed System
- Section 8: Notes
- Section 9: Appendices
- Section 10: Glossary

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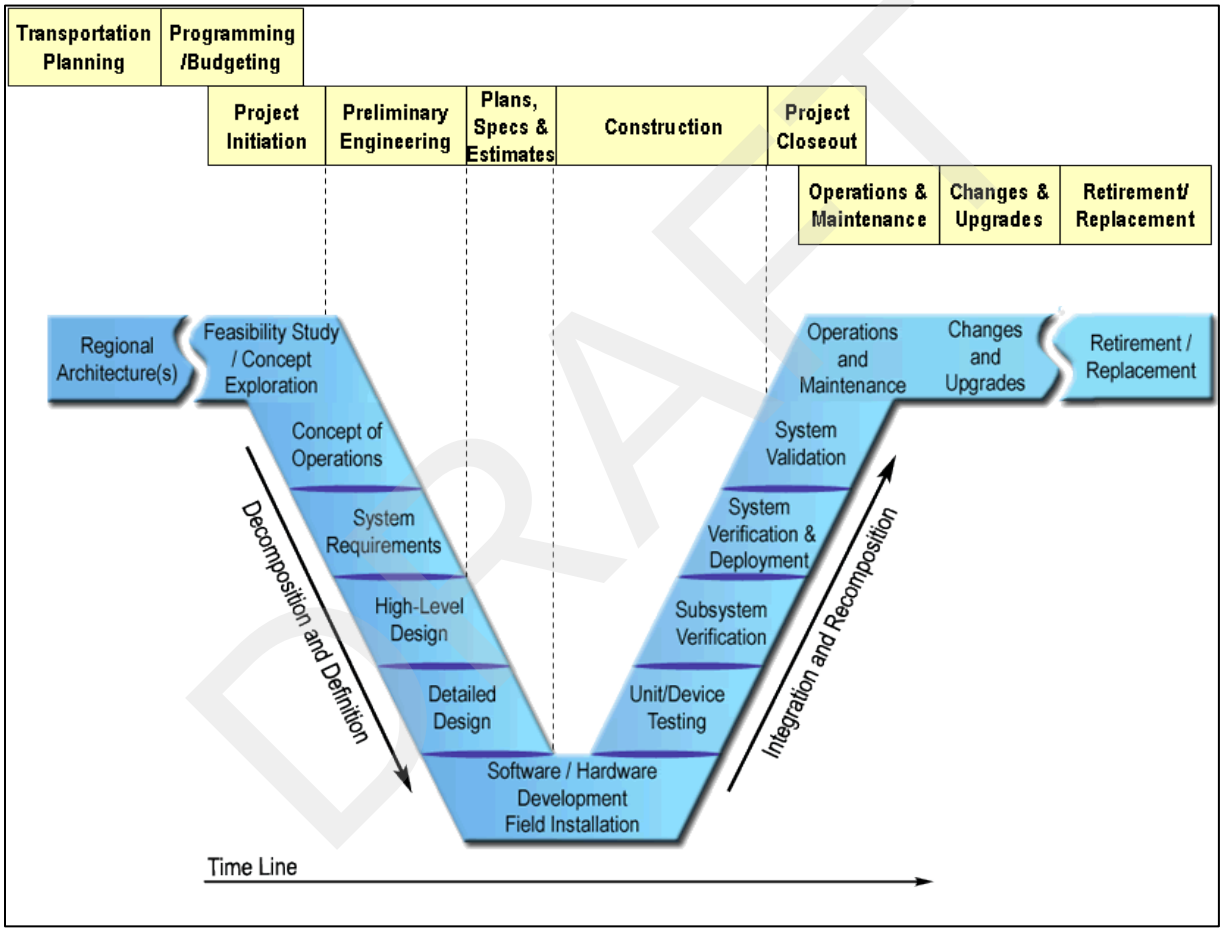
Development of a ConOps is an initial, critical step in the systems engineering process. Systems engineering is a comprehensive planning and management process which encompasses all major phases of the system lifecycle. A key focus of this process is an objective, needs-driven requirements development approach and an emphasis on ensuring that the requirements used to design the system can be traced to documented stakeholder needs and goals. This focus, along with the comprehensive nature of the overall process, has led the Federal Highway Administration (FHWA) to mandate the use of the systems engineering process when using federal funding on certain types of transportation projects (23 CFR, Rule 940). An overview the process elements typically used in transportation projects is shown below in **Figure 3**. While Federal Funds will not be used for this project, CFX has elected to follow a similar systems engineering process to help define objectives and needs.



Source: FHWA

Figure 3: Systems Engineering V-Diagram

1.4 High-Level System Overview

The SR 417 project is a combination of a traditional widening project (i.e. the addition of a general purpose lane) and a PTSU project with Active Traffic Management (ATM) treatments. Goals of the SR 417 project include:

- Addressing future traffic growth
- Improving highway safety
- Mitigating future noise impacts
- Enhancing hurricane and other evacuation
- Improving mobility on the Central Florida expressway system
- Improving congestion due to traffic incidents

PTSU systems nationally vary greatly in terms of appearance to drivers and real-time responsiveness to traffic conditions. The PTSU system on SR 417 will be a modern, state-of-the-art system incorporating the following Active Traffic Management (ATM) strategies:

- Dynamic PTSU (variable hours of operation for the shoulder), controlled on a real-time basis from a TMC. This differs from Static PTSU, where the hours of operation are pre-determined and fixed. Dynamic PTSU (D-PTSU) will be deployed at a later date when traffic volumes reach a threshold that triggers regular re-occurring congestion, and will begin as a relatively low "level" of dynamic PTSU as described in Section 4.3.1.
- Closed-circuit television (CCTV) cameras providing full remote monitoring capability of the shoulder and visual confirmation of displays on PTSU-related devices (lane control signs, incident management DMSs, variable speed limit signs)
- Traffic Monitoring Sensors continuously collecting lane-by-lane volume and speed data at bottleneck locations, which on SR 417 are entrance and exit ramp gores
- Operations staff monitoring the facility (Discussions with D5 are ongoing for use of the FDOT District 5 RTMC)
- Dynamic Lane Assignment for general purpose lanes - lanes can be closed (through the use of overhead signs) for incident management purposes
- Variable Speed Limits to reduce the speed on all lanes when the shoulder is open due to stopping sight distance restrictions, further described in Section 4 of this document

The term "PTSU" is used in this document for brevity to generally describe the entire system represented by the bullets above.

Figure 4 through **Figure 8** show conceptual configurations of dynamic signs planned for SR 417. These signs will be located on gantry structures placed approximately every half mile, which is consistent with other PTSU facilities in the US. All gantry structures will have the following signs:

- A lane control signal (LCS) over each lane and the left shoulder. The LCSs will be small, full-color/full matrix DMSs.
- A speed limit sign with an embedded dynamic panel for the numerals within a regulatory panel on the left-side and right-side support poles. A yellow beacon will be located above each speed limit sign. The beacon will be in dark mode when the speed limit is 70 MPH and flashing yellow mode when the speed limit is reduced below 70 MPH. In some cases, speed limit signs may be placed on standalone poles rather than gantry support structures due to site-specific constraints.

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- One of three additional signs
  - Type 1 – has a static sign indicating the meanings of red Xs, green arrows, and yellow Xs
  - Type 2 – has a (smaller) incident management dynamic message sign
  - Type 3 – has only Lane Control Signals
  - Type 4 – has a static guide sign
  - Type 5 – has a (larger) travel time dynamic message sign

A nomenclature of "Type X gantry" has been developed for CFX's facilities. In general, gantries alternate between Type 1 and Type 2 applications. Type 4 is used in areas with high guide sign density where there is insufficient space for separate lane control signal gantries and overhead guide sign structures. These signs and their specific place are further described in Section 4.3.2.

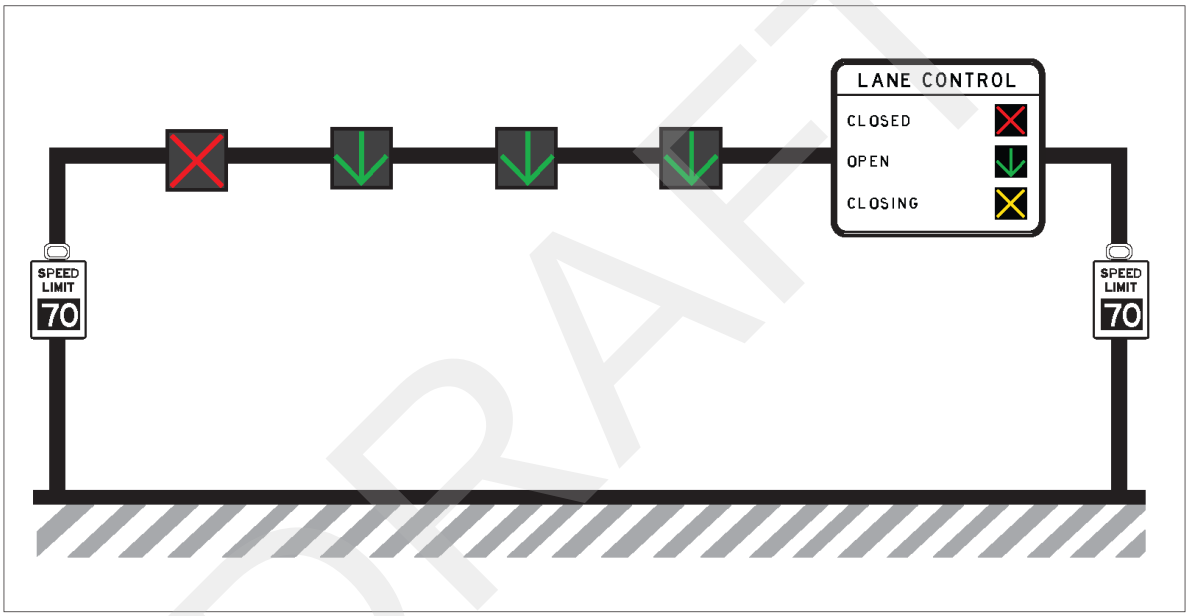

Figure 4: Example of Type 1 Sign Gantry with LCS Instructions

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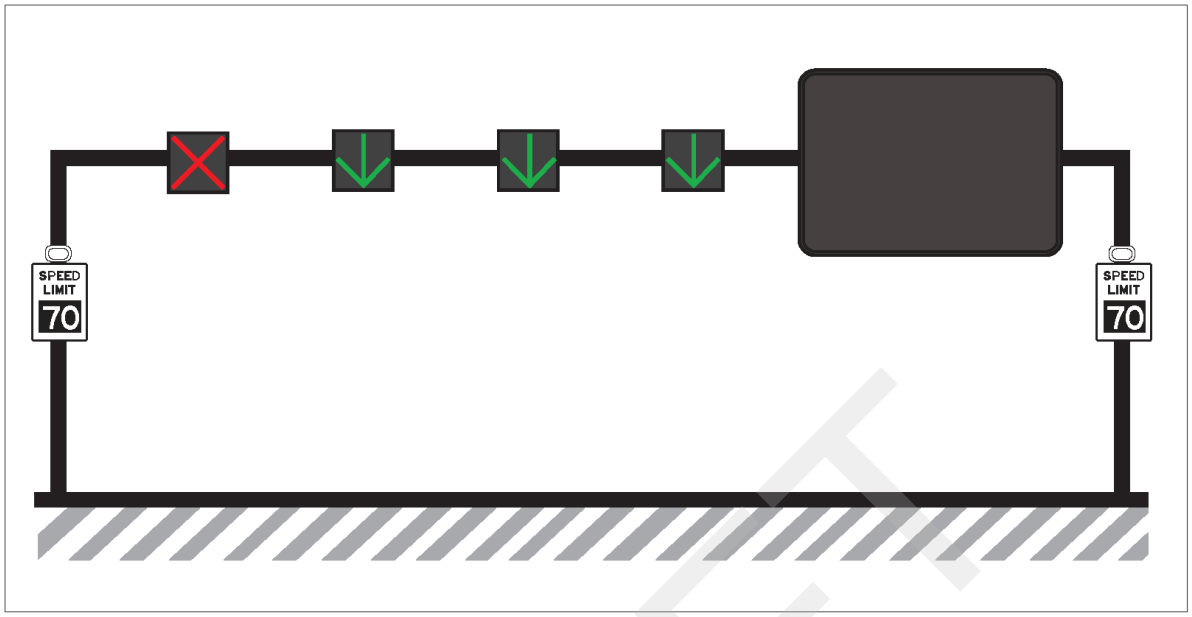

Figure 5: Example of Type 2 Sign Gantry with an Incident Management DMS

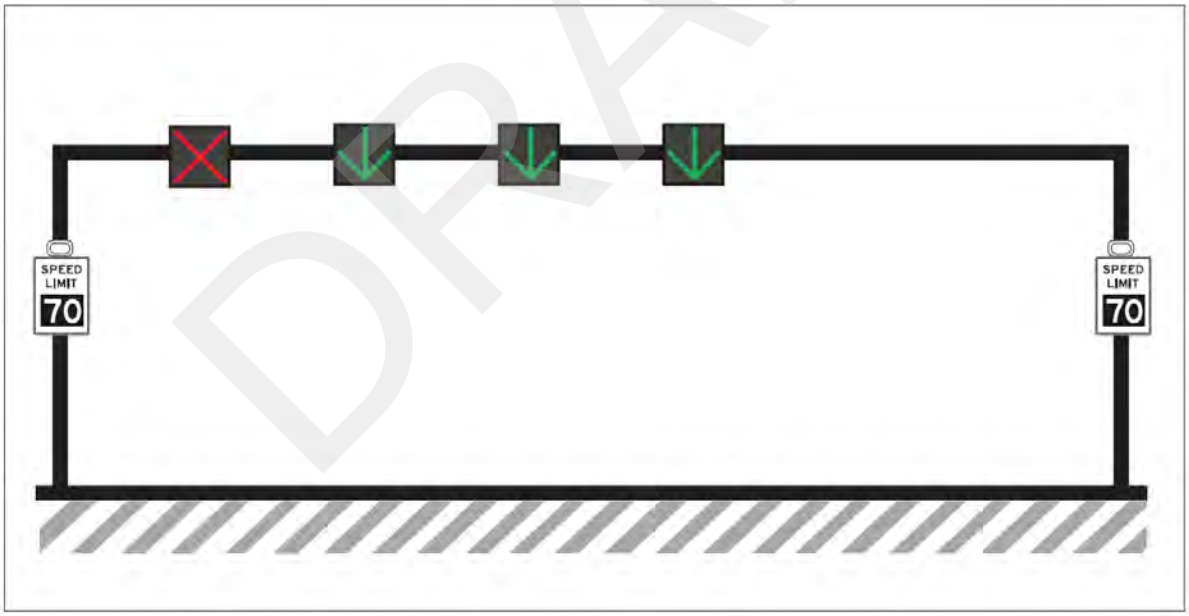

Figure 6: Example of Type 3 Sign Gantry

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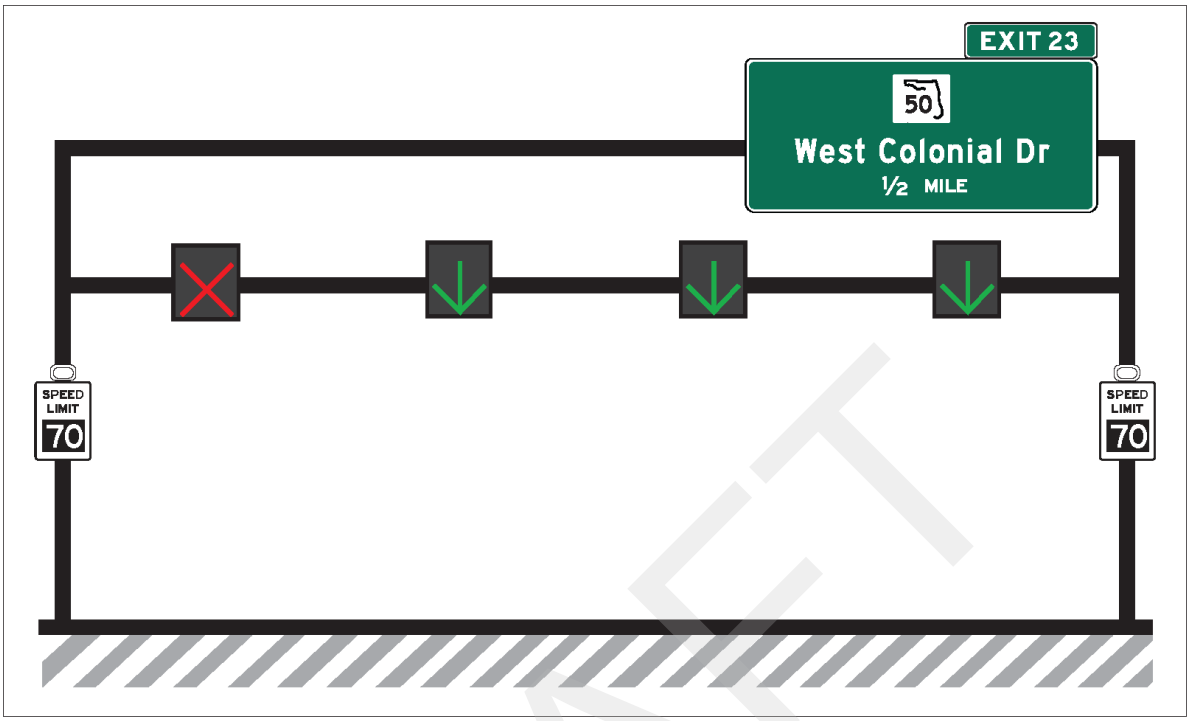

Figure 7: Example of Type 4 Sign Gantry with Exit Guide Sign

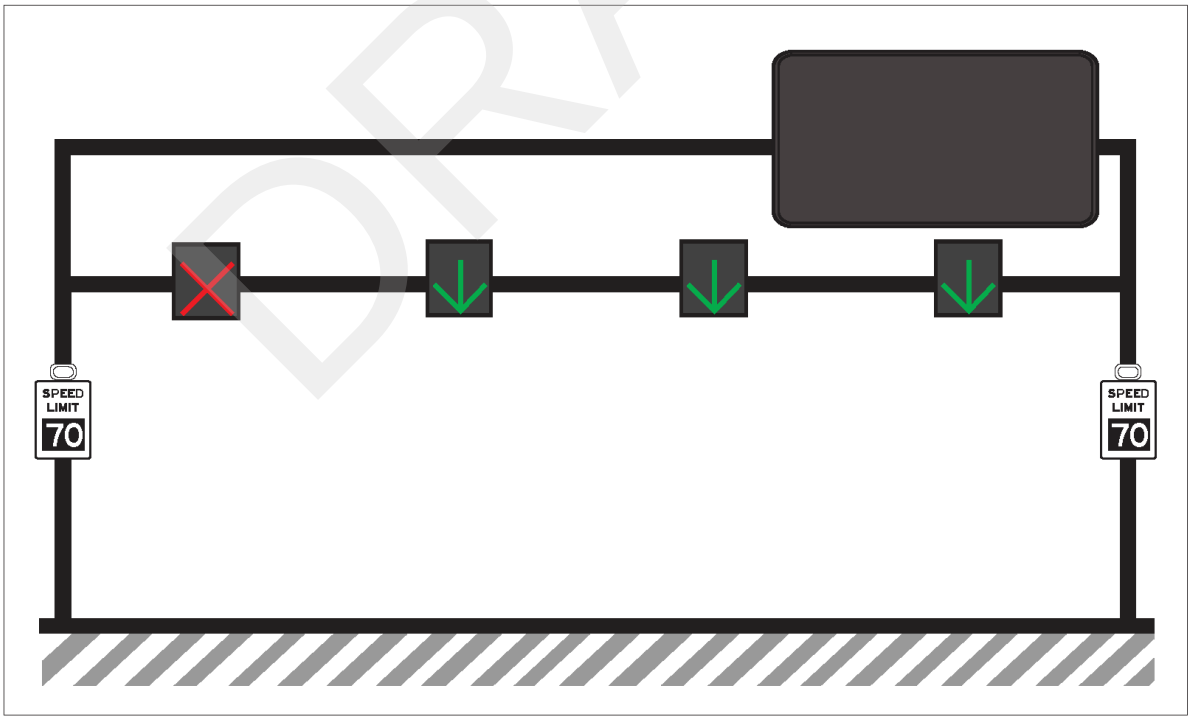

Figure 8: Example of Type 5 Sign Gantry with a Travel Time DMS

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1.5 Stakeholders

The SR 417 project includes the following stakeholders that are further described within Section 4 of this ConOps document:

- FDOT Central Office
- FDOT District 5 RTMC Traffic Incident Managers
- FDOT District 5 RTMC Operators
- CFX Operational Staff, including maintenance technicians and engineers
- Towing Companies
- Road Rangers / CFX Expressway Service Patrol
- Emergency Responders
- Law Enforcement, including Florida Highway Patrol (FHP) and local law enforcement
- Drivers along the SR 417 corridor

1.6 Referenced Documentation

The following documents were reviewed in the course of the development of this ConOps document and, where appropriate, referenced in this document:

- Hard Shoulder Running (HSR) Interstate 4 - Eastbound from Kirkman Road to World Drive, Westbound for SR 434 to Dirksen Drive. Concept of Operations. Submission 1. Prepared for Florida Department of Transportation. June 6, 2016. Available from: Jeremy Dilmore Jeremy.Dilmore@dot.state.fl.us
- Statewide Active Traffic Management Study. Concept of Operations. Revised Submission. Prepared for the Ohio Department of Transportation. March 15, 2017. Available from: John MacAdam John.MacAdam@dot.ohio.gov
- US 23 Active Traffic Management. Concept of Operations. Version 3. Prepared for Michigan Department of Transportation. April 2015. Available from: Stephanie Palmer PalmerS3@michigan.gov
- I-90 Smart Corridor Concept of Operations. Update. Prepared for Illinois Tollway. February 2017. Available from: Elyse Morgan emorgan@getipass.com
- I-76 ITS Enhancements. Concepts of Operations. Prepared for Pennsylvania Department of Transportation. Available from Pennsylvania Department of Transportation District 6-0 Traffic Unit
- Decision Support Framework and Parameters for Dynamic Part-Time Shoulder Use: Considerations for Opening Freeway Shoulders for Travel as a Traffic Management Strategy. Federal Highway Administration. November 2019. Available at: https://ops.fhwa.dot.gov/publications/fhwahop19029/index.htm
- *A Policy on Geometric Design of Highways and Streets, 7th Edition.* American Association of State Highway and Transportation Officials. 2018.
- Topic No. 750-010-002, Rule 14-15.012, F.A.C., Speed Zoning for Highways, Roads and Streets in Florida, FDOT. March 1997 (Revised: August 2018).
- NCHRP 03-123 Technical Memorandum for Task 2 - Summary of Effective Practices. NCHRP Project 03-123 Proposed Practices for the Application of Dynamic Lane Use

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Control. January 31, 2017. Available at http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP03-123_Task2TechMemo.pdf

2. Current System Situation

2.1 Background, Objectives, and Scope

SR 417 currently is a well-managed expressway with elements such as DMS for displaying travel times or other special messages, CCTV coverage monitored in a TMC, lane-by-lane speed and volume sensors, travel time system used to post messages on the DMS, Road Ranger expressway service patrols, and electronic toll collection. The existing system is further described in Section 2.3. While these elements are adequate for managing SR 417 in its current form, the widening project will require upgrades and replacement of some of this equipment due to the roadway changes occurring in the current median. Following widening and the introduction of PTSU, SR 417 will require additional ITS equipment such as lane control signals, incident management DMSs, variable speed limits, and TMC support for both.

2.2 Operational Constraints

The SR 417 facility experiences recurring congestion during the average weekday PM peak hour. An operational analysis of the existing conditions was conducted based on April 2019 volumes provided by CFX. The following summarizes the specific locations of congestion by direction and by time period.

2.2.1 Northbound SR 417 Operations

The following summarizes the existing northbound SR 417 operations including the existing speed contours in the weekday AM and PM peak hours as well as the travel times along the facility.

2.2.1.1 Speed Contours

During the AM peak hour, the northbound direction experiences speeds of 50 mph or greater throughout the facility. As shown in **Figure 9**, the northbound SR 417 facility is free of active bottlenecks during the average weekday AM peak hour.

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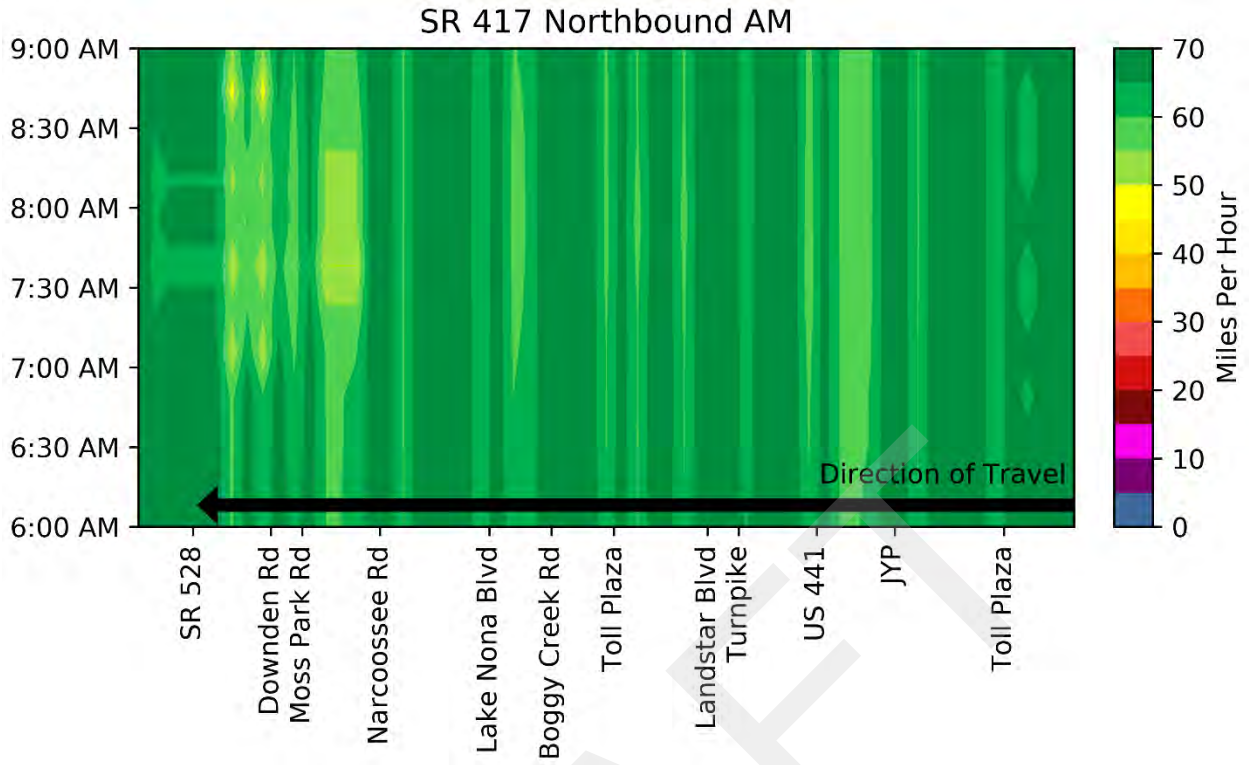

Figure 9: Northbound AM Speed Contours (Based on April 2019 data provided by CFX)

During the PM peak hour, the northbound direction experiences congestion near the US 441/Orange Blossom Trail interchange which results in slowdowns extending approximately 3 miles back to near the Toll Plaza east of International Drive. As illustrated in **Figure 10**, speeds drop due to less than 20 mph near the John Young Parkway interchange and to less than 15 mph near the Toll Plaza east of International Drive.

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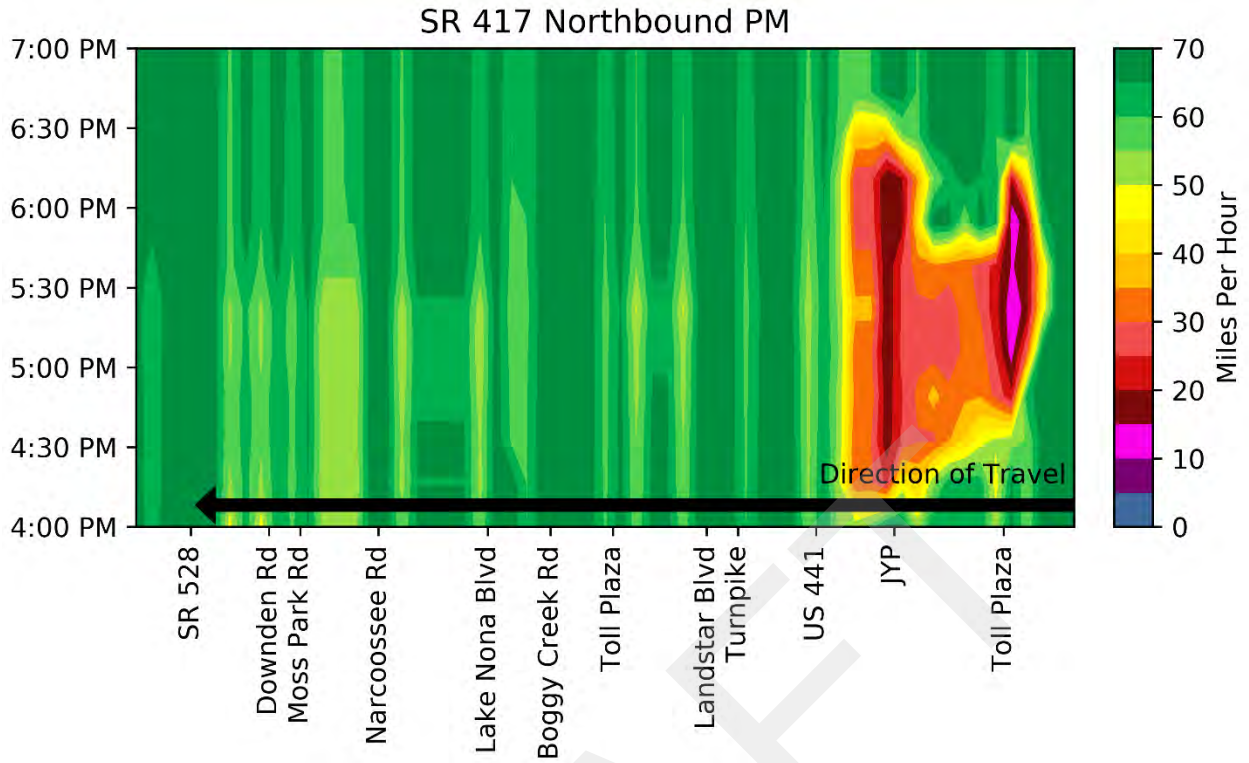

Figure 10: Northbound PM Speed Contours (Based on April 2019 data provided by CFX)

2.2.1.2 Travel Times

The northbound travel time throughout the day is shown in **Figure 11**. The northbound travel times show little fluctuation during the AM peak hours but show distinct PM peaking characteristics during the average weekday (Tuesday-Thursday) and on Fridays. The PM travel times during the weekday are approximately 50 percent higher than the free-flow travel time. The PM travel times during an average Friday peak slightly earlier than an average weekday (approximately 4 PM) and are approximately 60 percent higher than the free flow travel time.

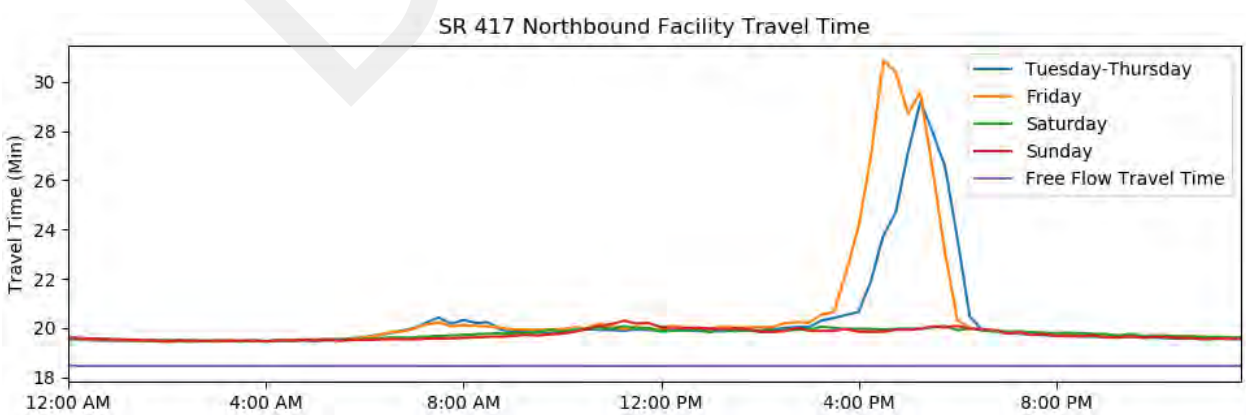

Figure 11: Northbound Travel Times (Based on April 2019 data provided by CFX)

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2.2.2 Southbound SR 417 Operations

The following summarizes the existing southbound SR 417 operations including the existing speed contours in the weekday AM and PM peak hours as well as the travel times along the facility.

2.2.2.1 Speed Contours

During the AM peak hour, the southbound direction experiences speeds of 50 mph or greater throughout the facility (like the northbound AM operations). As shown in **Figure 12**, the southbound SR 417 facility is free of active bottlenecks during the average weekday AM peak hour.

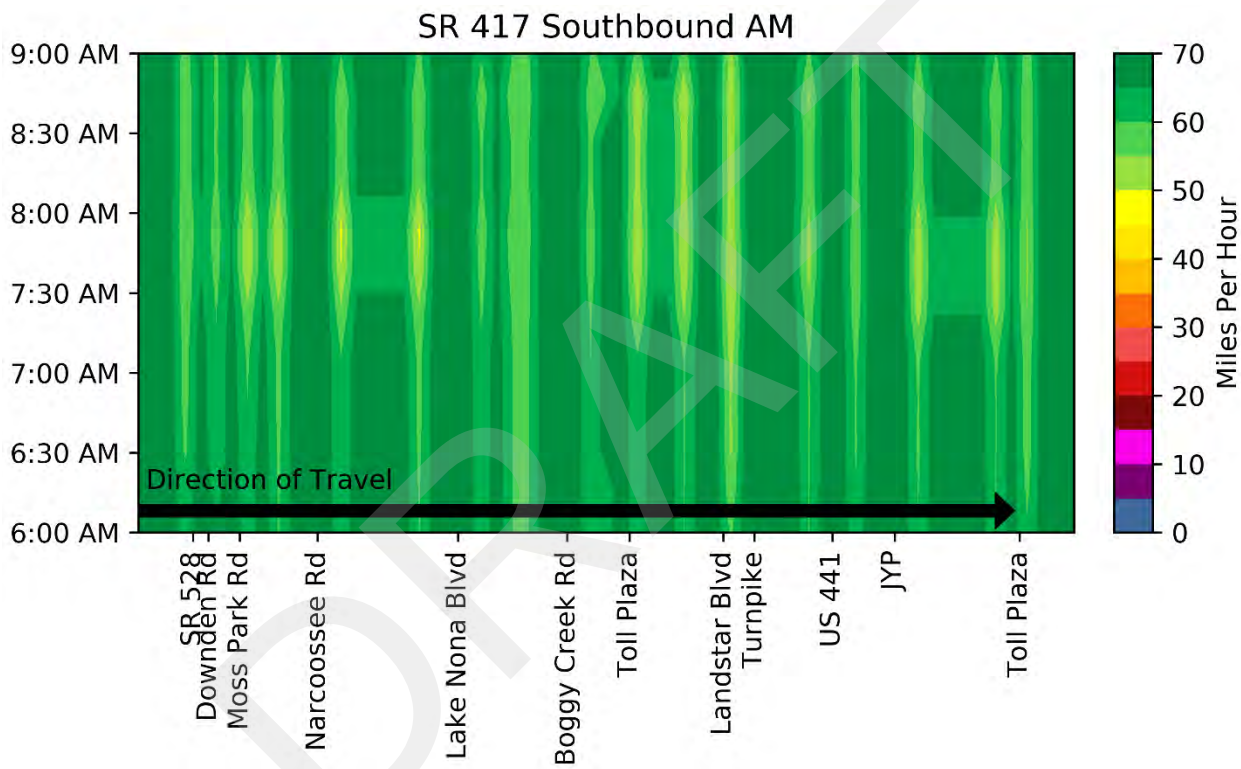

Figure 12: Southbound AM Speed Contours (Based on April 2019 data provided by CFX)

As illustrated in **Figure 13**, there are two active bottleneck locations which result in slowdowns along southbound SR 417 during the PM peak hour. There is an active bottleneck near the Narcoossee Road interchange which results in speed breakdowns of less than 30 mph back to the Moss Park Road interchange (approximately 1 mile). There is also an active bottleneck along SR 417 between the Landstar Boulevard off-ramp and the adjacent Toll Plaza on-ramp. This bottleneck results in speeds of less than 20 mph, spilling back approximately 1.5 miles.

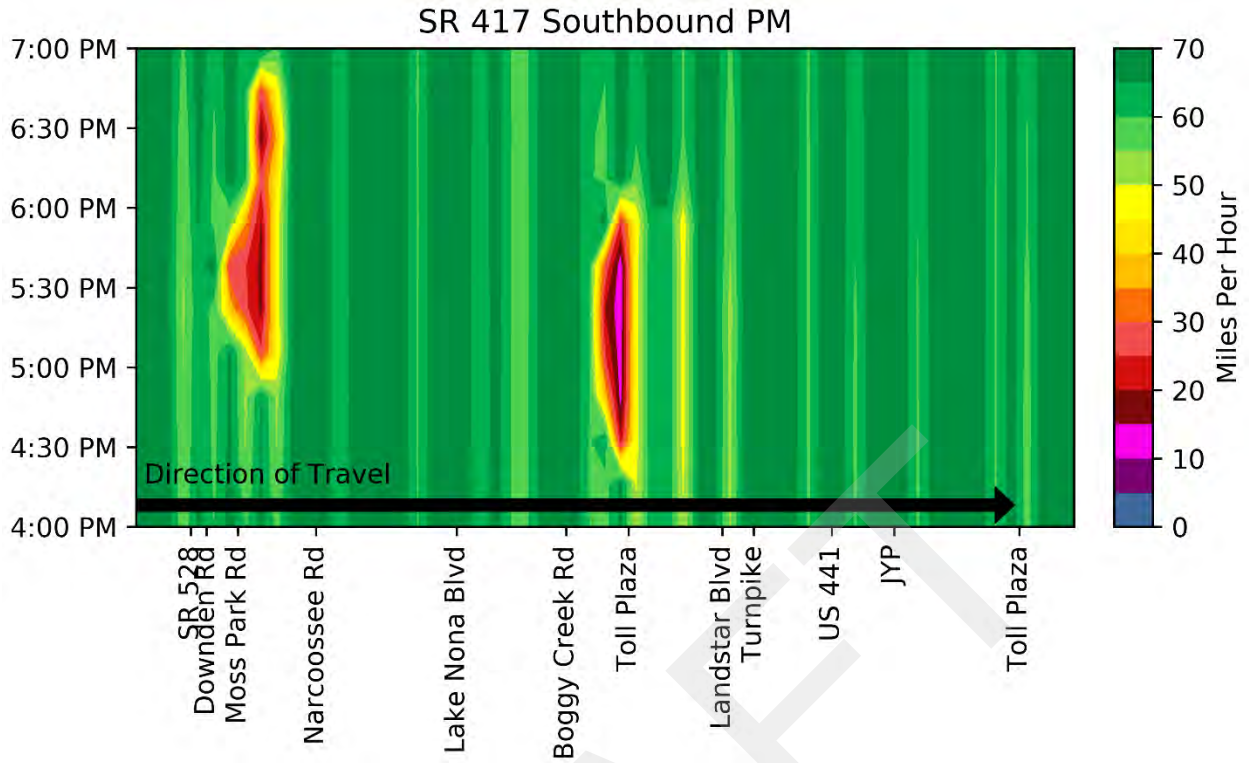

Figure 13: Southbound PM Speed Contours (Based on April 2019 data provided by CFX)

2.2.2.2 Travel Times

The southbound travel time throughout the day is shown in **Figure 14**. The southbound travel times show some peaking in AM peak hours but show more distinct PM peaking characteristics during the average weekday (Tuesday-Thursday) and on Fridays. The AM travel times during the average weekday are approximately 15 percent higher than the free flow travel time, while the PM travel times during the weekday are approximately 40 percent higher than the free-flow travel time. Like the northbound direction, the PM travel times during an average Friday peak slightly earlier than an average weekday (approximately 4 PM) and are approximately 30 percent higher than the free flow travel time.

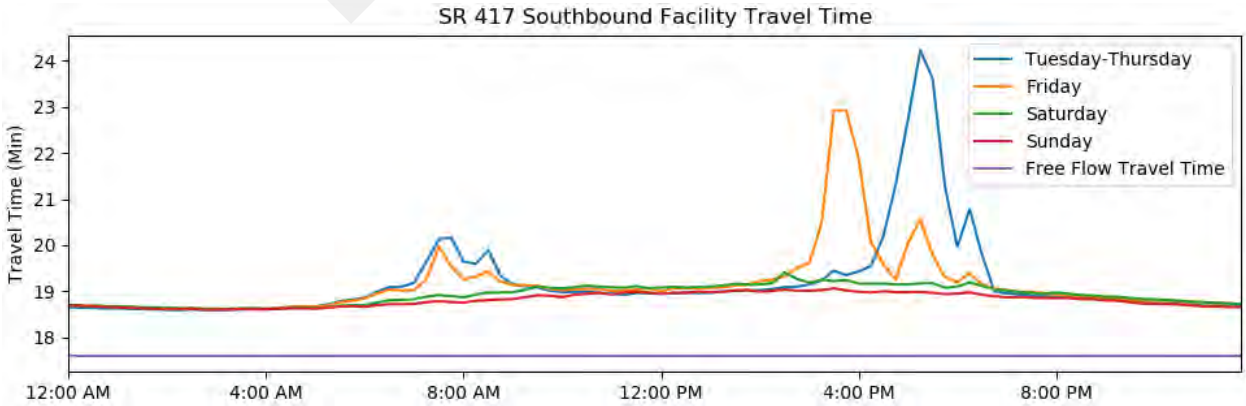

Figure 14: Southbound Facility Travel Times (Based on April 2019 data provided by CFX)

2.2.3 Incidents

CFX maintains a log of incidents on SR 417 requiring closure of lanes or the shoulder. This data is pulled from the SunGuide software system, maintained by the Florida Department of Transportation (FDOT). Data in 2019 was available from February to November and was reviewed and summarized in **Table 1.**

Table 1: SR 417 Incident Data (2019)

Incident Type	SR 417 Northbound			SR 417 Southbound		
	Average Per Month	% of Incidents	Average Duration (min)	Average Per Month	% of Incidents	Average Duration (min)
Shoulder Closure	133	92.6%	N/A	115	90.0%	N/A
One Lane Closure		4.0%	23		5.3%	15
Two Lane Closure		2.0%	54		0.0%	N/A
Three Lane Closure		0.0%	N/A		3.1%	53

More than 90% of incidents on SR 417 involve a blockage of the shoulder. The data does not specify which shoulder (right or left) was blocked. Lane closures occur approximately 18 times per month (9 times per direction). Closures of single lane last about 20 minutes on average, and closures of two or three lanes last longer (nearly an hour).

This data provides an indication of how often the PTSU system may be activated in the future, recognizing that higher exposure (traffic volume) in future years creates the potential for a higher number of incidents.

2.2.4 Existing Operational Summary

The existing facility does not experience average weekday congestion during the AM peak hour in either direction. However, the facility experiences congestion during the PM peak hour in both directions. Travelers can experience 40 to 50 percent increases in travel time along the facility during the average weekday PM peak period. As traffic continues to grow, the congestion drivers experience along the facility will continue to worsen. This has driven the need to widen the facility and incorporate the PTSU system to provide CFX with a future option to manage recurring congestion should traffic volumes reach their projected levels.

2.3 Description of the Current Traffic Management and ITS System

CFX has implemented many ITS devices along SR 417 and throughout the rest of their roadway network. These devices are owned and maintained by CFX, but operated from the FDOT District 5 RTMC in Sanford, Florida. CFX has a longstanding agreement with FDOT District 5 through which FDOT staff and consultants manage CFX facilities, including SR 417.

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The following is a general description of the ITS elements that are currently deployed on their system:

- Dynamic Message Signs (DMS) – electronic, overhead or roadside signs that inform motorists of current traffic conditions, including travel times, and display response plan messages and toll messages. Systemwide, CFX has 57 3-Line DMSs spaced at major interchanges throughout the system and 52 Two Line Toll DMS (TDMSs) located at the approach of each mainline toll plaza building.
- Portable Dynamic Message Signs (PDMS) – smaller, mobile message signs often used for work zones or near incident sites
- Data Collection Sensors (DCSs) and Traffic Monitoring Sensors (TMSs) – DCS are placed at every exit point and 3-Line DMS to provide updated travel time information. TMS devices are placed at every ingress point, egress point and split ramp on the system to detect every movement. Existing DCSs and TMSs will be sufficient for PTSU. TMSs are also known as microwave vehicle detection systems (MVDSs) and are a non-intrusive traffic detection technology that detects the presence of vehicles and records their volume, speed, and characteristics. Travel time information displayed on DMSs is collected through the DCS devices and filtered through CFX's data server to post travel time messages on the DMS located throughout the system. Incident Management messages are generated by District 5 RTMC staff.
- Closed Circuit Television (CCTV) Cameras – closed-circuit television used to visually monitor roadway conditions and detect incidents (manually through human observation of videos). CCTVs are placed approximately every mile and are spaced to provide full coverage of the existing roadway network
- Emergency Service Patrols (Road Rangers) – CFX provides vehicles dedicated to assisting disabled vehicles, detecting congestion, and responding to incidents, from 6:00 a.m. to 10:00 p.m., 365 days a year.
- Electronic Toll Collection – known as E-PASS, the Authority's electronic toll collection system uses in-vehicle transponders with roadside and overhead gantry readers to automatically deduct tolls from instrumented vehicles. The E-PASS technology is also compatible with FDOT's SunPass.
- Wrong Way Driver Systems – these are currently deployed at 38 off-ramp locations systemwide and will be expanded as part of the on-going widening projects as well as a standalone WWD project.
- Fiber Optic Communication – existing fiber optic communication system along SR 417 provides high capacity connection to all existing ITS devices with capacity to expand the number and type of devices. This system connects the devices to CFX Headquarters and the District 5 RTMC.

CFX uses the statewide SunGuide software to operate the current infrastructure 24/7/365 from the FDOT District 5 RTMC. Additionally, CFX staff uses SunGuide to view cameras and post messages to the DMS as necessary. CFX also owns and operates the CFX Data Server software which creates travel times and sends travel time messages to DMS signs in an automated fashion. Consulting staff pulls data from SunGuide for traffic reviews.

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In addition to CFX's ITS infrastructure, FDOT District 5 has many roadside devices in the vicinity of SR 417 which are tied into the RTMC. The FDOT Freeway Management System (FMS) was developed as an ITS initiative and is the hardware and software infrastructure through which the RTMC monitors the roadway network in District 5. The FDOT's SunGuide FMS uses CCTV cameras and traffic sensors to gather traffic data, analyze the data, and disseminate output to the RTMC, its users, and the public. Computer-Aided Dispatch (CAD) is integrated to add user-provided traffic data and initiate traffic incident response.

2.4 User Class Profiles

FDOT District 5 currently maintains a number of traffic management system tools which focus on roadway monitoring and incident management, including existing vehicle detection, CCTV cameras at selected locations, dynamic message signs and highway advisory radio that warn of upcoming congestion and incidents. The RTMC has developed an Incident Management Plan and CFX uses this plan with support from the RTMC.

CFX's incident management plan is shown in **Figure 15**. Following the detection of an incident, the following stakeholders are notified:

- Wrecker service – to remove damaged vehicles
- FHP/Emergency Responders – to control the accident scene
- Road Rangers – for initial traffic control, supporting/assisting others, and communicating back to RTMC
- Asset Maintenance Contractor – to assess damage and provide MOT as required
- CFX Traffic Operations (if a major incident)
- CFX Central Office Incident Notification (COIN) Distribution List (if a major incident)

Additional activities occur if there is infrastructure damage or if the incident occurred in an active construction zone.

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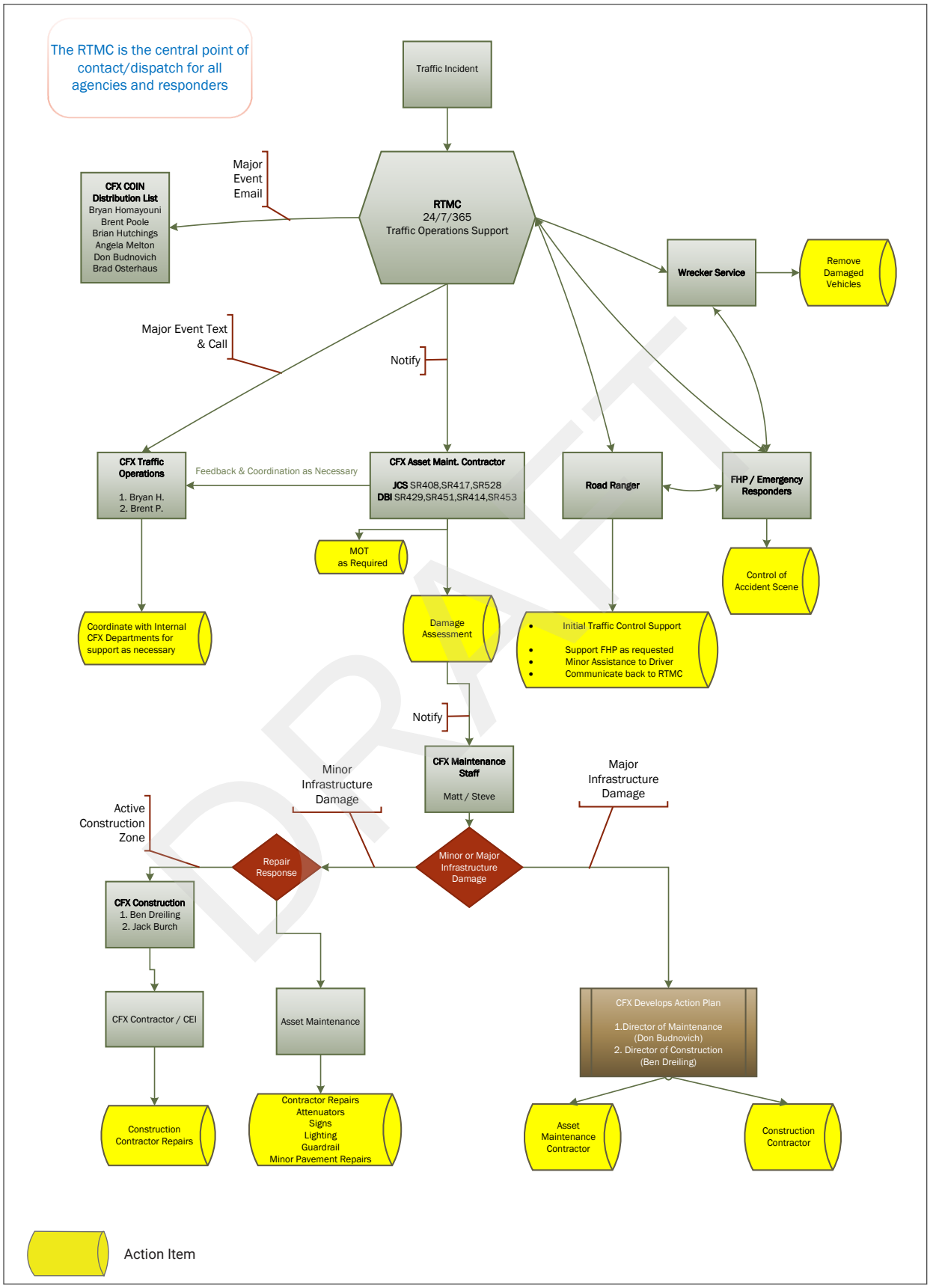

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Traffic Incident Plan

Figure 15

2.5 Support Environment

CFX has an ITS maintenance contract that maintains the existing ITS infrastructure (devices & layer 2 network equipment) and a fiber optic network maintenance contract that maintains the fiber optic network and layer 3 network equipment. In terms of operation, all CFX devices are routed to CFX Headquarters which has a center to center connection with the FDOT District 5 RTMC who provides operational support.

3. Change Justification

Tremendous growth is occurring in Central Florida. Recurring congestion is present on portions of SR 417 today, and additional capacity is needed to serve current and future demands. The addition of one lane in each direction will provide sufficient capacity in the near-term but not in the long-term, and the addition of two lanes in each direction would be complex and expensive to construct because it would require outward widening. As a result, CFX has chosen to widen SR 417 inward using the existing grass median and the proposed typical sections has three general purpose lanes in each direction and a wide left shoulder, part of which is used for PTSU. Other active traffic management (ATM) treatments are being added as well. The changes and their justification are described further in the sections below.

3.1 Justification for Changes

As described in Section 2.2, both directions of SR 417 experience LOS F operations in the average weekday PM peak today and future traffic projections show additional capacity in both directions will be needed in the future. As a result, CFX is undertaking a widening project to transform SR 417 from a 4-lane expressway to a 6-lane expressway by building inward and utilizing the existing grass median. However, a 6-lane SR 417 is not anticipated to serve peak period demand on a recurring basis beyond 2035 and may not serve peak period demand in earlier years. At that time, an 8-lane configuration would be required to meet peak period demand. However, a future 8-lane widening of SR 417 is expensive and would take longer than the 6-lane widening due to the need to widen outward from the current roadway footprint. The current cross-section of SR 417 does not permit 8 lanes with a left shoulder sufficiently wide enough to store disabled vehicles. Additionally, one incident on SR 417 causes severe congestion and improved mitigation of incidents will improve travel time reliability.

To alleviate the need for outward widening and to alleviate the need to widen SR 417 twice in a relatively short timeframe, PTSU will be used to provide additional capacity during peak hours and maintain a shoulder wide enough to store disabled vehicles during most hours of the day. The PTSU system will be able to provide improved traffic flow under both recurring and nonrecurring congestion scenarios.

Several projects in the area will impact regional travel patterns and are expected to have a significant effect on future SR 417 volumes. A new interchange is currently under construction connecting Florida's Turnpike with SR 417. In addition, there are current plans to build the Osceola Parkway Extension (OPE). The OPE is expected to be built between Boggy Creek Road and Osceola Parkway, extending to the proposed Northeast Connector Expressway. The proposed

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improvements include a new interchange with ramps connecting SR 417 and the extension near the Boggy Creek Road interchange.

The Orlando International Airport (MCO) is continuing to build a new terminal to the south and it is anticipated that more traffic may be diverted to SR 417 to connect to the regional facilities (I-4, SR 417, and SR 528, etc.).

In addition, FDOT will also be widening I-4 to an ultimate 10-lane section past SR 417, further increasing volumes on I-4. All these regional projects will require additional capacity on SR 417.

CFX staff has determined that PTSU is the preferred option for future capacity improvements and should be used for improved incident management in the near-term. The CFX Board was briefed on this decision and had no objections during the March 2020 board meeting.

3.2 User Needs

Table 2 summarizes user needs defined for the project by the stakeholders that have been identified for the project.

Table 2: User Needs

User Need ID	User	Need
UN001	FDOT Central Office	Provide clear and consistent messages to drivers
UN002	FDOT District 5 RTMC Traffic Incident Managers	Increase Safety of Vehicle Travel on Corridor
UN003	FDOT District 5 RTMC Operators	Increase Vehicle Throughput on Corridor
UN004	CFX Operational Staff	Decrease Amount of Vehicle Delay on Corridor, Increase Safety of Vehicle Travel on Corridor
UN005	Towing Companies	Decrease Amount of Vehicle Delay on Corridor
UN006	Road Rangers / CFX Expressway Service Patrol	Decrease Amount of Vehicle Delay on Corridor
UN007	Emergency Responders	Increase Safety of Vehicle Travel on Corridor
UN008	Law Enforcement	Increase Safety of Vehicle Travel on Corridor
UN009	Drivers	Decrease Average Travel Time on Corridor

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4. Concepts for the Proposed System

This section describes how the PTSU system will operate and the roles of various users.

4.1 Background, Objectives, and Scope

PTSU for mixed traffic (all vehicles) is proposed on the left shoulder of both directions of SR 417 from International Drive to SR 528 in conjunction with a construction project that will add an additional general-purpose lane in each direction. The primary objective of the project is to provide peak period congestion relief in future years when traffic volumes are expected to increase. A second objective is to improve incident management through the use of general-purpose lane closures when incidents are present and, in some cases, offset the loss of general-purpose lane capacity by opening the shoulder. The PTSU system will include the following components:

- A shoulder used for part-time travel
- Lane control signals above all lanes and the left shoulder
- Variable speed limit signs
- Incident Management dynamic message signs
- Closed-circuit TV cameras
- Traffic Monitoring Sensors

PTSU will also involve changes in operating procedures for RTMC staff, law enforcement, emergency responders, Road Rangers, and CFX maintenance staff described in Section 4.5.

4.2 Operational Policies and Constraints

CFX will need to address certain institutional and jurisdictional issues in collaboration with regional transportation agencies and facility stakeholders. These institutional issues need to be resolved by developing common policies and approaches to the challenges that arise. Partnering agreements should be incrementally developed during the design phase to document consensus among the parties on issues related to organization; operational concepts; and specific roles and responsibilities for each partner.

The PTSU system will be operated from the FDOT District 5 RTMC, and law enforcement activities will be handled by the Florida Highway Patrol (FHP) and local law enforcement agencies. Incidents will be handled by local fire departments and Road Rangers depending on the severity of the incident. Removal of disabled vehicles will be handled by towing firms contracted with CFX.

Initial discussions between CFX, District 5, and FHP have been held as part of the development of this ConOps document and preliminary roles and responsibilities are documented in Sections 4.4 and 4.5. Ultimately, agreements between key stakeholders should be documented in memorandums of understanding (MOUs) or similar documents prior to the opening of the PTSU system. An MOU can be updated as additional details of the PTSU system are developed in the design phase and experience is gained following the opening of the system to traffic.

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4.3 Description of the Proposed System

The following elements will be implemented on SR 417 as part of the PTSU project and are changes necessary from the existing system:

- Dynamic Part Time Shoulder Use (D-PTSU) enables use of the left shoulders as travel lanes on flexible basis in response to incidents or traffic conditions. Core hours of PTSU operation will be established and, aside from incidents, deviations from these hours will be planned in advance and communicated to stakeholders.
- Lane Control Signals provide status information about individual traffic lanes (and the shoulder) at regular intervals and directs drivers to open lanes. General purpose lanes can be closed if they are blocked.
- Variable Speed Limits will decrease the speed limit when the shoulder is open or when there is an incident. Specific speed reductions are described in Section 4.3.3.
- Increased fiber optic network capacity will connect these devices to the RTMC. An additional 72 SM fiber is being installed on both sides of SR 417.

The following sections provide additional information on these treatments.

4.3.1 Dynamic Part-time Shoulder Use

Part-time shoulder use (PTSU), also known as hard shoulder running, is typically used to address recurring congestion by adding temporary capacity during peak periods to the peak direction of travel. Dynamic PTSU, or D-PTSU, has variable hours of operation that are controlled by facility operators in real time and the shoulder can be opened for recurring congestion, nonrecurring congestion, or incident management (i.e. diverting traffic around incidents). The shoulder can also be rapidly closed if it becomes blocked. The open/closed status of the shoulder is communicated to drivers with overhead lane control signals. There are no static signs displaying the hours of operation because they may vary.

The degree to which D-PTSU facilities are “dynamic” varies greatly, and one key factor influencing this is the degree to which stakeholders have experience with PTSU or, more broadly, Active Traffic Management (ATM). The addition of PTSU on SR 417 is atypical because it is accompanied by the addition of a general-purpose lane and will not be immediately used for congestion relief when the facility opens. PTSU will initially be used for incident management – Level 2A as described in **Table 3** - and later for both incident management and congestion relief.

Since PTSU will be new to Florida, routine PTSU operation on SR 417 for congestion-related purposes should begin at Level 2B, as described in **Table 3**. CFX should establish, but not post in the field, core hours of operation for the SR 417 shoulder to be open. Aside from incident situations, deviations from these hours should be planned in advance by RTMC staff and communicated to law enforcement, emergency responders, and CFX maintenance forces. Reasons for opening the shoulder outside of core hours of operation include planned special events or extended hours during peak season. As time goes on and stakeholders in Central Florida become more accustomed to PTSU, CFX may transition to Level 3 or Level 4 operation.

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Table 3: Levels of Part Time Shoulder Use (Adapted from FHWA Decision Support Framework and Parameters for Dynamic Part-Time Shoulder Use)

Level	Title	Description
0	No part-time shoulder use (PTSU)	Shoulder is never opened to traffic.
1	Static PTSU	Shoulder is only opened to traffic at predictable, fixed hours of day and days of week.
2A	Dynamic PTSU for incident management	No planned openings or congestion-related openings, but the shoulder is opened for incidents.
2B	Dynamic PTSU with core hours and scheduled variation	Shoulder is opened to traffic during recurring "core" hours and days of the week and may also be opened outside of those core hours in a scheduled, pre-determined manner for special events or seasonal variations.
3	Dynamic PTSU with core hours and unscheduled variation	Shoulder is opened to traffic during recurring "core" hours and days of the week and may also be opened outside of those core hours in response to real-time or anticipated traffic conditions.
4	Fully Dynamic PTSU	Shoulder is opened and closed purely in response to or in anticipation of factors such as traffic congestion, demand surges, events, incidents, weather, maintenance needs, incident management needs, or enforcement needs. There are no "core" hours and days of the week when the shoulder is always opened regardless of traffic conditions.

The levels presented in **Table 3** are intended to capture the potential range of PTSU operational practices. Levels 2A and 2B represent the lowest levels of “dynamic” operation. Level 2A requires a high degree of activity management from a TMC to detect and respond to incidents, but drivers rarely observe PTSU and TMC activities such as monitoring traffic conditions (speed, volume, etc.) and predicting when it is necessary to open the shoulder to avoid congestion is not necessary. Level 2B requires the establishment of processes and protocols for routinely opening the shoulder, but it does not require TMC activities such as monitoring traffic conditions (speed, volume, etc.) and predicting when it is necessary to open the shoulder to avoid congestion.

Levels 3 and 4 involve a high degree of traffic monitoring and prediction at a TMC. On facilities with a high degree of congestion year-round, Level 3 and Level 4 operation may be indistinguishable to routine drivers because the shoulder will nearly always be open at certain times on certain days of the week. There are no US facilities best characterized as Level 4 for general purpose traffic at this time, but some European facilities operate in this manner.

D-PTSU can be implemented with LCSs over all lanes or just the shoulder. Placement of LCSs over all lanes requires a higher degree of TMC management because of the potential to close general purpose lanes in response to incidents.

The degree to which PTSU facilities are “dynamic” is a continuum, and it is possible for a facility to have characteristics of multiple levels. The level of current and recently-removed D-PTSU facilities in the United States (US) is best characterized as follows:

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- US 23, Michigan – This facility is opened during weekday peak periods and on Saturdays when the University of Michigan has home football games. This is best characterized as a Level 2B facility that is transitioning to Level 3.
- I-670, Ohio – This facility opened in Fall 2019 as a Level 2B facility. The TMC has the capability to transition to a higher level, and the current level is unknown.
- I-90 (Illinois Tollway), Illinois – This facility was primarily implemented for incident management purposes. The shoulder is opened to general purpose traffic due to incidents or construction/maintenance projects that close general purpose lanes. This is best characterized as a Level 2A facility. The left shoulder is routinely open to buses in response to congestion, and this facility is effectively a Level 4 facility for buses. This is also the only bus-on-shoulder facility in the US that uses a dynamic sign to indicate when buses are permitted to use the shoulder; on other facilities the driver determines if is usage criteria (such as low travel speeds) are being met.
- I-70, Colorado – This facility was built to serve recreational traffic returning to Denver from the mountains. It was initially opened on weekends and holidays in the winter and summer, and is now opened on weekends and holidays year-round. Opening is planned in advance, but there is greater variation in the closure time than most PTSU facilities due to the greater variability in recreational traffic. This is best characterized as a Level 3 facility.
- I-85, Georgia – This facility is an auxiliary lane between 2 interchanges approximately one mile apart. It was initially opened during fixed hours in the PM peak period on weekdays (Level 1), but these hours are now adjusted in response to traffic conditions. This is best characterized as a Level 3 facility.
- I-66, Virginia – This facility opened as a Level 1 facility in 1992, but was converted to D-PTSU in 2015. The conversion enabled the shoulder to be open in the off-peak direction during peak periods and on weekends if traffic conditions justified it. After 2015 this was best characterized as a Level 3 facility. PTSU was removed in 2018 as part of a major widening project.
- I-35W, Minnesota – PTSU was initially opened in peak periods on weekdays. In later years PTSU was opened before the AM peak and remained open until after the PM peak on weekdays and was also open during daytime hours on weekends as well because traffic levels routinely required the shoulder to be open to prevent congestion. Over its entire life, this was best characterized as a Level 3 facility. PTSU was removed in 2018 as part of a major widening project
- I-405, Washington – PTSU is opened in the PM peak period on weekdays. On Fridays and on Thursdays during the summer, the peak occurs earlier, and the shoulder opens earlier. This is best characterized as a Level 2B facility.

Many of these facilities have opened within the past 5 years, and operating practices are rapidly evolving as agencies gain experience with PTSU.

On SR 417, the left shoulder will be 19 feet wide. The shoulder will be separated from the leftmost general-purpose lane by a solid yellow stripe, like a typical shoulder. A second solid yellow stripe will be 12 feet beyond the first stripe. This will separate the portion of the shoulder used for part-time travel (i.e. the “shoulder lane”) from the permanent shoulder (i.e. the “shoulder beyond the shoulder lane”). This is consistent with left-side PTSU facilities in other states.

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4.3.2 Dynamic Lane Use Control

Lane control signals (LCS) will be located over each lane and the left shoulder. This enables the RTMC to dynamically close or open individual traffic lanes or the shoulder as warranted and provide advance warning of the closure(s) to safely merge traffic into adjoining lanes. Closures of general-purpose lanes are typically done in response to incidents blocking the lanes and are intended to inform drivers of downstream conditions and reduce secondary crashes. The corridor will need to be continuously monitored to enable lane closures in real time.

Chapter 4M of the Manual on Uniform Traffic Control Devices (MUTCD) covers lane control signals. The following meanings of indications applicable to expressways are provided:

- Downward green arrow – road users are permitted to drive in the lane
- Yellow X – road users should prepare to vacate the lane
- Red X – road users are not permitted to use the lane

At this time, SR 417 LCSs are planned to use these indications, with supplemental text messages above them in some cases as described in Section 5. PTSU systems in other states have employed different signing concepts. CFX will continue to re-evaluate these alternate approaches as more data is available, more facilities open, and the MUTCD evolves. The system will be set up to allow for flexibility in this regard by using small DMSs instead of older-style blank-out LCSs with fixed number of display possibilities. **Table 4** summarizes a review of lane control signal sizes on recent PTSU installations in the US.

Table 4: Lane Control Signal Sizes Summary

State	Facility	Years Open	Lane Control Signal	
			Used For	Approximate Size
Washington	I-405	2017-present	Shoulder	5’ by 5’
Michigan	US 23	2017-present	All Lanes	6’8” high by 5’4” wide
Ohio	I-670	2019-present	All Lanes	Individual lane control signals not used. DMSs displaying lane status and other messages are 10’ high and 13’ to 60’ wide
Colorado	I-70	2015-present	Shoulder	4’ by 4’
Virginia	I-495	2015-present	Shoulder	4’ by 4’
Virginia	I-66	2015-2018*	All Lanes	4’ by 4’

* Lane control signals installed for all lanes in 2015 replaced lane control signals for shoulder only installed in 1992.

The sizes in the examples listed in **Table 4** do not necessarily refer to the “signal face” dimension used in Chapter 4M of the MUTCD. Some dimensions may be for the entire lane control signal hardware unit and include the housing surrounding the signal face. SR 417 will use LCSs with a nominal dimension of 6’ high and 5’ wide. The rectangular shape will permit a text message above the arrow or X symbol.

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LCSs will be located on gantry structures installed specifically for the PTSU project. Each gantry will have lane control signals overhead and variable speed limit signs with an embedded DMS for speed limit displays on both supporting poles. Each gantry will have a dedicated cabinet and controller. Gantries are distinguished from one another as follows:

- Type 1 – a static sign over the right shoulder providing the meaning of green arrow, yellow X, and red X displays.
- Type 2 – a small, incident management DMS over the right shoulder
- Type 3 – has only lane control signals and no other supplemental signs
- Type 4 – a static guide sign above the lane control signals.
- Type 5 – a large, travel time DMS above the lane control signals

Chapter 1 presented conceptual drawings of these five types of gantries. Type 3 gantries are proposed for use on SR 417 but were not for SR 429.

A conceptual signing plan for SR 417 was developed in fall 2019. The following principles were used when developing this plan:

- Gantries should be placed approximately every half mile, consistent with other Dynamic PTSU facilities in the US
- Overhead sign structures (LCS gantries or static sign structures) should be a minimum of 800' apart
- Guide signs planned following the widening of SR 417 should generally remain in place or have slight location adjustments but not be eliminated.
- No more than one static guide sign or one large travel time DMS should be placed on a LCS gantry
- When possible, LCS gantries should alternate between Type 1 and Type 2. However, the need for Type 4 gantries often eliminates this possibility
- Type 1 gantries should be located downstream of system interchange on-ramps such as those from Florida's Turnpike

Figure 16 displays the location of LCS gantries proposed for SR 417, as well as several variable speed limit signs that are not part of LCS gantries (see section 4.3.3). The conceptual signing plans have greater detail. In addition to dynamic signs, the conceptual signing plan includes several static signs used upstream and downstream of PTSU.

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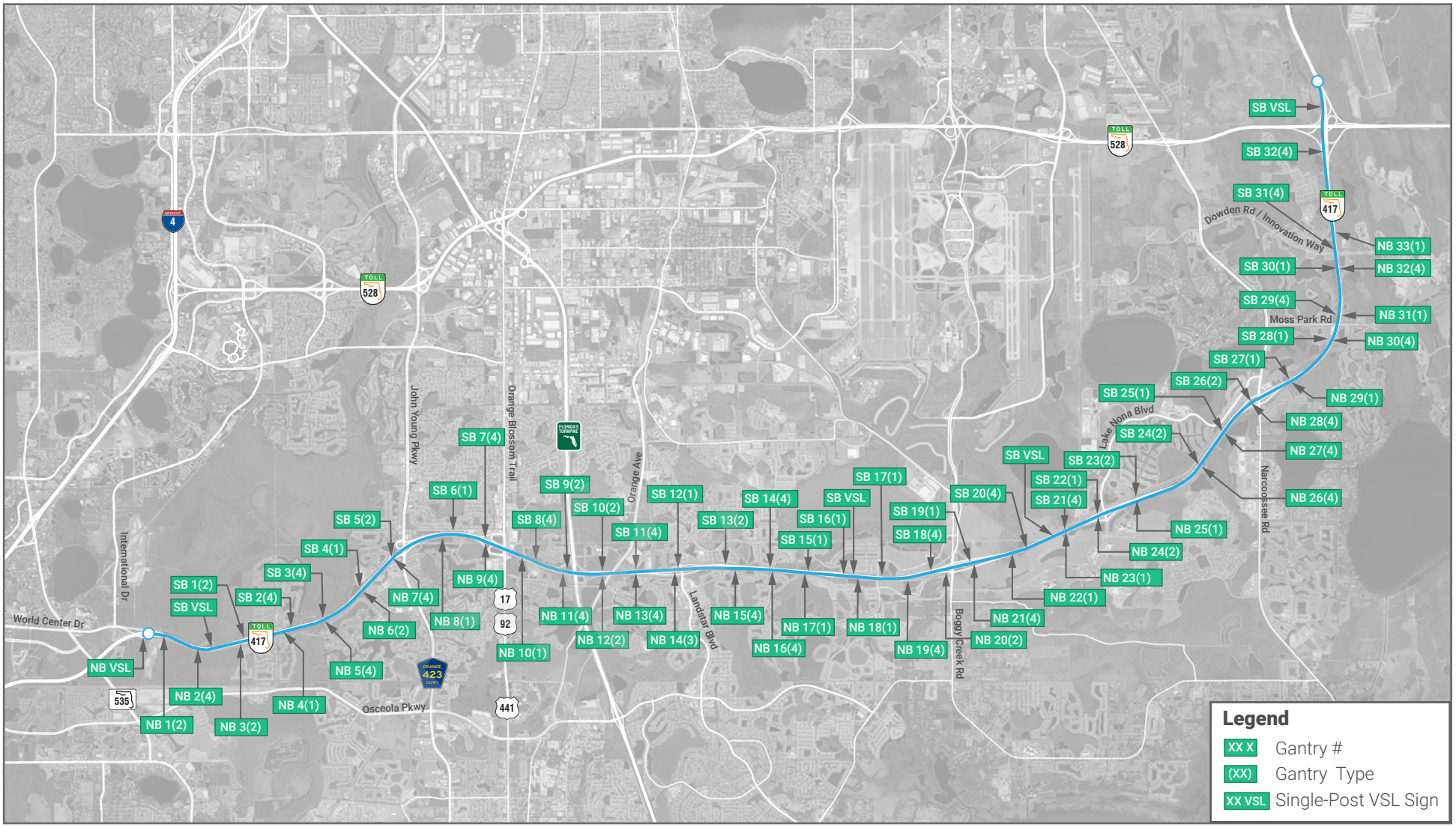

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SR 417 Part-Time Shoulder Use

Gantry Type and Location

Figure 16

4.3.3 Variable Speed Limits

Variable speed limits will be used on SR 417 to address stopping sight distance issues and slow traffic in the vicinity of incidents. As depicted in Section 1, each gantry will have a speed limit sign on both supports (i.e. on the left side and the right side of the road). As previously shown in **Figure 16**, several additional VSL signs will be post-mounted at locations where no gantry is present or be mounted on non-gantry structures.

VSL signs will have an embedded dynamic panel to display the (variable) speed limit numerals with a static regulatory sign. Each VSL sign will include a yellow beacon located above the sign; the beacon will be in dark mode when the speed limit is 70 MPH and flashing yellow mode when the speed limit is reduced below 70 MPH. Lane control signals will continue to display arrow and X indications when variable speed limits are in effect. Each VSL sign will be visible from a CCTV camera so RTMC staff can confirm what is being displayed on it. RTMC software will automatically maintain a log of the speed displayed on each VSL sign with 1-minute resolution.

When the shoulder is open for congestion-related purposes, the speed limit will be reduced to 55 MPH in 5 MPH increments as described in subsequent sections. When there is an incident, the speed limit will be reduced to 60 MPH or 50 MPH in 5 MPH increments, as described in subsequent sections. Under no circumstances will the speed limit be reduced below 50 MPH. All VSL signs will be turned on and display a speed limit – the "normal" 70 MPH speed limit or a reduced speed limit – at all times (unless there is a loss of power or other failure event).

Some PTSU facilities have used variable speed limits for all lanes, including US 23 in Michigan, I-670 in Ohio, the 2015 upgrade of I-66 in Virginia, and I-35W in Minnesota. Use of variable speed limits has traditionally been intended to slow traffic prior to an incident or downstream queue rather than mitigate deficient design criteria. In these cases, the speed limit varies if certain traffic conditions are present and not by default when the shoulder is opened. Use of variable speed limits for these purposes is partially based on positive European experiences with PTSU and other active traffic management strategies in the 1990s. In the US, I-670 in Ohio and US 23 in Michigan always reduce the speed limit when the shoulder is open to traffic. These are left-side PTSU facilities and have SSD issues similar to SR 417.

4.3.3.1 Florida Regulations

Use of variable speeds in Florida is covered by FDOT manual *Topic No. 750-010-002, Rule 14-15.012, F.A.C., Speed Zoning for Highways, Roads and Streets in Florida, March 1997 (Revised: August 2018)*. This is codified under Florida Administrative Code and referenced in the Florida Design Manual, 2020. Section 10.1 of *Speed Zoning for Highways, Roads and Streets in Florida* indicates the following relevant to SR 417:

- VSL is permitted in Florida for multiple reasons, including to alleviate "non-ideal" roadway conditions
- "VSL systems shall not be implemented without adequate speed enforcement. A record shall be maintained on the day, hour, and minute a VSL change is made…"

- "FDOT mandates any automated system capable of adjusting or displaying posted speed limits on electronic signs require a human operator to review and accept system-generated speed limits prior to posting them on roadside signs"
- "…under no circumstances shall the reduced posted speed limit be more than 20 mph below the unconditioned maximum posted speed limit"
- A yellow beacon on the speed limit sign shall flash when speed limit is reduced

The FDOT manual also describes an operating procedure in which speed limits are reduced in 5 MPH increments. CFX has chosen to use this method to reduce speed on SR 417. Reduce Speed Ahead signs will not be used.

4.3.3.2 Curve Applications

Per the 2018 American Association of State Highway and Transportation (AASHTO) Green Book, "a driver's ability see ahead is needed for safe and efficient operation of a vehicle on a highway", and the sight distances needed for stopping are "applicable to all roads and streets." Stopping sight distance (SSD) is a function of a driver's break reaction time and braking distance. On level terrain with a 70 MPH design speed (the posted speed limit on SR 417), the design value of SSD is 730 feet per Table 3-1 of the 2018 AASHTO Green Book.

SSD is usually limited by crest vertical curves or roadside obstructions on sections with horizonal curvature. On SR 417, the proposed concrete median barrier will limit SSD, with the leftmost lane on left hand curve sections being the critical locations for SSD. Full-time lanes on SR 417 are being designed for 70 MPH SSD, but traffic travelling on the shoulder – when it is open – will be 12 feet closer to the median barrier and 70 MPH SSD will not be available at some curves. **Figure 17** depicts this situation, and **Figure 18** shows the curves on SR 417 where 70 MPH SSD is not available for the shoulder lane. On SR 417 this will be mitigated through the use of VSL that will reduce the speed limit.

On SR 417, there are two curves in the northbound direction and three curves in the southbound direction that do not have 70 MPH SSD when the shoulder is open. The speed limit will be reduced to 55 MPH corridor-wide when the shoulder is open for congestion-related purposes. However, there will be distances of approximately 5 to 10 miles between curves. These distances create the potential for the speed limit to be increased between curves. In the future, as CFX gains experience with PTSU operation and Central Florida drivers become accustomed to it, VSL practices could be modified so that reduced speeds are only used in the vicinity of curves without 70 MPH SSD. CFX will have the opportunity to assess such a change in the early years of PTSU operation when it is primarily used for incident management purposes.

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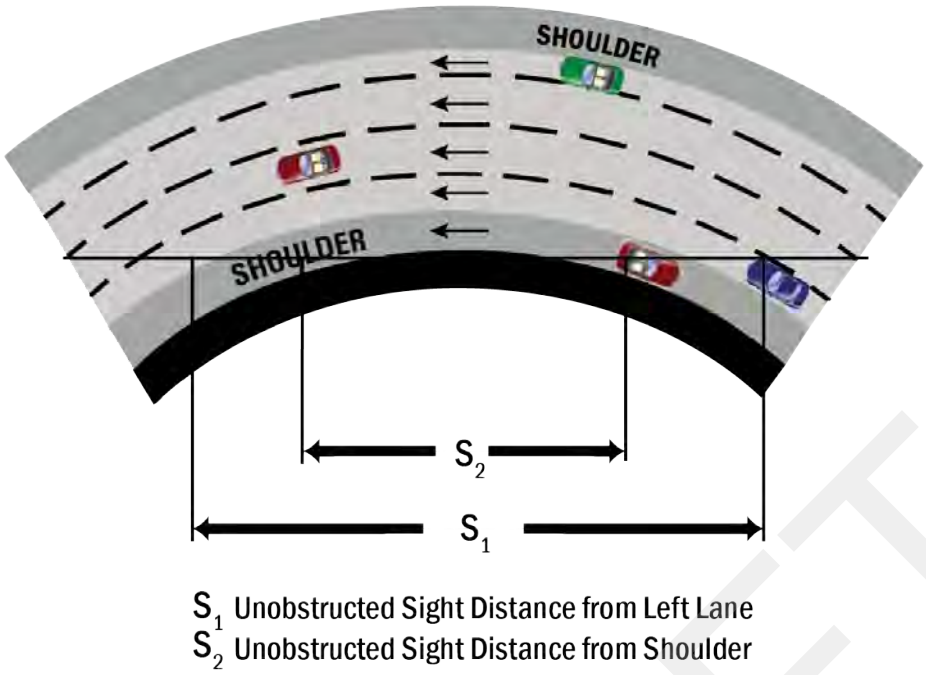

Figure 17: Median Barrier on Horizontal Curve Section Limiting Stopping Sight Distance when Shoulder Open to Travel

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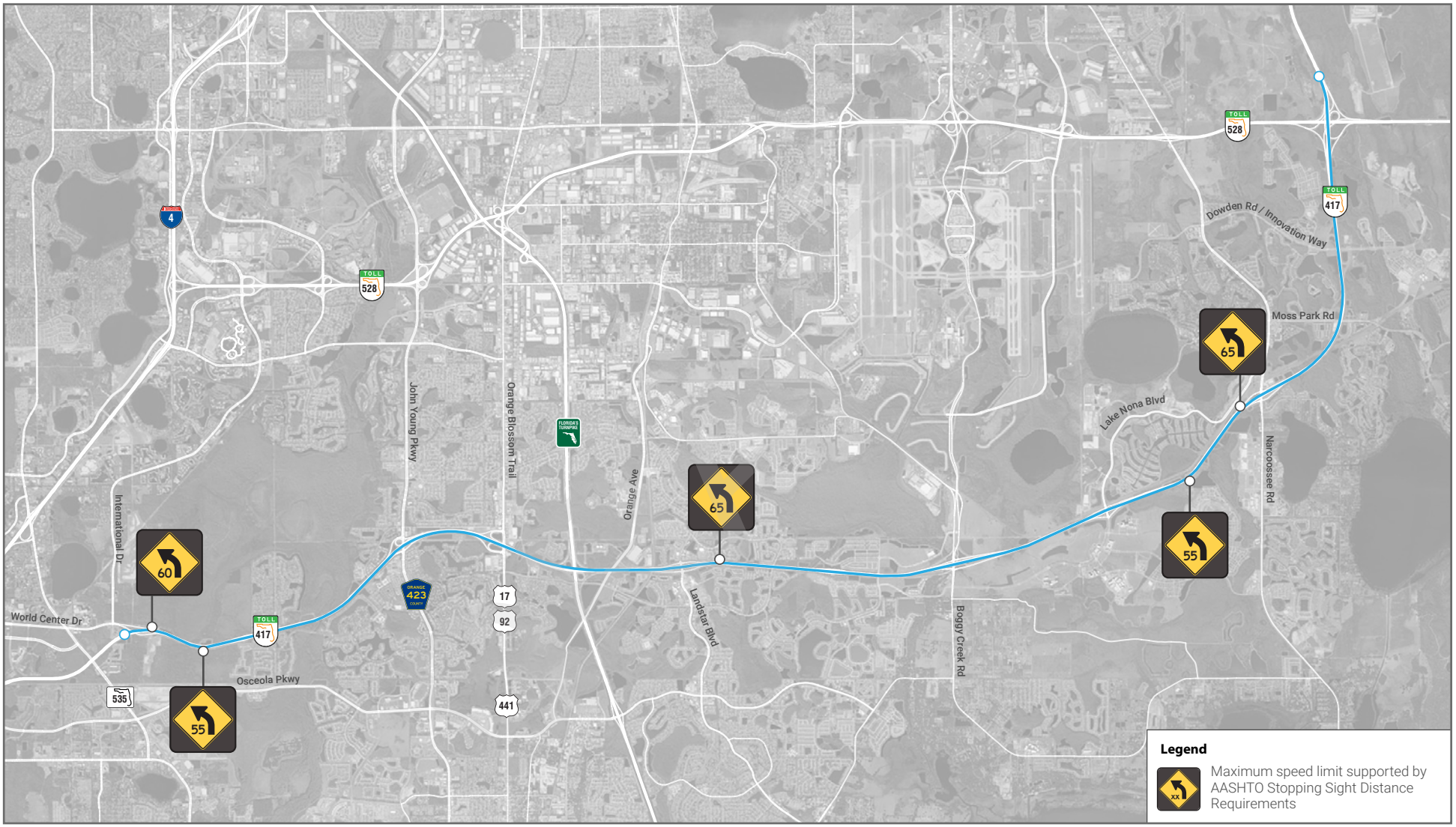

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SR 417 Part-Time Shoulder Lane

Curves with Stopping Sight Distance Values Less than 70 MPH when Shoulder Opened

Figure 18

As shown in **Figure 18**, the speed supported with the available SSD at the curves ranges from 55 to 65 MPH, and these curves are spread along SR 417. The speeds and locations illustrated in **Figure 18** were provided by each section design engineer for incorporation into this ConOps document. Redesign of the curves identified in **Figure 18** would involve relocating some portions of the existing expressway to the outside and is considered unfeasible, so VSL will be used. When the shoulder is closed and no incidents are present, the speed limit on SR 417 will remain 70 MPH. When the shoulder is open for congestion-related purposes, the speed limit on all lanes will be 55 MPH. Curves are frequent enough that decreases prior to each curve followed by a return to 70 MPH would result in a high number of speed limit changes that could be confusing to drivers, so the speed limit will be set at 55 MPH throughout the corridor when the shoulder is open throughout the corridor. For congestion-related PTSU, the speed reductions will occur as follows:

- 1st VSL sign on facility: 65 MPH
- 2nd VSL sign on facility: 60 MPH
- 3rd VSL sign on facility and subsequent signs: 55 MPH

If congestion is limited to a portion of the corridor and the shoulder is open on only a portion of the corridor – such as only south of Florida's Turnpike or only north of Florida's Turnpike – the speed reduction described in the bullets above could be implemented prior to the start of the portion of SR 417 where the shoulder is open.

In both directions, the limited number of VSL signs upstream of the start of PTSU and the reduction of the speed limit by 5 MPH increments will result in short portions at the start of PTSU facility having posted speeds greater than 55 MPH when the shoulder is open. In the northbound direction, the portion of SR 417 at the start of PTSU has 70 MPH SSD so there are no issues with this. In the southbound direction, the start of a curve with 55 MPH SSD occurs between the first and second gantry. To enable the speed to be reduced to 55 MPH prior to this curve, two sets of post-mounted VSL signs will be installed upstream of the first gantry.

4.3.3.3 Incident Applications

The VSL system will also be used when a lane is blocked by an incident. In these situations, the speed limit will be reduced to either 60 MPH or 50 MPH. The speed limit will be lowered to 50 MPH for a full closure of the road or an incident that opens the shoulder on a curve where only 55 MPH SSD is available. For other incident scenarios, the speed limit will be lowered to 60 MPH.

The speed limit will be decreased to 60 MPH as follows:

- 3rd VSL sign prior to incident: 65 MPH
- 2nd and 1st VSL signs immediately prior to incident: 60 MPH

The speed limit will be decreased to 50 MPH as follows:

- 5th VSL sign prior to the incident: 65 MPH
- 4th VSL sign prior to incident: 60 MPH
- 3rd VSL sign prior to the incident: 55 MPH
- 2nd and 1st VSL signs immediately prior to incident: 50 MPH

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4.3.4 Regional Traffic Management Center (RTMC) Upgrades

To connect ITS devices to the RTMC, CFX has fiber optic infrastructure located on the outside of both directions of SR 417. The current fiber optic infrastructure consists of two 72 SM fibers placed in each direction of travel. An additional 72 count fiber cable will be added in both directions in conjunction with the widening projects to support PTSU.

The TMC will need software upgrades to operate the PTSU system. Some US agencies that operate PTSU have expanded their existing software when PTSU was added and others have purchased software from vendors, as described in the following list:

- US 23, Michigan – Michigan DOT purchased software from Delcan/Parsons
- I-670, Ohio – Ohio DOT's in-house TMC software, BuckeyeTraffic, was unable to operate the PTSU system. Ohio DOT purchased openTMS from Q-Free as a short-term solution. Ohio DOT is in the process of replacing BuckeyeTraffic with OHGOInsight, a customizable off-the-shelf software, and will eventually use OHGOInsight to operate PTSU.
- I-90, Illinois – The Illinois Tollway added PTSU functionality to their existing software
- I-70, Colorado – Colorado DOT uses in-house software (Colorado Traffic Management System) for their TMC and added functionally to operate PTSU.
- I-66, Virginia – Virginia DOT purchased iNet from Delcan/Parsons for the 2015 update to I-66. The software was retired in 2018 when PTSU was discontinued and a major widening project began.
- I-495, Virginia – Virginia DOT purchased OpenTMS from Q-Free to operate PTSU. I-495 has static PTSU (fixed hours) and only has lane control signals over the shoulder, so Virginia opted for OpenTMS despite their opinion that iNet had stronger capabilities for dynamic PSTU and features like those on I-66 including congestion-related variable speeds and lane control signals over all lanes.
- I-35W, Minnesota – Minnesota DOT uses IRIS, a software developed in-house but also available as open-source other agencies through a general public license. This software was used to operate I-35W PTSU until it was discontinued in 2018 when a major widening project began.

4.3.5 Detailed System Overview

PTSU functions will be achieved through the deployment and integration of new and existing roadside monitoring and control equipment for collecting data and managing traffic operations, traveler information systems that will provide regulatory and informational messages, and the implementation of the ultimate PTSU decision support and control software at the RTMC.

LCSs, VSL signs, and DMSs will be located on gantry structures. Each gantry will have a cabinet outfitted with uninterrupted power supply (UPS) to supply short-term power to LCSs in the event of a power failure. VSL signs and DMSs will be powered by a separate circuit and the VSL sign will have an independent UPS. A telemetry device that is interlocked with the communications fiber will be used to continuously report the status (voltage and current) of each circuit in a service panel, including the main supply. This will provide faster detection of trouble and a more cost-effective response. Each sign on the gantry will have a separate controller in the cabinet. Some

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VSL signs will be post mounted at locations away from gantry structures. These post-mounted VSL signs will have media converters and switches to connect to the fiber optic network or the closest local hub cabinet and will be connected to a UPS in a nearby cabinet.

The communications link from the cabinets will connect to the new 72 SM fiber optic line's network tail circuits utilizing IP-based communications compatible with other ITS devices along the corridor that are maintained by CFX. CCTV cameras will be located to provide full coverage of the shoulder and will be located on both gantry structures and standalone poles as needed to support full coverage. CCTV cameras, regardless of location, will be connected via fiber following CFX standards and IP-addressing.

The PTSU system will perform data collection and condition monitoring activities using a series of sensors (e.g., TMS/DCS, CCTV cameras), each serving as an input to a central data processing and ultimate decision support module that will serve as the core of the PTSU system elements. The devices will collectively provide specific data and images/video that will capture current traffic data as the basis for formulating proactive strategies. The PTSU system may be able to automatically detect incidents on the shoulder; selection of specific software is ongoing at this time. The PTSU system and designated operators will then use this information to communicate to drivers on the roadway using sign messages. **Figure 19** depicts PTSU devices and associated inputs and output on SR 417. The PTSU system will maintain a log with times to the minute of the displays provided on each LCS and each VSL sign. The log will be stored in a format that is externally available so that it can be viewed by other stakeholders such as law enforcement.

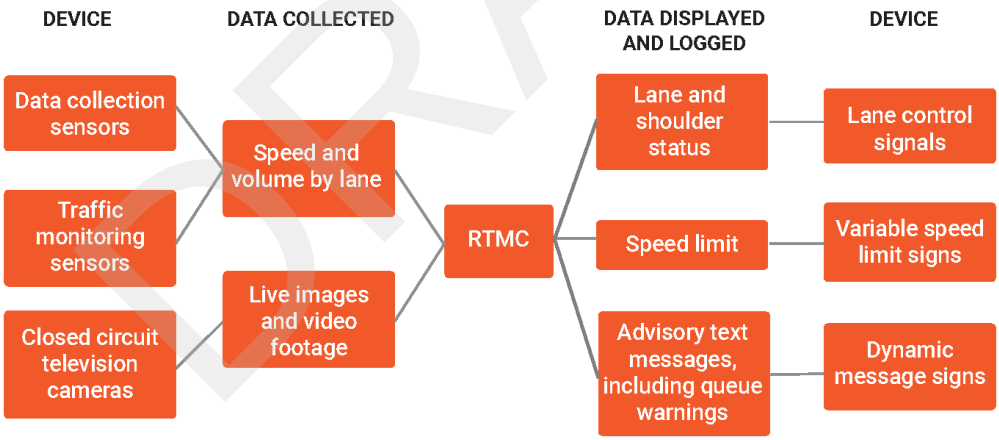

Figure 19: Data Inputs and Outputs

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4.3.6 Key System Elements

Specific vehicle detection systems and CCTV cameras installed in support of PTSU will be connected into existing traffic management modules, such that all available information (from both new and existing systems) would be available to the baseline traffic management system as well as the specific PTSU system.

The PTSU system will be tightly integrated with existing RTMC traffic management systems activities as well as existing coordination with law enforcement and 511. It is intended for PTSU to serve as an extension of current TMC control, communications, and coordination capabilities. Specific components such as lane and speed control signage would be directly integrated with the PTSU control submodule, which in turn would receive its inputs from response plans developed within the decision support submodule.

Enhanced operator workstations will provide access to PTSU decision support plans as well as device display information, permitting rapid acceptance or modification to specific response plans or portions thereof, followed by deployment.

Within the decision support module, specific combinations of operational and geographic response strategies would be stored. This decision support module may be a feature added to SunGuide or a standalone software application; it is undetermined at this time. Strategies would be selected based on specific detector parameters along with incident detection alarms (shoulder lane incident detection cameras) and real-time information (either manually input by the TMC operator or provided via 511, Road Rangers, or law enforcement).

4.4 Modes of Operation

This section describes the steps that occur when the mode of operation changes. Section 5 of this document provides additional information on specific sign displays associated with these modes of operation. The modes of operation on SR 417 will be:

- Normal Conditions – Off Peak (shoulder closed)
- Normal Conditions – Peak Period (shoulder open)
- Congestion Off-Peak (shoulder open)
- Incident Blocking Lanes
- Minor Message Displays
- Work Zones
- Failure Conditions

The following sections describe these modes. More complex modes have scenario diagrams depicting specific actions taken by system stakeholders. These diagrams are based on diagrams included in the 2016 “Hard Shoulder Running (HSR) Interstate 4 - Eastbound from Kirkman Road to World Drive, Westbound for SR 434 to Dirksen Drive” Concept of Operations. The I-4 PTSU application would have been operated from the RTMC and the diagrams reflect processes that were developed for the RTMC that are applicable to the proposed project by CFX. The diagrams have been modified to reflect differences in the SR 417 system and recent conversations with CFX, FDOT, and other stakeholders.

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4.4.1 Normal Conditions – Off Peak

In this mode, the shoulder operates in a 'normal' fashion allowing for disabled or damaged vehicles to pull off the roadway to the left for maintenance reasons (i.e. left shoulder use is not allowed for vehicles travel) and all general-purpose lanes are open. Police enforce the "closed" status of the shoulder, TMC staff monitor the facility and are prepared to initiate shoulder opening activities if a peak period is approaching or off-peak congestion occurs and they are prepared to close a general purpose lane if one becomes blocked.

4.4.2 Planned Opening of Shoulder

In future years, recurring congestion is expected on SR 417 (without PTSU) and the shoulder is expected to be opened on a recurring basis. The estimated years and hours of the day that PTSU will first be needed are discussed in Section 7.2, and this forecast should be reassessed once the widening project and other expressway projects in the Central Florida area are completed and volumes have changed on SR 417.

Planned openings will require verification the shoulder is free of blockages, such as disabled vehicles or debris; this process is often referred to as a "sweep". Prior to the start of PTSU, the shoulder will be inspected from the RTMC with CCTV and in the field by a vehicle driving the shoulder from the start to the end of the PTSU section. Based on initial discussions with the RTMC, Road Rangers, CFX maintenance forces, or FHP Officers are potential stakeholders who could conduct sweeps. The primary responsibility of FHP Officers and Road Rangers today is to respond to incidents; this priority could make it challenging for them to be reliability available for sweeps. CFX will determine who will conduct sweeps closer to the start of PTSU operation and hire or contract with additional staff if needed to reliably have individuals available for sweeps.

Thirty minutes prior to the start of PTSU, a pre-positioned sweep vehicle should receive a message from the TMC operator and depart from a waiting area and drive the shoulder to verify it is clear. Specific locations for pre-positioning will be determined closer to the opening date of the system.

Following verification from the driver of the sweep vehicle and a subsequent camera sweep that the shoulder is clear, it will be opened to traffic. The shoulder will remain open until an incident blocking it occurs or the peak period passes, and traffic volumes decrease. The process for a planned opening of the shoulder is shown in **Figure 20**.

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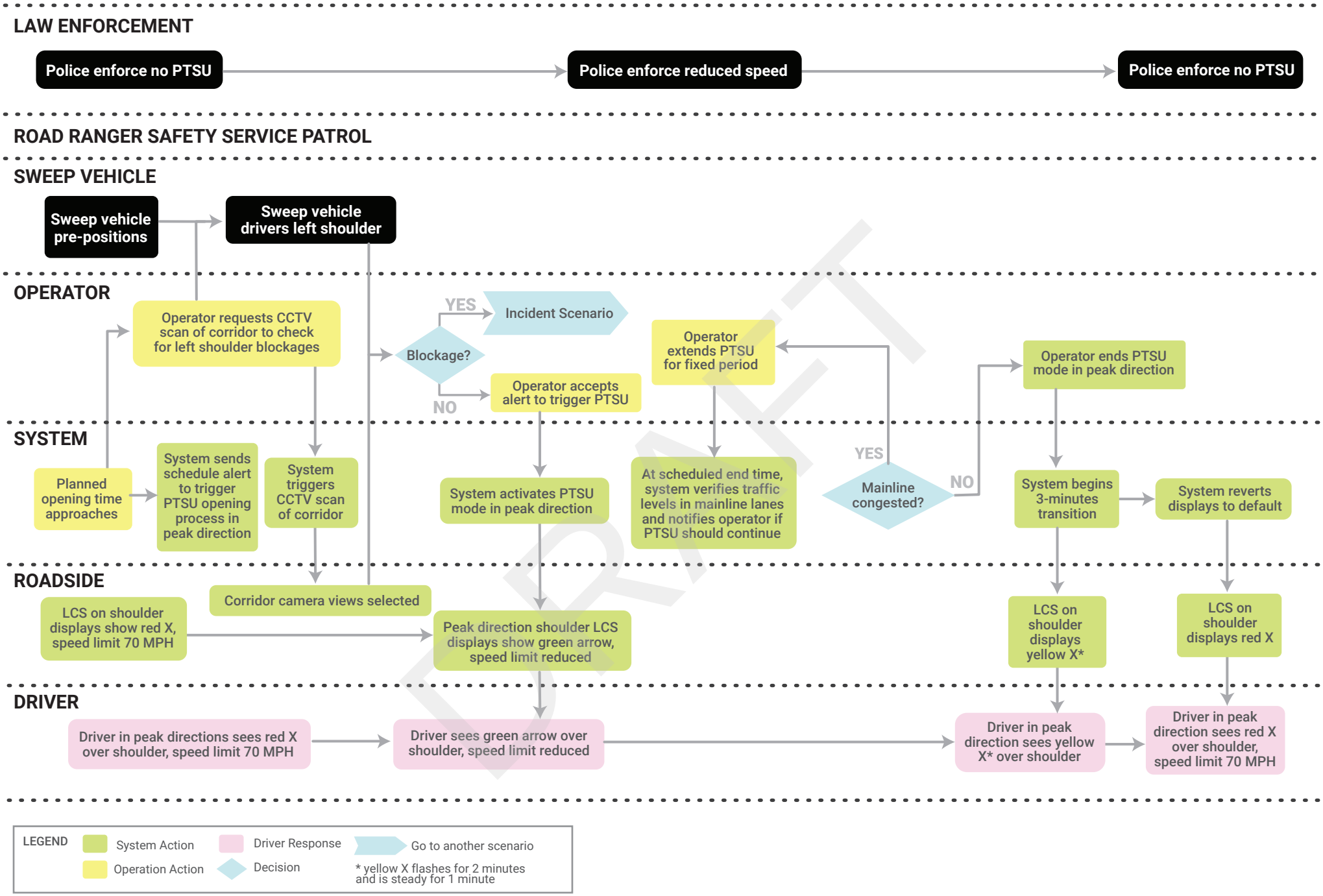

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SR 417 Part-Time Shoulder Use

Scenario 2 -Planned Opening of Shoulder

Adapted from Hard Shoulder Running (HSR) Interstate 4 - Eastbound from Kirkman Road to World Drive, Westbound for SR 434 to Dirksen Drive. Concept of Operations. 2016

Figure 20

Determining the planned hours of operation and thresholds for off-peak opening requires the identification of "triggers" for PTSU. The FHWA report "Decision Support Framework and Parameters for Dynamic Part-Time Shoulder Use" presents five methods for selecting and optimizing the opening time for a D-PTSU facility:

I. Demand-to-Capacity Patterns – Using sensors or traffic counts on the facility, an operating agency assesses historical demand profiles to determine levels of congestion relative to the available facility base capacity as well as the expected capacity with PTSU.

II. Empirical Performance Data – Using whole-year travel time reliability data, an operating agency explores the frequency and pattern of breakdown events to identify times when the facility experiences congestion.

III. Macroscopic Decision Parameter Optimization – Using the Highway Capacity Manual (HCM) 6th Edition freeway facilities method, an operating agency examines different types of decision parameters (speed vs. volume-based) and decision parameter values for a facility. It does this using an iterative approach to determine the optimum decision parameter for the facility, a process that can be automated through software.

IV. Microscopic Decision Parameter Refinement – Using calibrated microsimulation tools, an operating agency simulates the facility in question with the initial proposed decision parameter algorithm. It uses the simulation assessment to verify the concepts developed through the macroscopic optimization, which can be refined for the facility-specific geometry and traffic patterns.

V. Monitoring and Adjustment – Once D-PTSU is in place, adjust trigger values based on the performance of the expressway under the initial values.

Methods I and II are applicable to existing facilities experiencing congestion. They use data collected on the facility identify the conditions under which congestion occurs rather than trying to model it. Since the 6-lane SR 417 has not been constructed yet, these methods cannot be used.

Methods III and IV can be used on an existing or planned facility. The HCM 6th Edition freeway facilities method is implemented with FREEVAL software, which was used for the SR 417 traffic analysis described in Section 7.2 of this report. Analysis in this report focused on identifying the year, direction, and peak periods in which PTSU will be needed to prevent the onset of congestion, as opposed to specific volume and speed triggers which, coupled with daily volume profiles, would be used to open the shoulder. Triggers will change once the SR 417 is widened, so values developed now could not be used by the time PTSU is available.

In general, volume triggers are more effective than speed triggers for operators to use on a day-to-day basis because incremental volume increases can be observed and provide an indication of capacity being approached. Speed, on the other hand, remains relatively constant prior to traffic flow "breaking down" and the onset of congestion. Given the time required to conduct a sweep, a volume trigger is more likely to provide operators with sufficient time to open the shoulder before the onset of congestion, whereas a speed trigger may not. However, capacity of a given expressway is not a fixed value and many factors including vehicle mix, driver population (familiarity with roadway), and weather conditions cause fluctuations. For these reasons, congestion may occur even if volumes do not indicate it should under "normal" conditions, and if congestion and reduced speeds are observed it is still appropriate to open the shoulder and dissipate congestion after it has formed. Volume should be the primary trigger for opening the shoulder, but speed should be used as a secondary trigger.

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Development of specific triggers (volume levels) should be done when the 6-lane SR 417 is completed and sensor data from the 6-lane facility can be used to understand what volume levels lead to breakdowns in traffic flow. **Figure 21** shows examples of volume and speed triggers, specially 1,500 passenger car equivalents per hour per lane and 50 miles per hour. The same volume and speed values are not necessarily appropriate for the entire day. In the AM peak, for example, volumes often rise more rapidly than in the PM peak. A lower volume trigger may be appropriate for the a.m. peak to maximize the likelihood there is enough time to conduct a sweep, whereas a higher volume trigger may be appropriate for the PM peak to minimize the likelihood of an unnecessarily early opening. Section 7.2 includes data on the current rate of volume changes from one 15-minute period to another throughout the day. There could be seasonal, day-of-week, or weather-related differences as well. A challenge with setting triggers is the need to use them proactively and allow for sweep time rather than merely reacting to congestion once it is observed and instantly opening the shoulder. Therefore, in addition to real-time sensor data, historical volume profiles are needed to understand how rapidly volume may increase at different times of day and days of the week. Historical volume profiles enable opening the shoulder prior to congestion but minimizing the number of "unneeded" openings in which volumes would have never reached congestion levels had the shoulder remained closed.

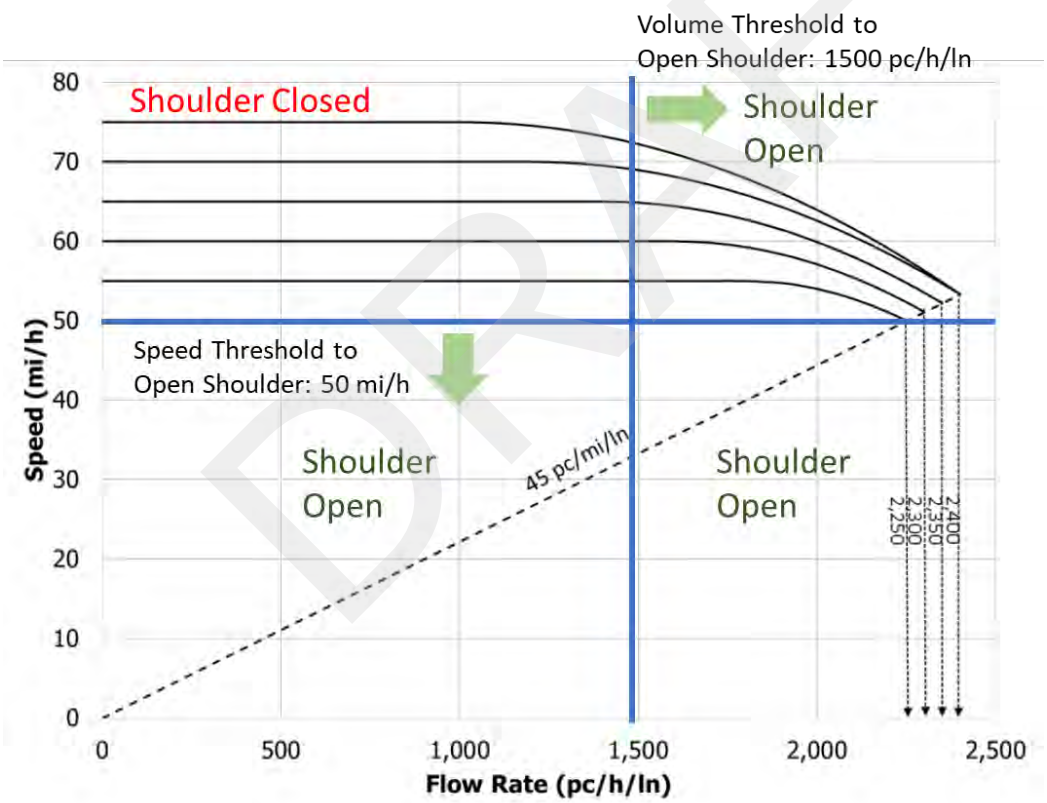

Figure 21: PTSU Triggers Based on Highway Capacity Manual Speed-Flow Curves (Source: FHWA Decision Support Framework and Parameters for Dynamic Part-Time Shoulder Use).

4.4.3 Congestion Off-Peak

Openings of the shoulder off-peak will occur for several reasons:

- Congestion is expected to occur in 45 minutes or less based on current volume and/or speed levels and historical traffic volume profiles for the day of the week in the current season. Initiating opening activities 45 minutes prior to the anticipated need for PTSU enables an authorized vehicle to travel to the starting of PTSU and conduct a sweep prior to the onset of congestion. Police, Road Rangers, or CFX maintenance staff may be used for off-peak sweeps; this will be determined at a later date. Common times for off-peak openings of shoulders are weekend days in the late morning or early afternoon and in the early afternoon of a weekday when the PM peak occurs earlier, such as on a Friday.
- Congestion is occurring. Unexpected traffic patterns may result in congestion not being predicted as described in the first bullet. In this case, a sweep should be conducted as quickly as possible and the shoulder opened as quickly as possible. Given the time required to sweep the shoulder, this is expected to be a relatively rare scenario and will only occur if there is reason to believe the congestion will be prolonged.
- An incident blocking right-side lanes occurs (see Section 4.4.4).
- Construction or maintenance activities close right-side lanes (see Section 4.4.6).

The process for an off-peak, congestion-related opening of the shoulder is shown in **Figure 22**. Once the shoulder is opened for off-peak congestion, it will typically remain open through the afternoon (in the case of a weekend) and into the evening hours (in the case of a weekday). Opening and closing the shoulder multiple times per day – except for the weekday AM peak and weekday PM peak – should be rare. If off-peak congestion has dissipated, operators will decide if scheduled opening of the shoulder is soon enough that that the shoulder should be kept open, and if so, keep the shoulder open. Based on the amount of time required to conduct a sweep and open the shoulder, it is recommended the shoulder be kept open if scheduled opening is within the next 60 minutes, although operators will have flexibility to adjust this threshold.

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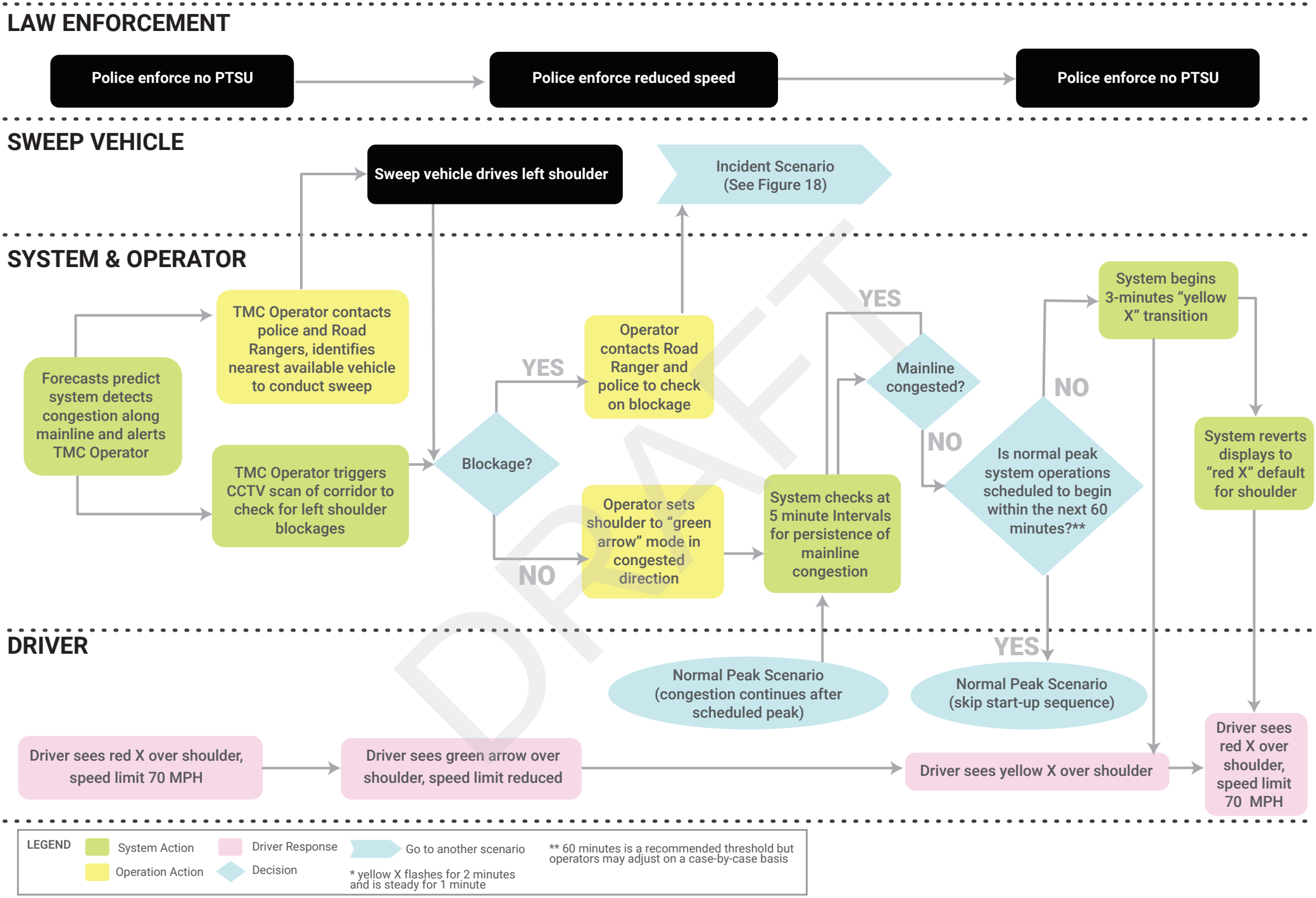

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Scenario 3 - Off Peak congestion

Adapted from Hard Shoulder Running (HSR) Interstate 4 - Eastbound from Kirkman Road to World Drive, Westbound for SR 434 to Dirksen Drive. Concept of Operations. 2016

Figure 22

4.4.4 Incident Blocking Lanes

If a general-purpose lane is blocked by an incident, or the left shoulder is blocked at a time when it is open to traffic, rapid closure of the lane and/or shoulder will occur. Operators may become aware of incidents through automated detection, CCTV inspection, or notification from law enforcement or Road Rangers. If notified automatically by TMC software or by stakeholders such as law enforcement or Road Rangers, operators shall confirm an incident's location via CCTV before initiating a lane/shoulder closing, unless weather conditions such as heavy rainfall obscuring visibility make it impossible to do so. Closing a lane or the shoulder can happen much more rapidly than opening the shoulder because a sweep is not necessary. **Figure 23** shows the process for closing lanes when an incident is present.

When an incident blocks the center and/or right lanes, it will sometimes be beneficial to open PTSU to enable an additional lane of traffic to pass through the incident area and minimize congestion. The decision to open the shoulder or not will be based on factors such as the estimated duration of the closure, the number of lanes blocked, and the time at which the incident occurs. Splitting traffic around an incident in a center lane (i.e. keeping lanes and/or shoulders to the right and the left of the incident open to traffic) should generally be avoided. Standard Operating Procedures will be developed during a later stage of the systems engineering process.

If the shoulder is already open and the incident blocks the shoulder, the shoulder will be closed in the vicinity of the incident in the same manner as which a general-purpose lane would be closed. Operators will also need to decide if 1) additional portions of the shoulder should be closed aside from the immediate incident area and 2) the shoulder should be reopened once the incident has been cleared. If the incident is near the start or end of the PTSU section on SR 417, it may be beneficial to close the shoulder from the start of PTSU to the incident location or from the incident location to the end of PTSU, respectively. Likewise, if the incident is cleared towards the end of the typical period of PTSU operation, it may be beneficial to simply leave the shoulder closed rather than reopening for a short period of time. Standard Operating Procedures to address these scenarios will be developed during a later stage of the systems engineering process.

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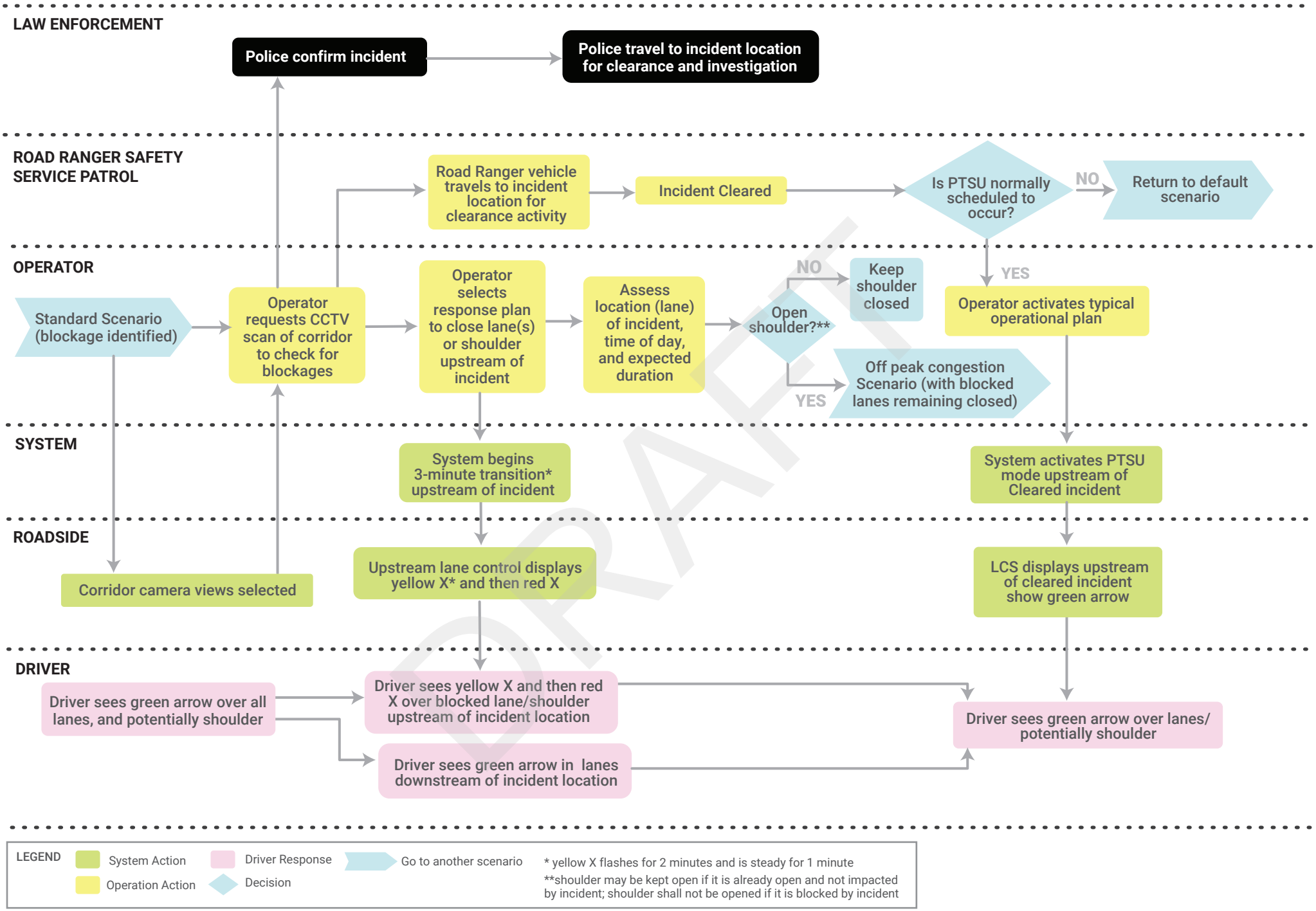

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Scenario 4, 5, 6, or 9 - Incident

Adapted from Hard Shoulder Running (HSR) Interstate 4 - Eastbound from Kirkman Road to World Drive, Westbound for SR 434 to Drive. Concept of Operations. 2016

Figure 23

4.4.5 Minor Message Displays

The PTSU system will display messages to drivers if there is law enforcement activity on the right shoulder, the left shoulder becomes blocked (at a time when it is already closed), or a queue develops. The following processes are associated with these events.

When an emergency vehicle is parked on the roadside and displaying visual signals, Florida law requires drivers to vacate the lane closest to the emergency vehicle[1]. An LCS display can be used to reinforce this message to drivers, as described in Section 5.8. and the upstream DMS can display the message such as "POLICE ACTIVITY ON RIGHT". A RTMC staff monitoring SR 417 with CCTV will initiate display of a "MOVE LEFT" message on the gantry prior to the emergency vehicle if police activity on the right shoulder is observed. Additionally, police officers may notify the RTMC if they are conducting enforcement on the right shoulder; this would enable a TMC operator to actively conduct a CCTV sweep of a smaller portion of SR 417, potentially identify the location of law enforcement activity sooner, and potentially display a "MOVE LEFT" message sooner.

When the left shoulder is closed because it is not needed to serve traffic demand but it becomes blocked by a disabled vehicle, a supplemental "BLOCKED" message will be displayed above the red X on the gantry prior to the blockage. This message will communicate to all users of the road, including users such as emergency responders who sometimes travel on shoulders, that the shoulder is closed and physically blocked. Disabled vehicles on the left shoulder will be identified by RTMC staff monitoring SR 417 with CCTV. Road Rangers or law enforcement may notify the RTMC if they observe and/or begin assisting a disabled vehicle, potentially enabling the RTMC to identify the disabled vehicle and display a supplemental "BLOCKED" message sooner.

The frequency of DMSs will enable the RTMC to warn drivers of slow or stopped traffic ahead, regardless of whether the shoulder is open or closed. Opening the shoulder is one means of dissipating a queue, but time is required to verify the shoulder is clear and it is not an option if the shoulder is already open or if it is blocked. Regardless of the open/closed status of lanes and the shoulder, DMSs on Type 2 gantries will display "STOPPED TRAFFIC X MILES AHEAD" or "SLOW TRAFFIC X MILES AHEAD" up to 3 miles prior to the slow or stopped traffic. RTMC operators will be automatically notified when TMSs or DCSs detect volumes below 40 MPH for one minute or more in all lanes at a given location or five minutes or more at a given location in at least one lane. Upon notification, RTMC operators will verify the presence and extents of the queue and display the appropriate DMS messages.

4.4.6 Work Zones

On CFX facilities, construction inspectors or maintenance personnel are required to contact the RTMC prior to MOT setup and after MOT takedown. When scheduled construction or maintenance activity will close a lane, an RTMC operator will be monitoring the work area and close lanes (with red X LCS displays) as the maintenance of traffic setup occurs in the field and lanes are physically closed. Similar monitoring will occur when work is expected to end so a green

[1]http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0300-0399/0316/Sections/0316.126.html

arrow can be displayed when lanes reopen. If right lanes are being closed, PTSU can be used to offset the loss of roadway capacity caused by lane closures. For short-term work zones, the process described in Section 4.4.2 would be used to verify the shoulder is clear. For a long-term work zone where lanes are closed for multiple days including through peak periods, the shoulder would remain open continuously (unless blocked). The speed limit will be determined on a case-by-case basis based the duration of the work zone and whether the work zone encompasses a section of roadway that does not meet 70 MPH SSD requirements when the shoulder is open. The speed limit will always be low enough to satisfy SSD requirements.

4.4.7 Failure Conditions

The reliability of ITS hardware has continually increased over the years, and the PTSU system will be designed and installed to minimize operational problems. This includes monitoring diagnostics to immediately identify to the RTMC Operator when and where a problem has occurred, and the nature of the problem (e.g., loss of communications, loss of power). The displays on each gantry (LCSs, VSL signs, etc.) will be visible from CCTV, providing an additional means of monitoring from the RTMC. When a failure (e.g., loss of communication, detector failure) is identified prior to or during operation, the RTMC Operator should verify and document the failure. The RTMC Operator will notify CFX staff and CFX maintenance staff or contractors will investigate and resolve the issue. It is expected that CFX will have automated monitoring systems in place to minimize the probability of failures first being observed by RTMC Operators.

CFX currently utilizes What's Up Gold (WUG) for its Network Monitoring Software (NMS). The NMS is critical to the operations of the ITS system as it provides real time monitoring/status of ITS network devices. The software was initially installed in 2012 and currently displays/monitors all ITS devices (Switch, CCTV, TMS, DCS, DMS, WWD, UPS, RPM, etc.) on the system. In the event of a device failure, whether that be communication or power, an SNMP Trap is sent to CFX maintenance staff to document and respond to the event.

Every cabinet will have a battery backup to provide short-term power to LCSs and a second battery backup to provide short-term power to VSL signs. If communication remains intact, operators should not display anything on LCSs over general purpose lanes and they should be blank. This will maximize the time an LCS display can be provided for the left shoulder.

When failures – loss of communication or loss of battery power – do occur, LCSs and speed limit signs should go "blank". As the lane signs speed limit signs are always displaying some sort of symbol even during "normal conditions" (e.g., green arrow, red X), a blank sign will indicate to the driver that there is a problem with the system.

On rare occasions, gantries may be unable to display lane control or the speed limit (i.e. the LCSs and VSL signs will be "dark") due to loss of power, depletion of battery backup, or other reasons. If one gantry is unable to display regulatory signs – LCSs and VSL signs – but gantries upstream and downstream are operational, the shoulder may still be opened to traffic. If two or more gantries in series are unable to display regulatory signs, PTSU will not be used. Additionally, VSL signs that reduce the speed limit in 5 MPH increments prior to horizontal curves that do not have 70 MPH SSD must be operational. In other words, if the speed limit cannot legally be reduced where needed for SSD purposes than PTSU will not be used. Following completion of the ConOps, CFX

will develop more specific failure-related thresholds for PTSU use, including scenarios involving failure of individual gantry components.

Policies of other US agencies with PTSU related to this issue include the following:

- I-670, Ohio – If one gantry is dark or offline, PTSU is still used. If two consecutive gantries are dark or offline, PTSU is not used. Static signs along the corridor state that the shoulder is closed when gantries are dark
- I-495, Virginia – If one cantilever structure is dark, PTSU is still used. Spacing of structures is close enough that the downstream structure is usually visible. Motorist education outreach has emphasized that standard rules of the road apply when LCSs are blank, meaning that the shoulder is closed in this situation.
- I-35W, Minnesota – If one gantry was dark, PTSU was still used. Static signs on the corridor stated "shoulder use permitted on green arrow", so if the entire system was dark the shoulder was considered closed because a green arrow was not displayed. Under typical conditions, red Xs (not dark displays) were used to indicate the shoulder was closed.
- I-405, Washington – This facility is relatively short and has only four gantries. If two or more gantries at any location are dark, the shoulder is closed.

Operators of the facilities listed above noted that power loss is rare and battery backups are utilized.

4.5 User Involvement and Interaction

The PTSU system will involve the following users:

- Drivers - motorists traveling along SR 417 will be targeted by PTSU messaging.
- RTMC Traffic Incident Managers – staff trained in incident management who provide direction to operators when incidents occur. Existing staff are not dedicated to CFX facilities and also provide coverage of FDOT facilities. In some cases, they may send communications to field devices instead of operators doing so. These staff are currently on duty from 6 AM to 10 PM Monday through Friday but this will change to 24/7 coverage within the next year.
- RTMC Operator - staff who generally send communications to field devices to change their displays.
- PTSU-specific TMC Staff - Based on the current workload, it is anticipated that one or two additional staff persons will be needed to operate CFX's PTSU facilities (SR 417 and SR 429) during busier times, such as 6 AM to 10 PM Monday through Friday. During overnight hours, FDOT staff or consultants handling incident management duties Districtwide would likely have the *capacity* to also handle CFX's PTSU, however FDOT does not have PTSU facilities and FDOT would need to provide permission for their staff to operate PTSU. Discussions with FDOT are ongoing at this time, but since additional staff are needed during some – if not all – hours of the day, CFX may choose to create a new position of PTSU Operator in the RTMC. The PTSU Operator position – or some combination of the RTMC Traffic Incident Managers and RTMC Operator positions if a PTSU Operator position is not created– will have the following responsibilities:
    - Determining and/or verifying problems that may necessitate changes to the sign displays (e.g., incident reported by other sources, including identifying the nature

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and severity of the problem/number of lanes to be closed) via communications with law enforcement and Road Rangers and/or CCTV cameras.
  - Determining whether the shoulder is clear to open (via communications with maintenance staff, law enforcement, Road Rangers and/or CCTV cameras).
  - Inputting additional information to the system (e.g., number of and which lanes closed, estimated duration of blockage, need for emergency vehicle access) to facilitate the development of a "recommended" signing plan.
  - Reviewing the system's "recommended plan," and making changes as may be appropriate.
  - Sending the signing plan into the field.
  - Continuously monitoring operations (i.e., traffic flow, incidents, system) and adjusting the sign displays (with system assistance) as conditions change.
- Law Enforcement – FHP and local law enforcement agencies responsible for enforcing the shoulder status (e.g., tickets to drivers traveling on shoulder when shoulder running is not permitted, i.e., RED X displays on lane control signals) and variable speed limits. FHP staffing levels are determined legislatively and unlikely to change when PTSU operation begins. Law enforcement officials can request closure of a lane or the shoulder if they observe it is blocked and provide incident scene management if fire rescue services are not present.
- Emergency Responders – local agencies who will provide emergency medical service to injured road users and extinguish fires. It is essential for emergency responders to be able to reach a crash scene as quickly as possible. If traffic in general purpose lanes is slow, emergency responders may use the right or left shoulder to reach a crash site. If the shoulder is closed when a crash occurs, it should be kept closed until emergency responders have reached the scene so that they are able to use the shoulder to arrive at the scene and assess the appropriate course of action.
- Road Rangers - CFX expressway service patrol vehicles and corresponding drivers that are responsible for assisting motorists who are stranded on the roadway, either in a stall or crash, and help ensure the roadway is clear of debris. Road Ranger operation will be similar with PTSU, with an added emphasis on quickly assisting and facilitating the removal of disabled vehicles on the left shoulder. The patroller is capable of quickly troubleshooting vehicle problems and perform minor repairs such as flat tires, re-clamping hoses, and are trained in First Aid and CPR as they may be the first on the scene of a crash. Currently there are two Road Rangers in operation on SR 417. Based on the length of CFX's portion of SR 417 and the relatively low level of congestion, it is anticipated that additional Road Rangers will not be needed for PTSU operation, unless they are responsible for conducting sweeps (see "Sweep Vehicles" below). Road Rangers can request closure of a lane or the shoulder if they observe it is blocked.
- Towing Companies – CFX has contracts with eight towing companies to remove disabled vehicles from its facilities. CFX will direct these companies to remove disabled vehicles from the left shoulder of SR 417 in an expedited manner so that opening the shoulder remains possible if an incident or congestion occurs. CFX also has RISC contracts with three towing companies to provide Rapid Incident Scene Clearance services for large scale incidents. RISC is activated by either RTMC staff or Law Enforcement on scene. Current towing contracts will expire and be rebid prior to the start of PTSU operation, and new contracts will include PTSU-specific requirements.

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- Sweep Vehicles – as described in Section 4.4.2, an authorized vehicle will drive the shoulder before it is opened to verify it is free of debris and disabled vehicles. It has not yet been determined if sweeps will be conducted by Road Rangers, FHP, or CFX maintenance forces.

CFX maintenance contractors will be responsible for hands-on maintenance of traffic control and ITS devices, including equipment shop and various device and communications test equipment. Because of the increased flexibility in use of the PTSU, it is expected that additional maintenance and training will be required in the corridor, although such maintenance could be handled via contract and not with additional CFX staff.

CFX is coordinating with FDOT District 5 in an effort to obtain approval to house the operation of the PTSU project in the RTMC and provide CFX access and use of RTMC system components. It is recommended that a dedicated workstation be provided within the control room to manage PTSU operations for each facility CFX implements PTSU operations on (one for SR 417 and one for SR 429).

CFX will coordinate with FDOT Central Office to assess the feasibility of updating the SunGuide software to enable operation of the PTSU system, including the addition of features such as control of LCSs and VSLs. If SunGuide updates are not feasible, CFX will purchase software to operate the PTSU system from another vendor.

Prior to the start of PTSU operation, several training activities should occur:

- RTMC staff – specifically PTSU Operators if that position is created - should be trained on the modes of operation described in Section 4 and the Operational Scenarios described in Section 5. These staff should understand the principles behind the operational scenarios and understand how to adapt them for unusual situations such multiple concurrent incidents and incidents in the vicinity of unusual geometry.
- RTMC staff – specifically PTSU Operators if that position is created - should be trained on use of new software features for PTSU and the ways in which lanes and the shoulder are opened and closed and variable speed limits are changed.
- Law enforcement officials should be trained on how to enforce variable speed limits.
- Selected CFX maintenance workers, Road Rangers, and/or law enforcement officials should be trained in how to conduct a sweep and when and where to pre-position before planned openings.
- All law enforcement officials, emergency responders, Road Rangers, and maintenance workers should understand the potential for the left shoulder to be opened to traffic and the need to be aware of LCS displays.

CFX should also establish a working group for key PTSU stakeholders, including CFX engineering staff, RTMC staff, Road Rangers, tow companies, law enforcement, and emergency responders. This group should meet on a regular basis leading up to and following the start of PTSU operation to discuss and resolve any issues that arise. Over time, the need for this group will diminish and it can meet less frequently or be disbanded as PTSU operations become institutionalized.

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PTSU on SR 417 is expected to begin around the same time, so training and working group meetings could likely be done concurrently for staff involved with the operation of both facilities.

4.6 Assumptions and Constraints

CFX will need to address certain institutional and jurisdictional issues in collaboration with regional transportation agencies and facility stakeholders. These institutional issues need to be resolved by developing common policies and approaches to the challenges that arise. Partnering agreements should be incrementally developed during the design phase to document consensus among the parties on issues related to organization; operational concepts; and specific roles and responsibilities for each partner.

4.7 Risks

Potential risks on the project include the following:

- Project agreements delayed due to disagreement on roles and responsibilities of project stakeholders
- Regulatory challenges implementing variable speed limits

4.8 Support Environment

4.8.1 Public Awareness

CFX should conduct a public outreach campaign in Central Florida prior to the opening of the facility. This campaign should use the media and direct outreach such as letters or emails sent to E-Pass holders to explain the PTSU system and provide rendered drawings so drivers understand what gantry structures and lane control signals will look like.

4.8.2 Facilities

This project includes the deployment of advanced ITS technologies to address specific traffic operations issues, thereby enabling a closer coordination of ITS and traffic engineering activities. The technical skills of staff at the RTMC will need to be expanded to monitor and adjust, when necessary, the PTSU technologies. Changes to the status of lanes and shoulder (open versus closed) will be made by human operations.

The ITS devices will be controlled from the RTMC. It is expected the PTSU functionality will be contained within updated SunGuide software and that no additional equipment will be needed beyond a dedicated workstation for the SR 417 PTSU operator. If SunGuide is not able to be updated, CFX will purchase software with PTSU functionality from another vendor.

Each gantry structure will have a cabinet to house controllers and other equipment and a UPS to provide short-term emergency power.

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4.8.3 Operating Procedures

The PTSU system will require specific operating procedures described in Section 5.4 and 5.5. There are procedures for various stakeholders to follow for congestion-related openings of the shoulder and emergency closures of lanes or the shoulder due to incidents. CFX will work with FDOT District 5 to develop Standard Operating Procedures (SOP) using new software functionality for the devices and processes that will be implemented under this project.

4.8.4 Enforcement

Law enforcement activities unique to the PTSU system will consist of enforcing the "closed" status of the shoulder and enforcing variable speed limits. Other states with relatively new PTSU facilities such as Washington, Michigan, and Ohio have indicated benefits of having additional law enforcement resources to enforce the "closed" status of the shoulder immediately following the opening of a new PTSU facility, but after several weeks a typical level of enforcement is adequate.

Enforcing variable speed limits will require that a police officer in the field to know what the (variable) posted speed limit was at the time a violation was observed, and have a means of documenting this or accessing the documentation maintained by others (such as the RTMC). The RTMC will maintain a log of the speed limit displayed on each VSL sign on SR 417 by the minute. Generally, the police officer will know the speed limit by conducting enforcement at a location where the speed limit sign is visible. Additional coordination with FHP and local law enforcement is needed to determine specific enforcement procedures.

Variable regulatory speed limits or variable advisory speeds are relatively rare on US PTSU facilities. The following facilities have or had variable speeds:

- I-670 Ohio – the speed reduction that occurs when the shoulder is open is regulatory. The facility has been open less than a year, and police have de-emphasized speed enforcement in the interest of prioritizing shoulder open/closed enforcement. ODOT maintains logs of speed limits, but the police stage speed enforcement so a sign can be seen from where a driver was pulled over so the logs are generally not needed for enforcement purposes.
- US 23 Michigan – the speed reduction that occurs when the shoulder is opened is advisory because Michigan law does not permit VSL. The advisory speed is used due to a SSD limitation similar to SR 417 and a lateral offset to obstruction (barrier) that is less than the minimum value in the AASHTO Green Book in some locations.
- I-35W Minnesota – prior to the removal of PTSU in 2018, speed advisories were used for speed harmonization purposes to improve traffic flow.
- I-66 Virginia –Speed limits were reduced for speed harmonization purposes to improve traffic flow. It would have been difficult for a drive to speed when the speed limits were reduced because congestion was present or imminent, so enforcement was never conducted.

SR 417 will be one of the first US PTSU facilities with regulatory VSL.

4.8.5 Maintenance

It is anticipated that CFX will utilize existing maintenance staff or their current maintenance contract to perform all maintenance activities for permanent devices with support from the vendor for factory/warranty maintenance. To support maintenance activities, all ITS field equipment should be deployed in a manner that allows maintenance staff to safely park and perform maintenance activities. Field equipment should be positioned in a manner that allows staff to perform maintenance with minimum impact on the traveling lanes. Operations and maintenance of elements that are relevant to PTSU operation are shown in **Table 5**.

Table 5: Operation and Maintenance of ITS Elements

Component	Typical Maintenance Responsibility	Typical Maintenance Actions [1]	National ITS O&M Cost / Yr per unit	Notes
Road Ranger Emergency Service Patrols	FDOT D5 and / or contracted support	Vehicle and Equipment Maintenance	150,000	Per vehicle based on 12-hour workday
TMS/DCS	CFX with factory repair	RM and MR	450	Microwave detection
CCTV Video Camera	CFX with factory repair	PM and MR	1,500 to 3,600	Requires bucket truck and spares; ship modules to manufacturer for repair
Lane Control Signals	CFX with factory repair	PM and MR	250-500	Incremental addition to DMS maintenance costs – see DMS below
DMS/LCD Signs	CFX with factory repair	PM, RM and MR	2,400 to 6,000	Requires maintaining spare modules and consumable lamps; ship modules to manufacturer for repair

[1]Note: PM – Preventative Maintenance, RM – Remedial Maintenance, and MR – Modular Replacement
Source: USDOT ITS-JPO

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5. Operational Scenarios

Changes in the open/close status of the shoulder – such as opening the shoulder or closing a general purpose lane for an incident – will be implemented by changing LCS displays and, in many cases, displaying supplemental messages on the larger Incident Management DMSs found on Type 2 gantries. Section 4.4 described the process that will occur before a lane or the shoulder is opened or closed. Operational scenarios addressed and what indications will be displayed on LCSs section include the following:

- Normal conditions
- Crashes / Incidents
- Congestion / queuing due to a bottleneck during peak and off-peak periods
- Work Zone
- Road Closure

Representative operational scenarios for the proposed LCS system are presented in this section. The examples are not meant to be all-inclusive in the sense that incidents could occur at any point on the roadway, but they do provide an understanding of LCS displays given likely events. General principles – such as the number of red Xs being displayed prior to a blocked lane – are described in the text. The figures depict individual LCS displays and DMS text messages for a northbound portion of SR 417 between International Drive and Landstar Boulevard. In these figures, incidents are generally shown to occur between the US 17/92/441 and the Florida's Turnpike off-ramp. This location was chosen because the weaving and additional lanes make it relatively complex in terms of LCS displays. The operational scenario diagrams are generally applicable corridor-wide.

The LCSs above each lane and the left shoulder will be small, full-color DMSs capable of displaying indications other than the green arrows, red Xs and yellow Xs that a traditional blank-out LCS displays. Use of full-color DMSs gives CFX the capability to add additional displays in the future. The following displays will be used on SR 417:

- Green arrow – indicates the shoulder or a lane is open.
- Red X – indicates the shoulder or a lane is closed. Emergency vehicles may still drive on a shoulder/in a lane where a Red X is displayed if they are responding to an incident.
- Yellow X with "MERGE" text – indicates a lane or the shoulder is closing and drivers should move out of the lane. This indication will always be displayed in a flashing mode for the first two minutes it is displayed, followed by a steady mode for the duration of the deployment. It will be the only indication on the LCSs with a flashing mode. This is consistent with the mode of operation for yellow LCS indications that was proposed for I-4 in 2016.
- Black "EXIT ONLY" text on yellow background – in the vicinity of a lane closure, indicates a lane is only for exiting traffic.
- Red X with "CLOSED" text – indicates the entire road is closed. Used for all LCSs on a given gantry when the entire road is closed.
- Black "MOVE LEFT" text on white background – used prior to police activity on the right shoulder and instructs drivers in the right lane to move to the left, consistent with Florida's "Move Over" law that requires drivers to leave one lane of separation between themselves and police on expressway shoulders.

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- Red X with "BLOCKED" text – indicates the shoulder is closed and there is a vehicle physically blocking it. The "blocked" message provides an added measure of safety to occupants of the vehicle on the shoulder, such as law enforcement officials, occupants of disabled vehicles, or tow truck drivers.
- Black "ROAD WORK AHEAD" text on orange background – indicates there is road work ahead.

Each of these displays is used in operational scenarios described in the following sections and corresponding figures.

When the shoulder is closed, the speed limit on SR 417 will be 70 MPH. When the shoulder is open, the speed limit will be lowered as described in Section 4.

5.1 Scenario 1: Normal Conditions – Off Peak

Under normal conditions (i.e., no congestion or incidents), the shoulder is closed. LCSs display GREEN ARROWS over lanes and RED Xs over the shoulder. The speed limit is 70 MPH. This scenario represents the default condition for SR 417.

This scenario is shown in **Figure 24**.

5.2 Scenario 2: Normal Conditions – Peak Period Congestion with PTSU

In future years when volume has grown on SR 417 and peak period congestion is a recurring event, the default conditions during the peak periods will be to open the shoulder to traffic. The speed limit will be lowered to the appropriate value based on the location on the corridor. Once the opening process described in section 4.4.2 is completed, green arrow indications will be displayed over the shoulder and all lanes.

When volumes fall to a low enough level that congestion is not anticipated with the shoulder being closed, the LCSs over the shoulder will display a flashing yellow X (with "MERGE" text) indication for two minutes and a steady yellow indication (with "MERGE" text) for one minute before displaying a Red X indication, marking a return to Scenario 1 conditions. This scenario will not be used in the opening year because the additional general-purpose lane is expected to sufficiently dissipate recurring peak period congestion. This scenario is shown in **Figure 25**.

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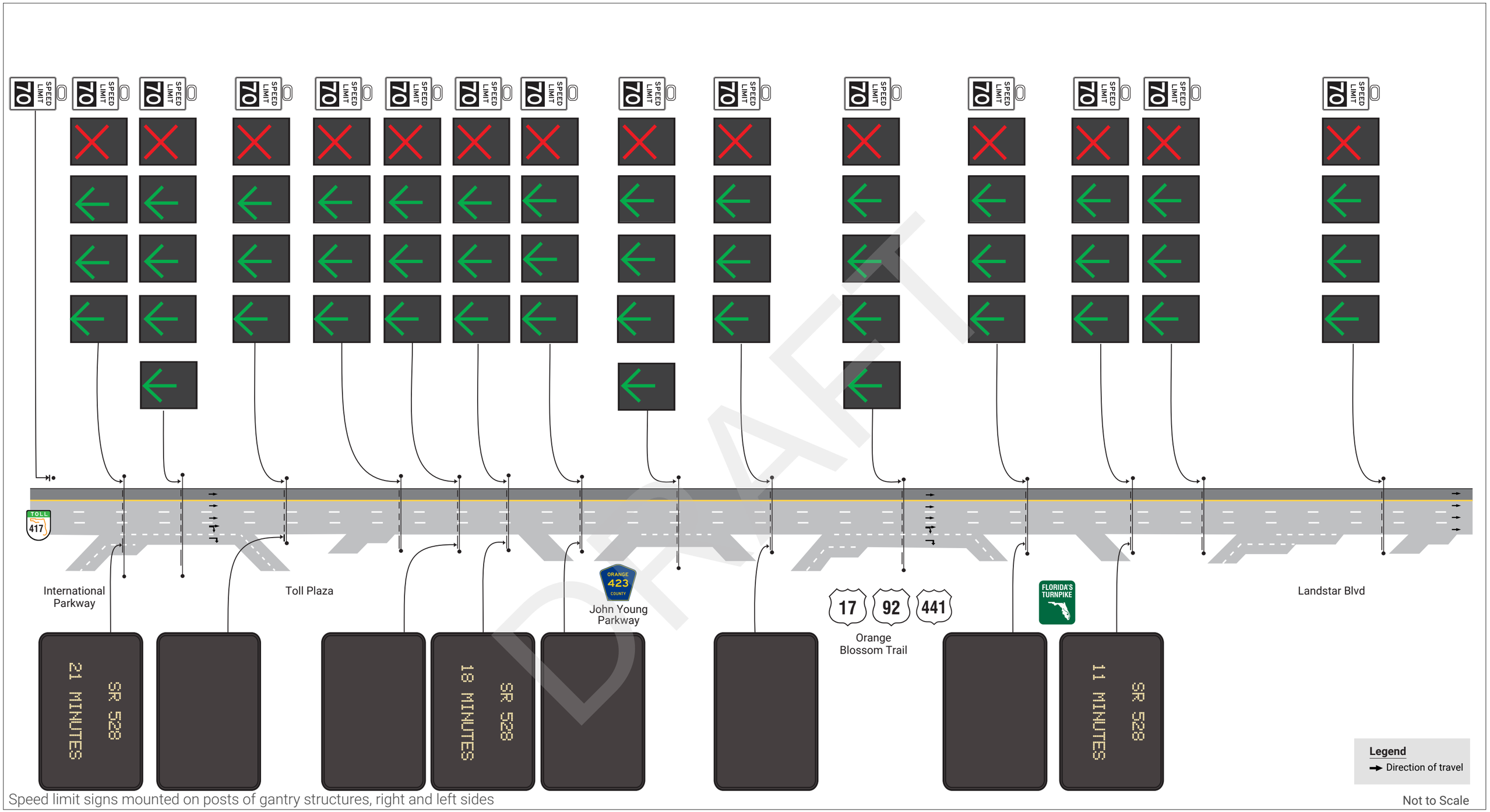

Speed limit signs mounted on posts of gantry structures, right and left sides

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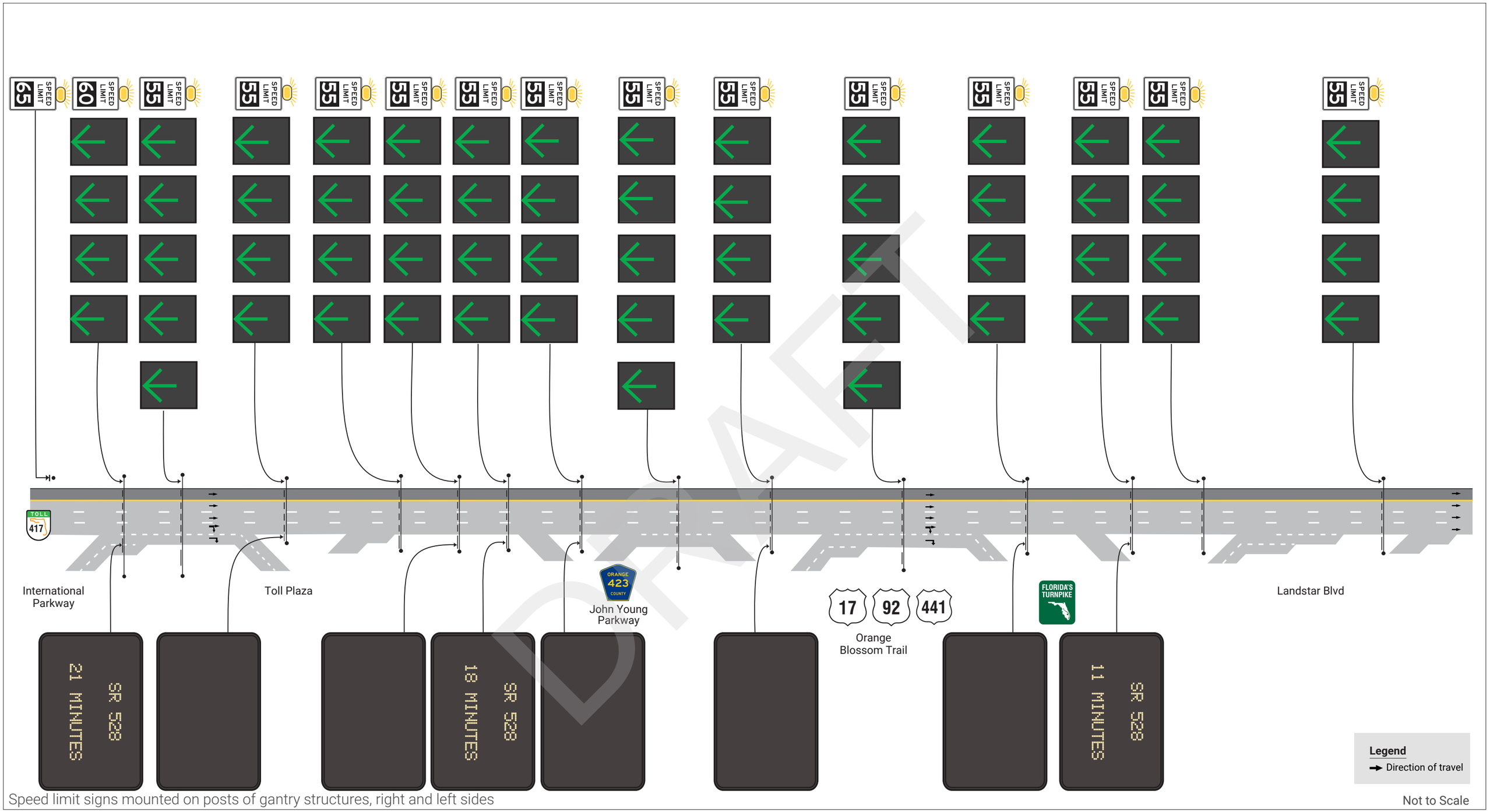
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario - Normal Condition - Off Peak

Figure 24



Speed limit signs mounted on posts of gantry structures, right and left sides

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario - Normal Conditions- Peak Period Congestion with PTSU

Figure 25

5.3 Scenario 3: Bottleneck/Congestion – Off Peak Period

An added benefit of Dynamic PTSU – versus static – is the flexibility it provides in immediately responding to traffic conditions. Bottlenecks and congestion are not limited to just peak periods. For example, special events and seasonal variations can result in weekend traffic becoming quite heavy during certain hours. Under these circumstances, CFX can open the shoulder:

- *proactively* if speed and volume levels, coupled with historical knowledge of the facility (typical day-of-week volume profile, seasonal variation, etc.) suggest that congestion is likely; or
- *reactively* if the congestion is unexpected. PTSU provides enough additional capacity that it will likely dissipate the congestion.

If the congestion is expected to occur or occurring over the entire length of the PTSU portion (in one or both directions), LCS displays and speed limits will be the same as Scenario 2. If the congestion is limited to only a portion of SR 417, the shoulder can be opened for just that portion. Given the length of the PTSU on SR 417 and the presence of interchanges with major roadways such as Florida's Turnpike, congestion limited to portions of SR 417 is a possibility.

Green arrow indications will be displayed over all general-purpose lanes. Where the shoulder is open, green arrow indications will be displayed over it. If the shoulder is closed (due to lower volume conditions) prior to the limit of the PTSU facility, one gantry will display a yellow X (with "MERGE" text) over the shoulder; this gantry will be located between one displaying green arrow over the shoulder and one displaying a red X over the shoulder.

When volumes fall to a low enough level that congestion is not anticipated with the shoulder being closed, the LCSs over the shoulder will display a flashing yellow X (with "MERGE" text) indication for two minutes and a steady yellow X (with "MERGE" text) for one minute before displaying a Red X indication, marking a return to Scenario 1 conditions.

An off-peak bottleneck/congestion scenario where congestion would be limited to a portion of the corridor is shown in **Figure 26**. In the situation depicted in **Figure 26**, PTSU is used to prevent congestion south of John Young Parkway. North of John Young Parkway, volumes are lower and PTSU is not needed. A scenario with congestion on the entire corridor would be the same as **Figure 25**.

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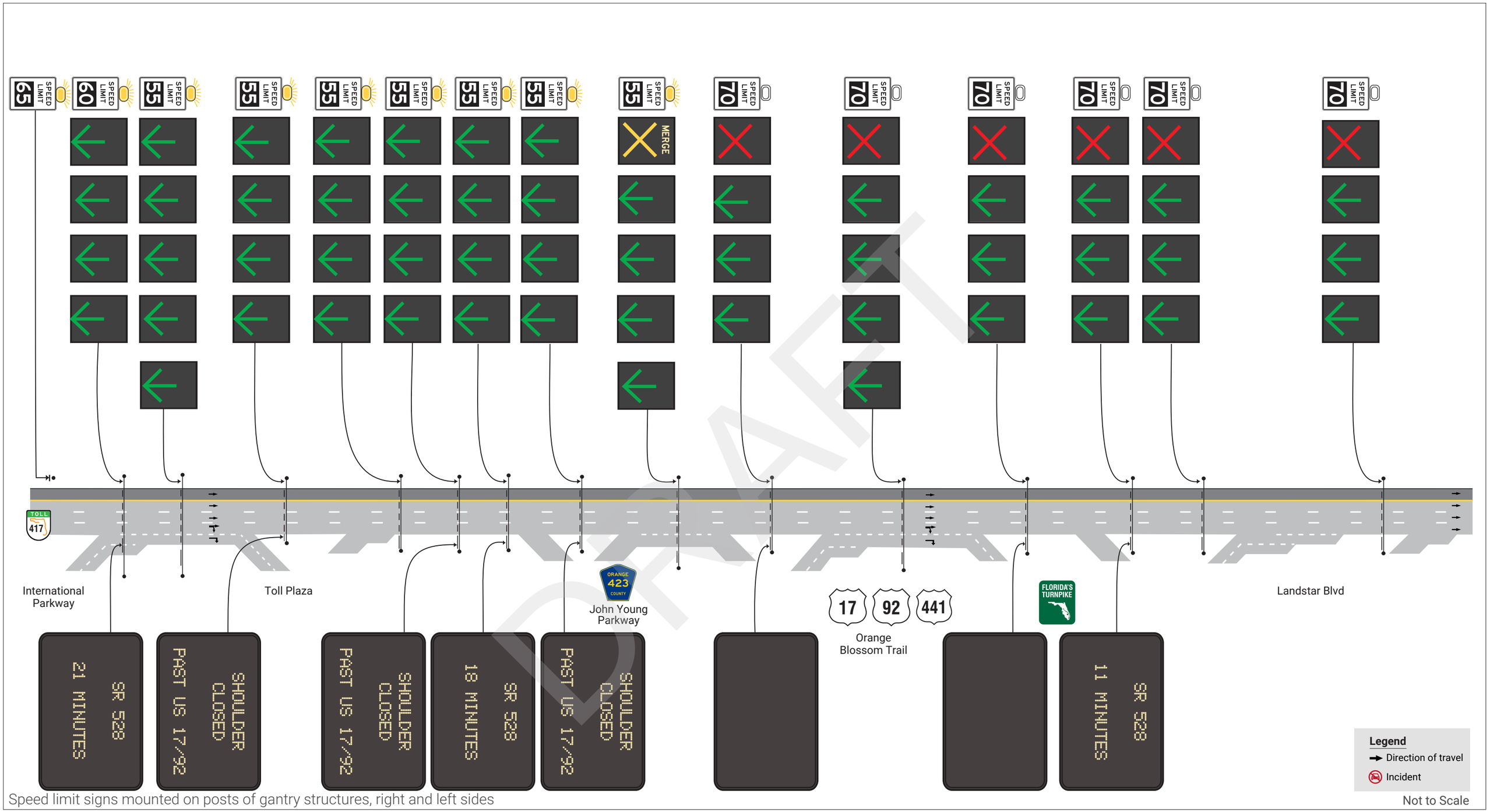

Speed limit signs mounted on posts of gantry structures, right and left sides

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario - Off Peak Congestion

Figure 26

5.4 Scenario 4: Incident Blocking a Single Lane

The sequence of LCSs displays for an incident blocking the right or left lane will be as follows in the blocked lane:

- Yellow X with "MERGE" text
- Yellow X with "MERGE" text
- Red X
- Green arrow (followed by green arrows at subsequent gantries)

The speed limit will be lowered to the appropriate value based on the location on the corridor. LCSs over the other two lanes will continue to display green arrow indications. If the incident is in the left lane, the shoulder will remain closed (or be closed if it is currently open) to avoid traffic being "split" around the incident. If the incident is in the right lane, TMC operators will have discretion to open the shoulder – once it is verified to be clear and emergency responders have verified they do not need it to reach the incident scene – depending on current traffic volumes and expected traffic volumes over the expected duration of the incident.

When the incident is cleared, LCS over all general-purpose lanes will return to green arrow indications and the shoulder will be closed in the same manner described in Scenario 2.

Figure 27 depicts a right lane incident at a time the operator chooses not to open the shoulder. If the shoulder were open, LCSs over the shoulder would display green arrows instead of red Xs.

Figure 28 displays an incident in the left lane. Because the shoulder is not opened, the speed limit is only decreased to 60 MPH. If the shoulder were opened at the time the incident occurred, it would also be closed so that traffic would not be "split" around the incident and the speed limit would be 55 MPH.

5.5 Scenario 5: Incident Blocking Center or Right Two Lanes

The sequence of LCSs displays for an incident blocking the center or right two lanes will be as follows:

- Yellow X with "MERGE" text in right lane, green arrow on other lanes and shoulder
- Yellow X with "MERGE" text in right and center lanes, green arrow on other lanes and shoulder
- Yellow X with "MERGE" text in right and center lanes, green arrow on other lanes and shoulder
- Red X in right and center lanes, green arrow on other lanes and shoulder
- Green arrow on all lanes and shoulder
- Yellow X with "MERGE" text in shoulder, green arrow on all lanes
- Red X on shoulder, green arrow on all lanes (repeated on subsequent gantries)

The last two gantries in the sequence above would have a green arrow on the shoulder if it were opened for congestion-related reasons at the time of the incident.

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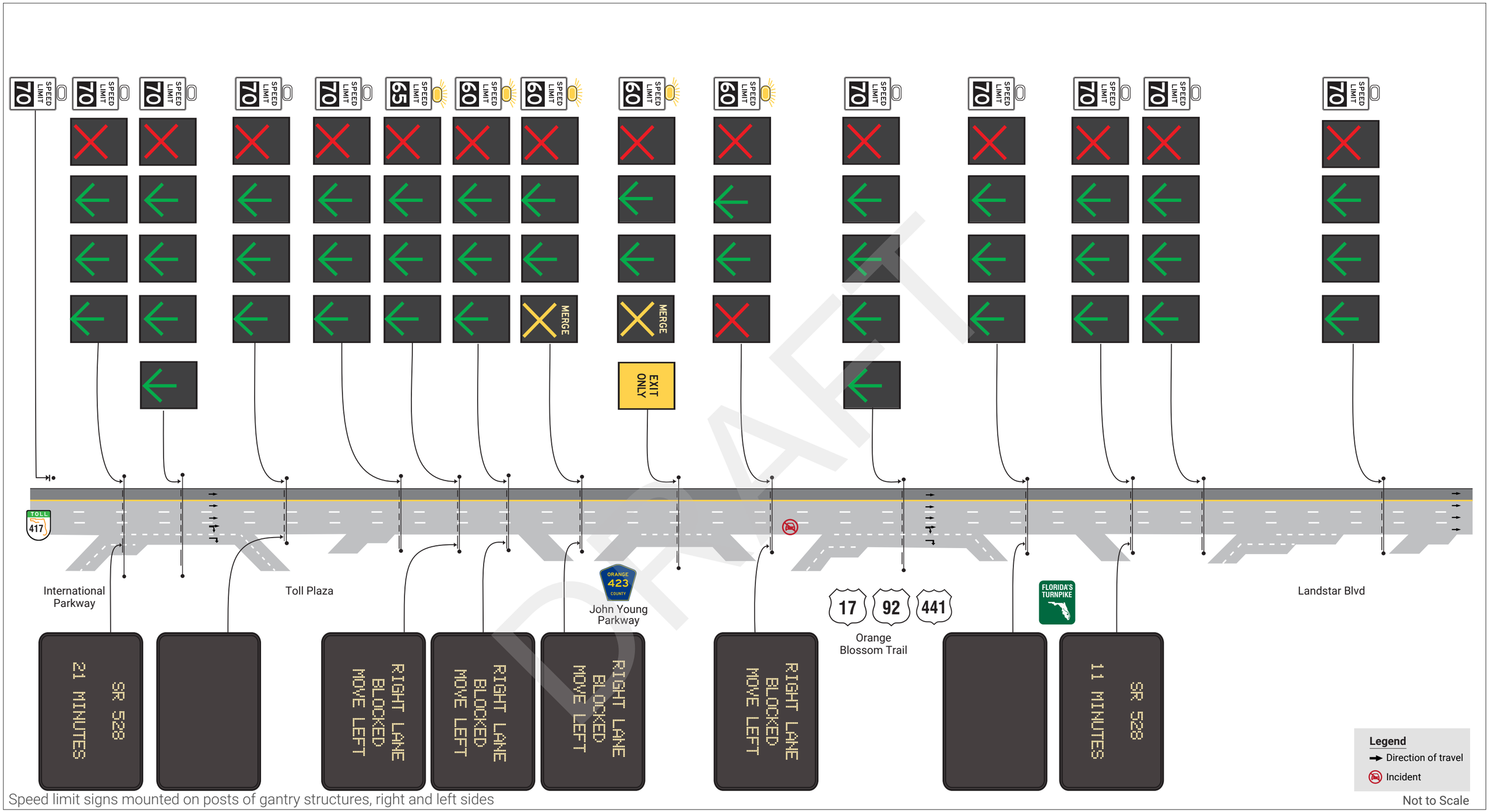

Speed limit signs mounted on posts of gantry structures, right and left sides

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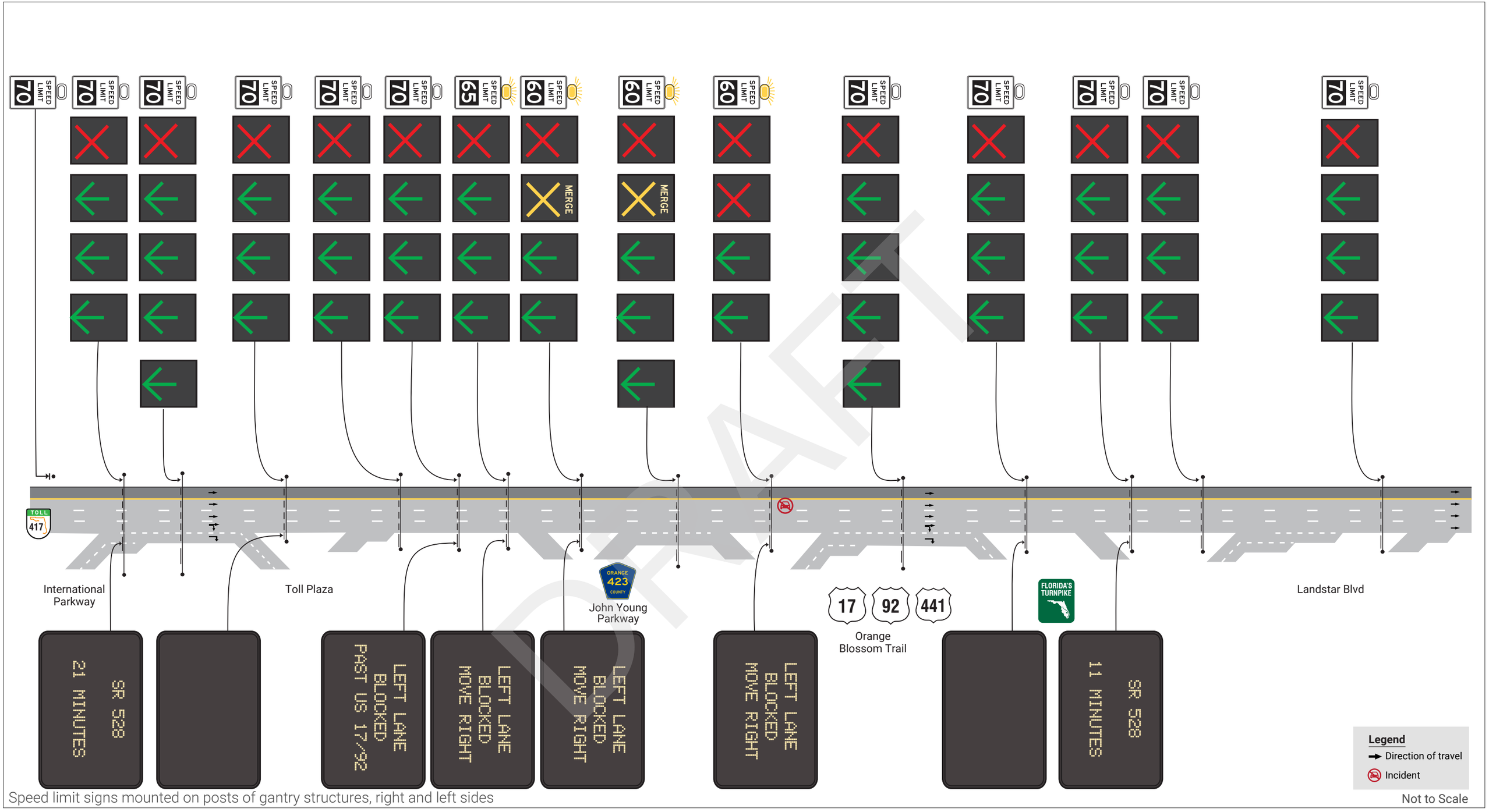
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario -Incident in Right Lane

Figure 27



Speed limit signs mounted on posts of gantry structures, right and left sides

Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario -Incident in Left Lane

Figure 28

The speed limit will be lowered to the appropriate value based on the location on the corridor. When the incident is cleared, LCS over all general-purpose lanes will return to green arrow indications.

This scenario is shown in **Figure 29**. **Figure 29** places the incident just beyond a weaving section and a right-side auxiliary lane is kept open to improve the mobility of drivers exiting to US 17/92/441. In **Figure 29**, the speed limit is decreased to 60 MPH rather than 50 MPH because the shoulder is opened on a portion of SR 417 where SSD supports speeds of 60 MPH or more. If the shoulder were open at the time the incident occurred, it would remain open.

5.6 Scenario 6: Incident Blocking Left Two Lanes

If the center and left general purpose lanes are blocked, the shoulder will remain closed, or be closed if it was open at the time of the incident, to avoid splitting traffic around the incident. The sequence of LCS displays for an incident blocking the left two lanes will be as follows:

- Yellow X with “MERGE” text in left lane, green arrow on other lanes
- Yellow X with “MERGE” text in left and center lanes, green arrow on other lane(s)
- Red X in left lane, Yellow X with “MERGE” text in center lanes, green arrow on other lane(s)
- Red X in left and center lanes, green arrow on other lane(s)
- Green arrow on all lanes (repeated on subsequent gantries)
- Yellow X with “MERGE” text in shoulder, green arrow on all lanes
- Green arrow on all lanes (repeated on subsequent gantries)

The shoulder will have a red X at all of the gantries noted above except the last one. At this location, the shoulder will have a red X if the shoulder is closed and a green arrow if it is open for congested-related reasons. **Figure 30** displays this scenario.

If the shoulder were open at the time the incident occurred, it would also be closed so that traffic would not be “split” around the incident.

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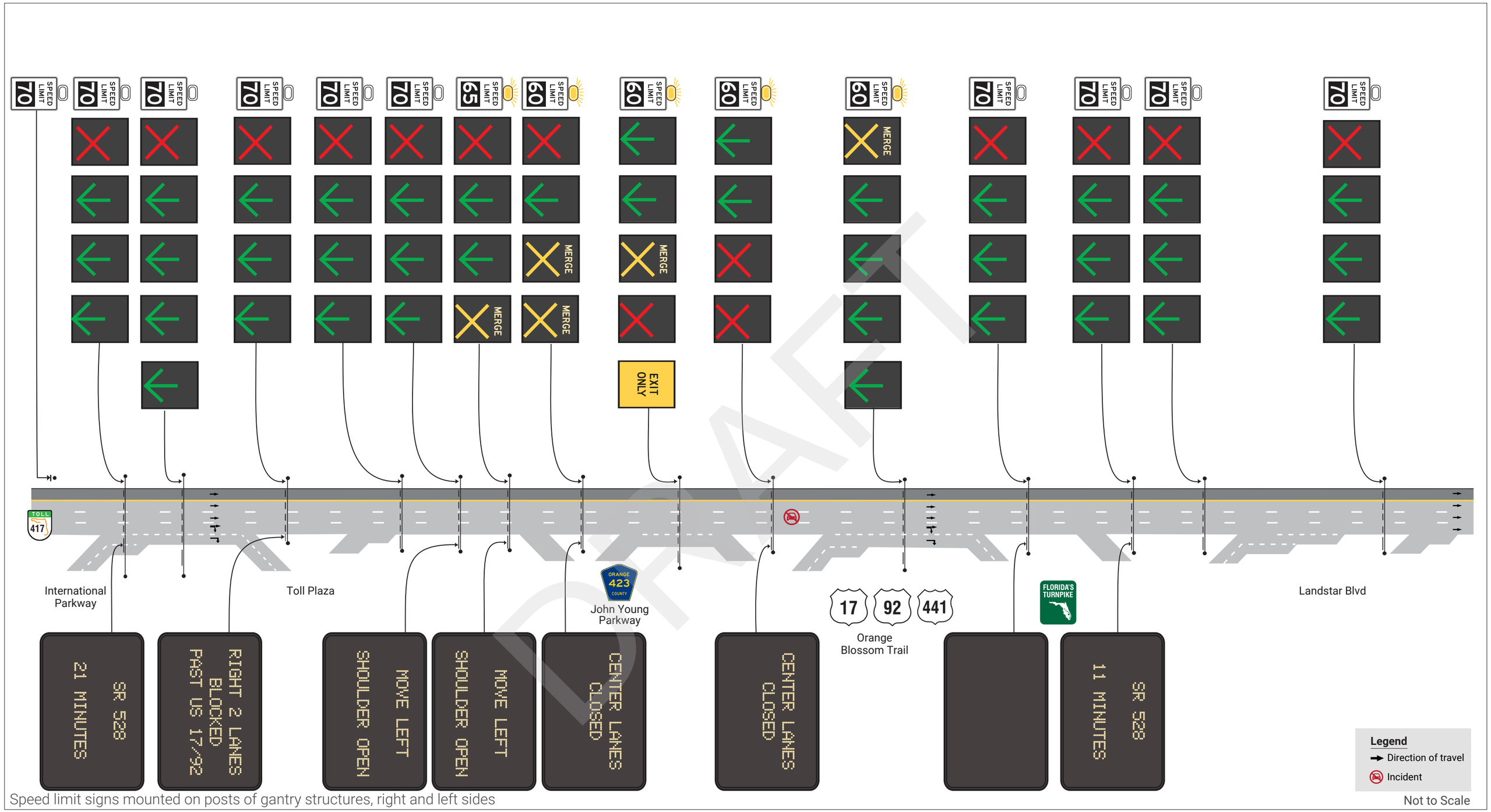


Speed limit signs mounted on posts of gantry structures, right and left sides

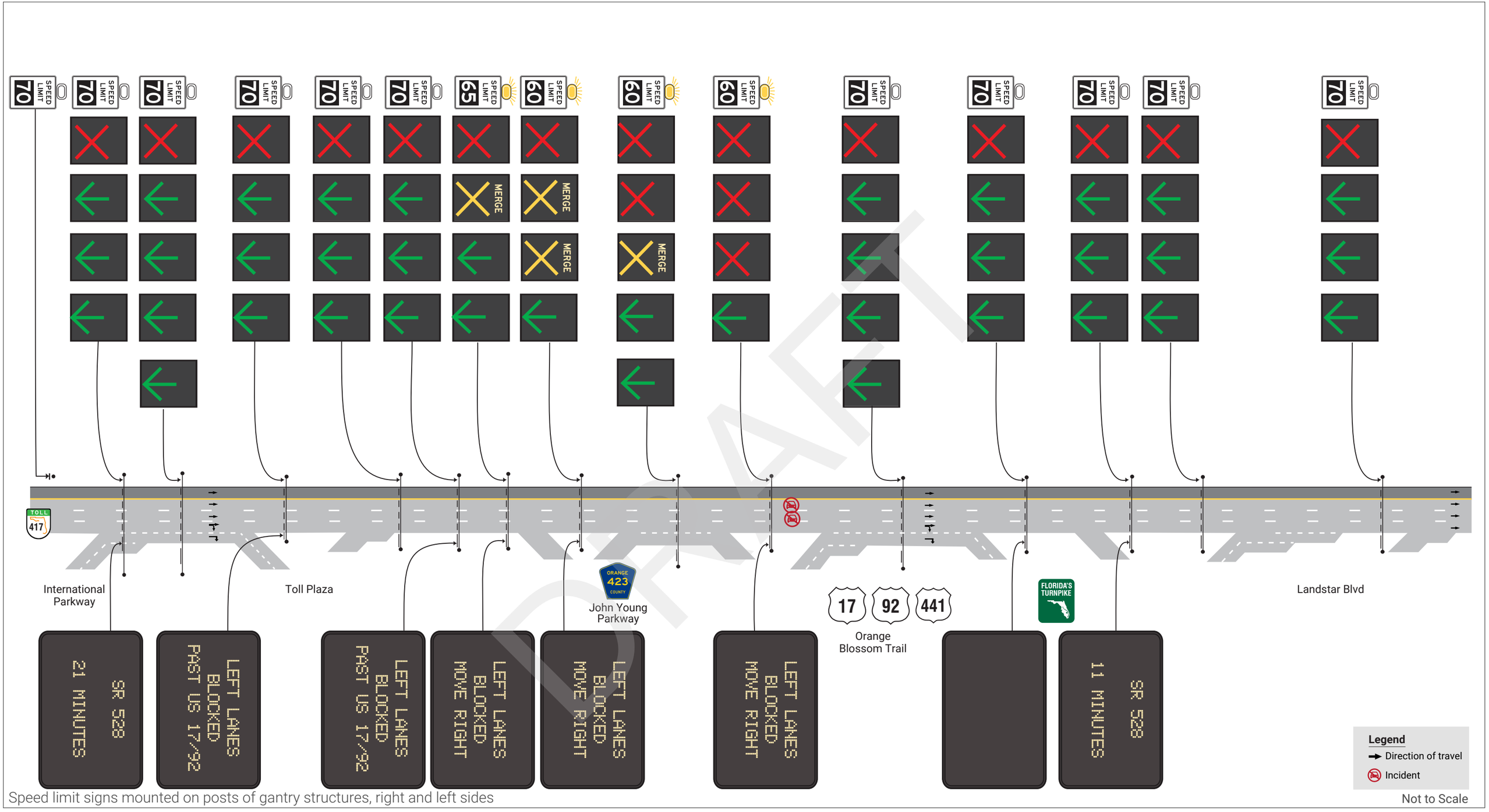
Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario -Incident in Center Lane

Figure 29



Speed limit signs mounted on posts of gantry structures, right and left sides

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario -Incident in Left Two Lanes

Figure 30

5.7 Scenario 7: Road Closure (All Lanes)

In the event of a major crash or other event necessitating a complete closure of SR 417, a series of indications will be provided to move drivers to the right and direct them to the exit upstream of the closure. Lanes will have two yellow X with "Merge" text indications followed by a red X indication. An "Exit only" indication is shown in the right lane prior to the exit. Red X indications with "Closed" text are used on LCSs on gantries at which the road is fully closed.

Figure 31 displays this scenario. In the case of **Figure 31**, the shoulder was closed prior to the incident occurring.

5.8 Scenario 8: Law Enforcement Activity on Right Shoulder

To reinforce Florida's "move over" law described in Section 4.4.5, black "MOVE LEFT" text on white background will be displayed on the right lane on the gantry prior to the law enforcement activity. A similar display for law enforcement activity on the left shoulder is not planned because the left shoulder is 19' wide and is less frequently used by law enforcement than the right shoulder.

Figure 32 displays this scenario. In the case of **Figure 32**, the incident is just downstream of an exit gore at which a lane drops, and black "EXIT ONLY" text on yellow background is displayed over the auxiliary lane to reinforce the fact it is for exiting traffic only.

5.9 Scenario 9: Incident on Left Shoulder

If the left shoulder becomes blocked during PTSU operation, it will be closed in a manner similar to a general purpose lane with an incident and reopened downstream of the incident. If the blockage occurs when the shoulder is closed, a supplemental "BLOCKED" message will be displayed above the red X on the gantry prior to the blockage. This scenario is shown in **Figure 33**.

5.10 Scenario 10: Work Zone

When a lane is closed for construction or maintenance activity, LCSs should reinforce, not contradict, traditional maintenance of traffic signing. Additionally, if the work involves the closure of a right lane, the shoulder can be opened to offset lost capacity.

Figure 34 displays a work zone scenario. Black "ROAD WORK AHEAD" text on orange background is used on all LCSs at the gantry prior to the start of yellow X sequence preceding the lane closure. Due to the location of the right lane closure in **Figure 34**, black "EXIT ONLY" text on yellow background is displayed over the auxiliary lane to reinforce the fact it is for exiting traffic only.

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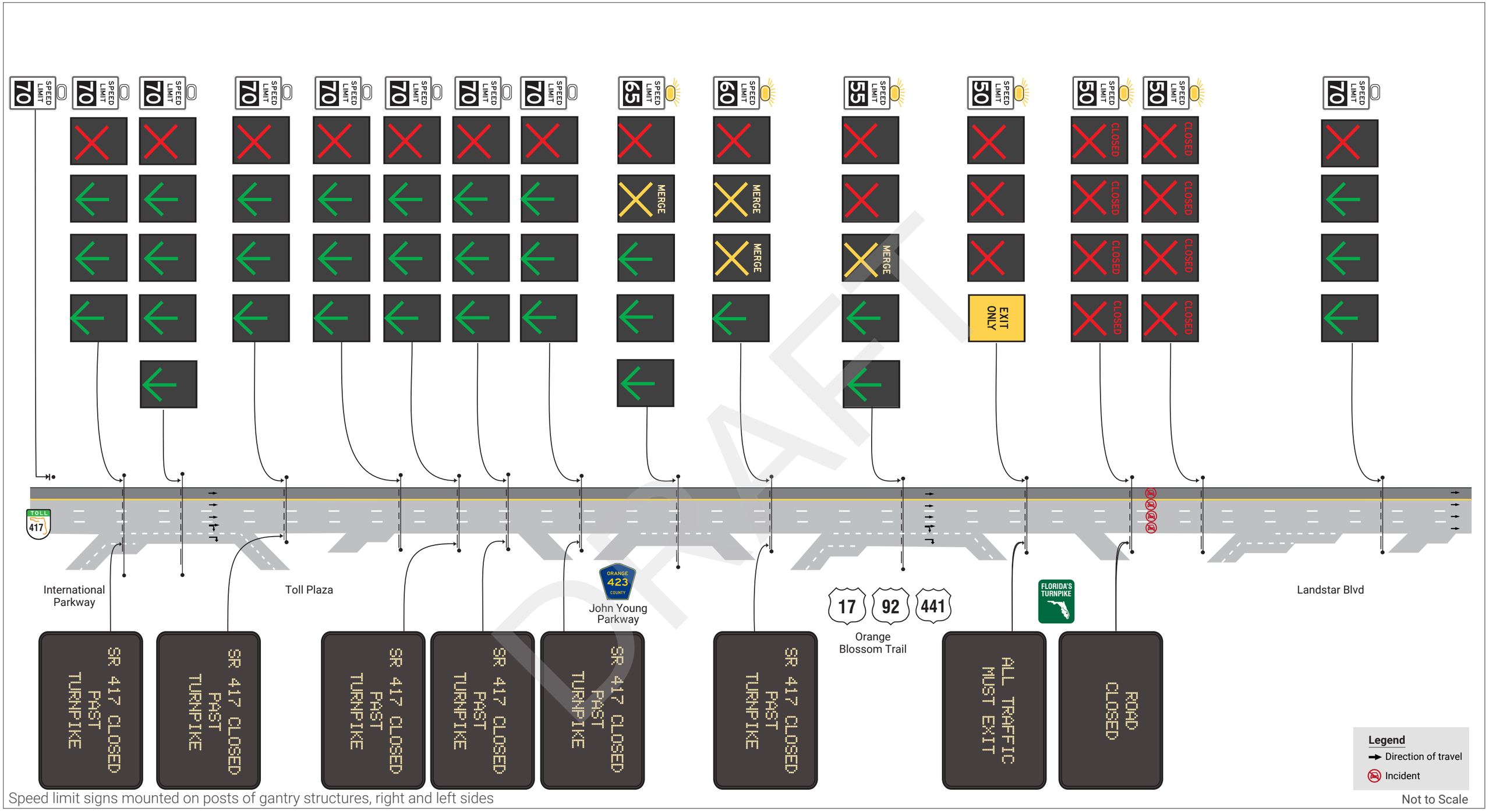

Speed limit signs mounted on posts of gantry structures, right and left sides

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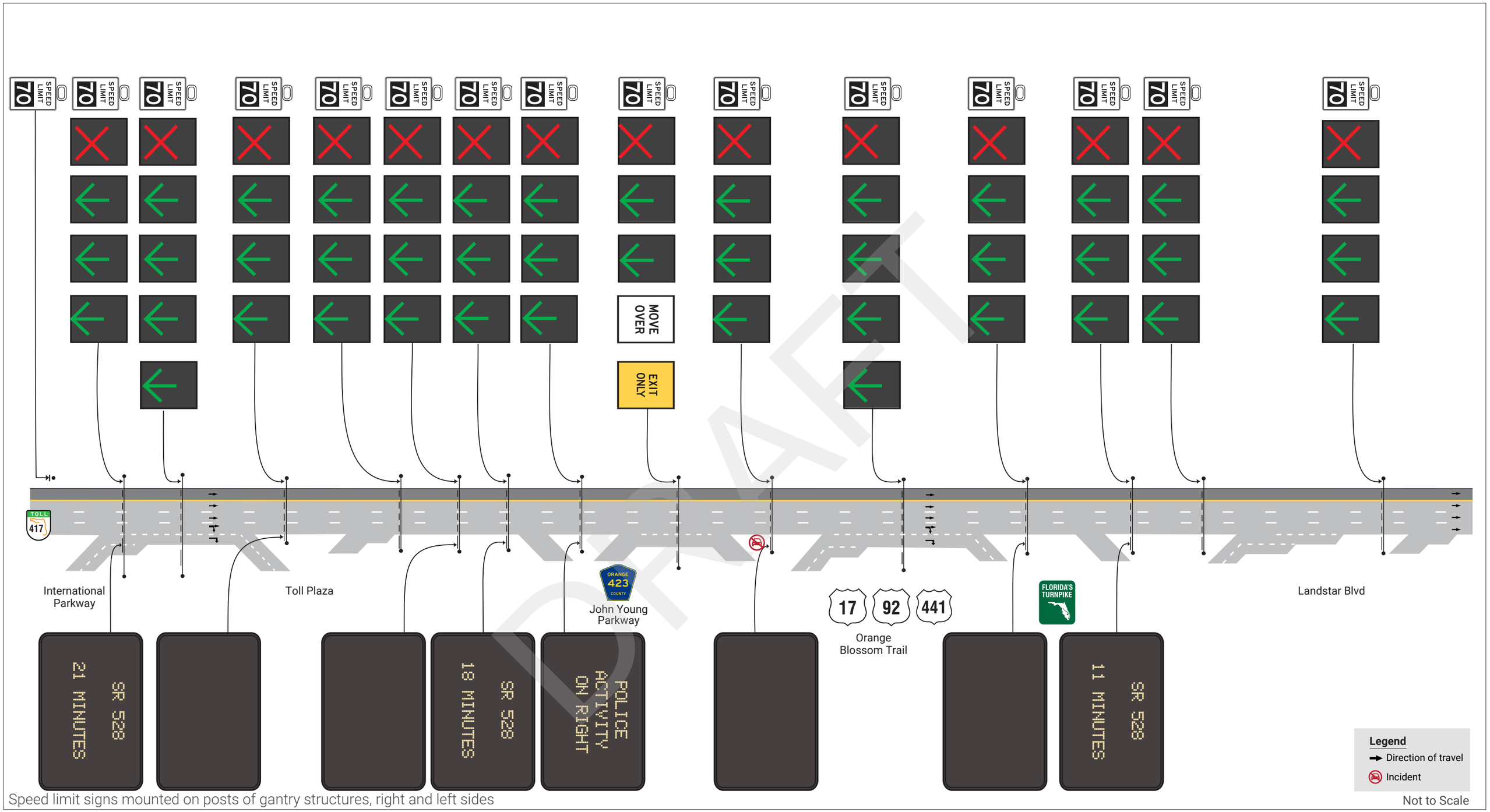
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario -Incident Blocking All Lanes

Figure 31



Speed limit signs mounted on posts of gantry structures, right and left sides

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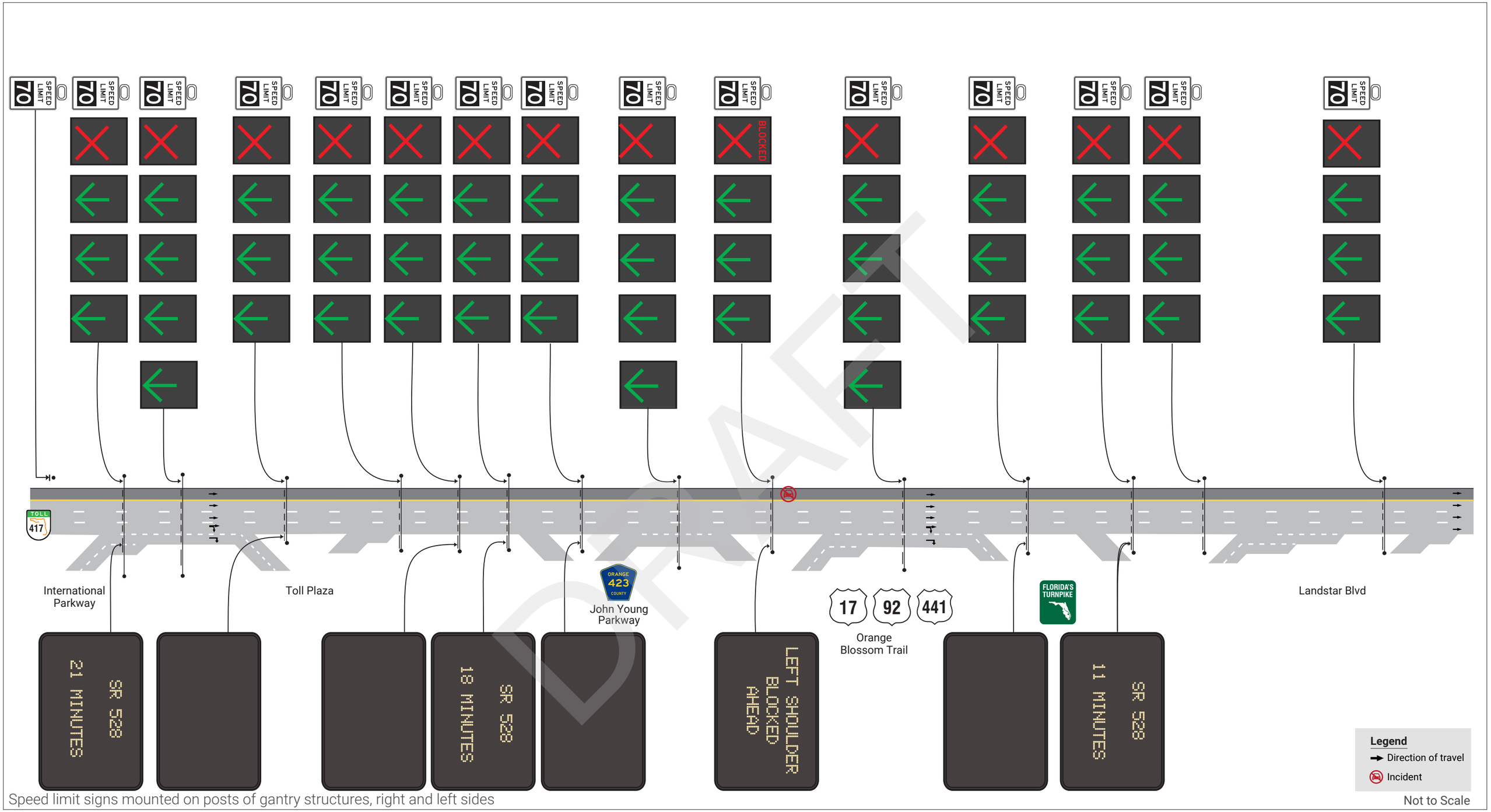
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario -Law Enforcement Activity on Shoulder

Figure 32



Speed limit signs mounted on posts of gantry structures, right and left sides

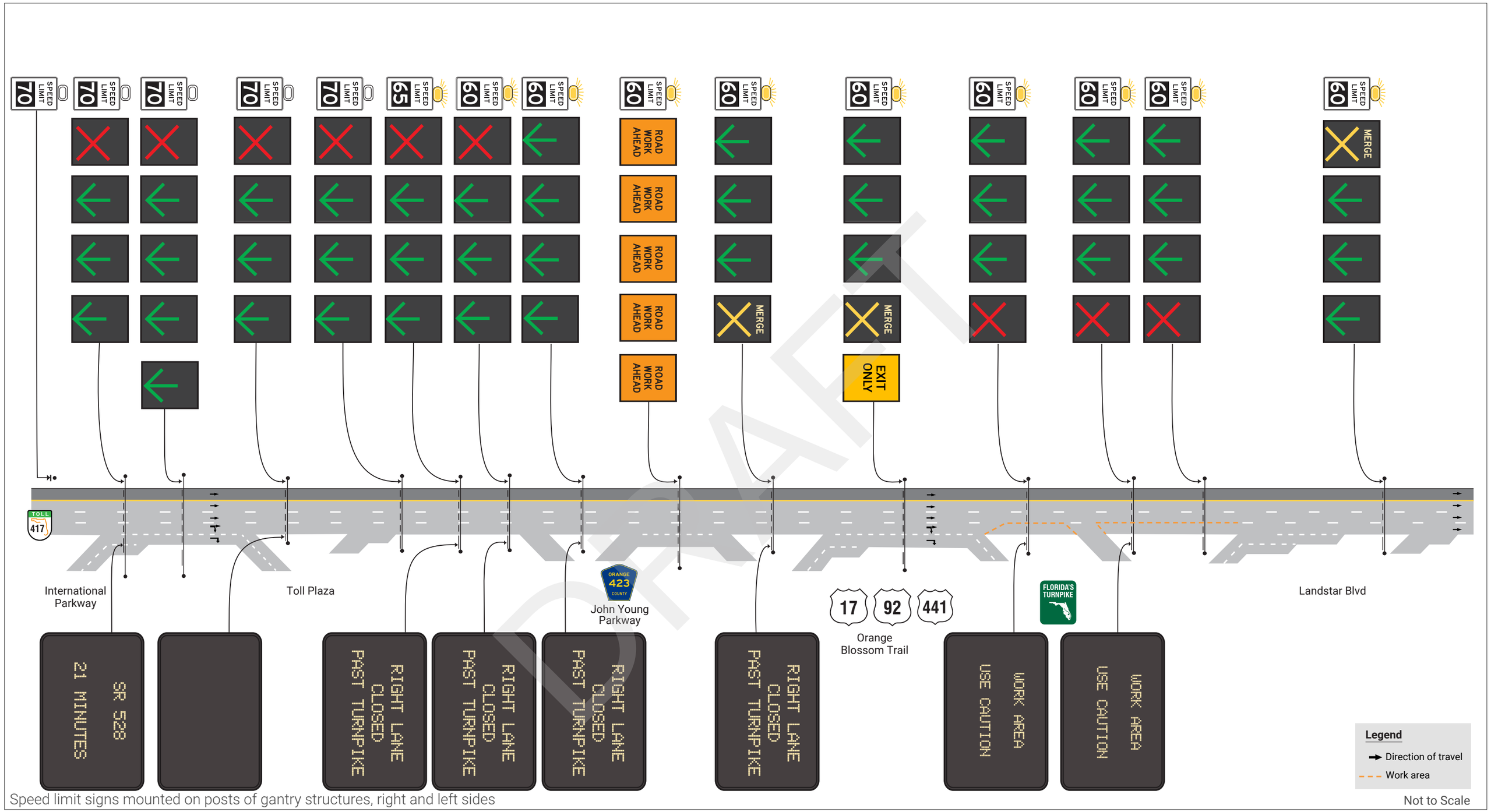
Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario -Incident on Part Time Shoulder Use Lane

Figure 33



Speed limit signs mounted on posts of gantry structures, right and left sides

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 417 Part-Time Shoulder Use

Operational Scenario -Maintenance of Traffic

Figure 34

6. Summary of Impacts

PTSU will make the appearance of SR 417 different than a typical expressway. Drivers will see lane control signals over all lanes and the left shoulder indicating if they are open or closed. Travel time reliability should improve due to the ability to provide additional capacity on the shoulder when incidents occur on the right side of the roadway, and additional information being provided to drivers may reduce the occurrence of secondary crashes. Longer term, PTSU will provide additional peak period capacity nearly equivalent to an additional lane, decreasing peak period travel times. The PTSU infrastructure will largely be constructed at the same time as the widening project, so construction impacts of PTSU will be negligible. Impacts to those who operate the facility include the following:

- The FDOT District 5 RTMC will need one additional staff person during each daytime shift to operate the SR 417 PTSU system. This person may also operate the SR 429 PTSU system at the same time, or a second person may be added to operate that facility. During lower-volume periods, FDOT staff/consultants have the *capacity* to operate the SR 417 and SR 429 PTSU systems but they currently do not have the authorization to operate PTSU and the RTMC may need to add a CFX staff person or consultant to do so. Staff operating PTSU will need to be trained on the software that operates the PTSU system.
- Law enforcement officials will enforce the "closed" status of the shoulder when it is closed and speed limits that vary, in addition to enforcement activities occurring today on SR 417.
- Law enforcement and emergency responders will request the RTMC close general-purpose lanes when needed for incidents and incident response.
- Road Rangers, CFX Maintenance staff, or FHP will verify the shoulder is clear of debris and disabled vehicles before each opening. There will also be increased effort in keeping the left shoulder clear at all times so the shoulder can be opened rapidly when an incident occurs.
- CFX and all of the stakeholders noted above will need to develop operating procedures for PTSU.
- CFX will have increased ITS maintenance responsibilities due to the additional ITS equipment being deployed.

7. Analysis of the Proposed System

This section provides a summary of traffic operations in future years with and without PTSU and discusses when it is forecast the shoulder will need to be opened on a regular basis to prevent recurring congestion. Information on the costs and schedule of the proposed system are presented as well.

7.1 Alternatives

Several alternate features were considered for the SR 417 PTSU system but ultimately not selected:

- Older-style blank-out lane control signals – these signals would only be capable of displaying green arrows, yellow Xs, and red Xs. These LCSs have been used on older PTSU projects but they are unable to display other messages. They also do not give CFX the flexibility to use different displays in the future.

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- Large, full-color DMSs – these signs would display both lane control indications (arrows and Xs) and text messages. Sign density on SR 417 without PTSU is relatively high, and some gantries with LCSs will also have permanent guide signs because there is insufficient space for separate structures. Large DMSs are not feasible for SR 417 due to the current sign density.
- Curve warning signs – dynamic curve warning signs (i.e. dynamic W1-2 signs) were considered in lieu of variable speed limits to reduce speeds on curves where 70 MPH stopping sight distance is unavailable when the shoulder is open. These signs are typically used when a curve's radius and superelevation do not support the posted speeds, as opposed to a stopping sight distance restriction. Additionally, if the advisory speed of the curve is more than 10 MPH lower than the posted speed limit (which would be the case on 55 MPH curves), chevon warning signs are needed on the outside of the roadway per Table 2C-5 of the MUTCD. Curve warning signs and chevrons would need to be located prior to and at curves, not necessarily where gantry structures will be located. Due to the complexities of curve warning signs, variable speed limits were chosen to reduce speeds to stopping sight distance values.

7.2 Traffic Operations Analysis

A traffic operations analysis was conducted for the future conditions and was submitted under separate cover. The following sections summarize the results of the future conditions analysis for the No-Build, Build (Widening), and Build (Widening and PTSU) scenarios for the design year (2045).

7.2.1 Future No-Build Operational Results

As volumes continue to grow, the SR 417 facility is expected to experience worsening recurring congestion during the weekday AM and PM peak hours. The following summarizes the specific locations of congestion by direction and by time period.

7.2.1.1 Northbound SR 417 Operations

Figure 35 and **Figure 36** illustrate the speed contours along northbound SR 417 for the 2045 AM and PM peak hours, respectively. During both the 2045 AM and PM peak hours, severe congestion (speeds less than 15 MPH) is expected across the study limits (Downden Road to International Drive).

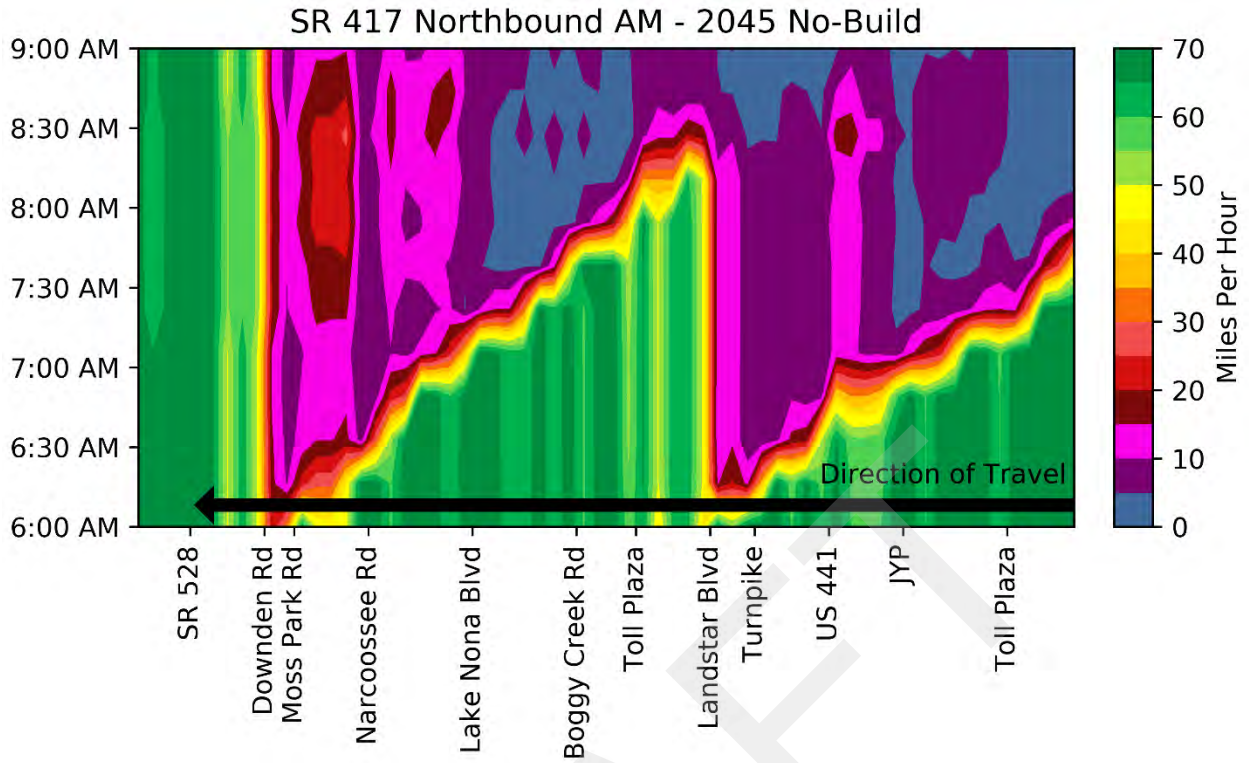

Figure 35: Northbound SR 417 – No-Build 2045 AM Speed Contours

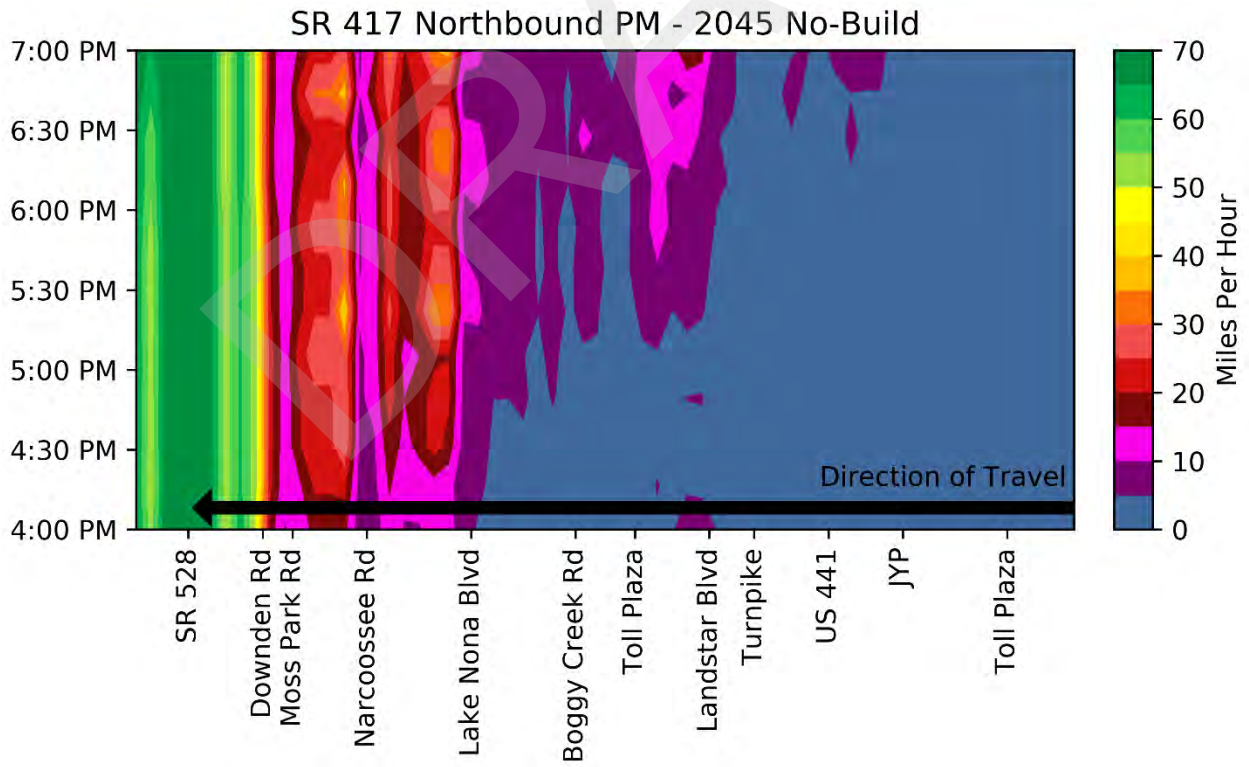

Figure 36: Northbound SR 417 – No-Build 2045 PM Speed Contours

The key performance metrics for northbound SR 417 in 2045 are summarized in **Table 6**. The average travel time along the facility is expected to be more than approximately 11 times the free-flow travel time throughout the day in 2045. The demand is also expected to exceed capacity by nearly double (max D/C ratio of 1.98). Average speeds of approximately 10 MPH or less are expected along the facility during the 2045 peak hours.

Table 6: Northbound SR 417 – No-Build 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Average Travel Time (min)	197.6	175.8	456.6
Space Mean Speed (mi/h)	24.8	10.0	6.3
Average Density (pc/mi/ln)	84.4	106.8	132.9
Max Demand to Capacity (D/C)	1.98	1.77	1.98
Max Volume to Capacity (V/C)	1.01	1.00	1.00
Vehicle Hours Delay (hrs)	1,752,313	9,930	144,071
Vehicle Miles Traveled (veh-miles / interval)	858,070	47,496	37,605
Length (mi)	21.5		
Free Flow Speed Travel Time (min)	18.4		

7.2.1.2 Southbound SR 417 Operations

Figure 37 and **Figure 38** illustrate the speed contours along southbound SR 417 for the 2045 AM and PM peak hours, respectively. During both the 2045 AM and PM peak hours, severe congestion (speeds as low as 5 MPH) is expected from Boggy Creek Road through the beginning of the southbound study limits (SR 528). Congestion is also expected between the John Young Parkway and Landstar Boulevard interchanges (less than 20 MPH) during both 2045 peak hours.

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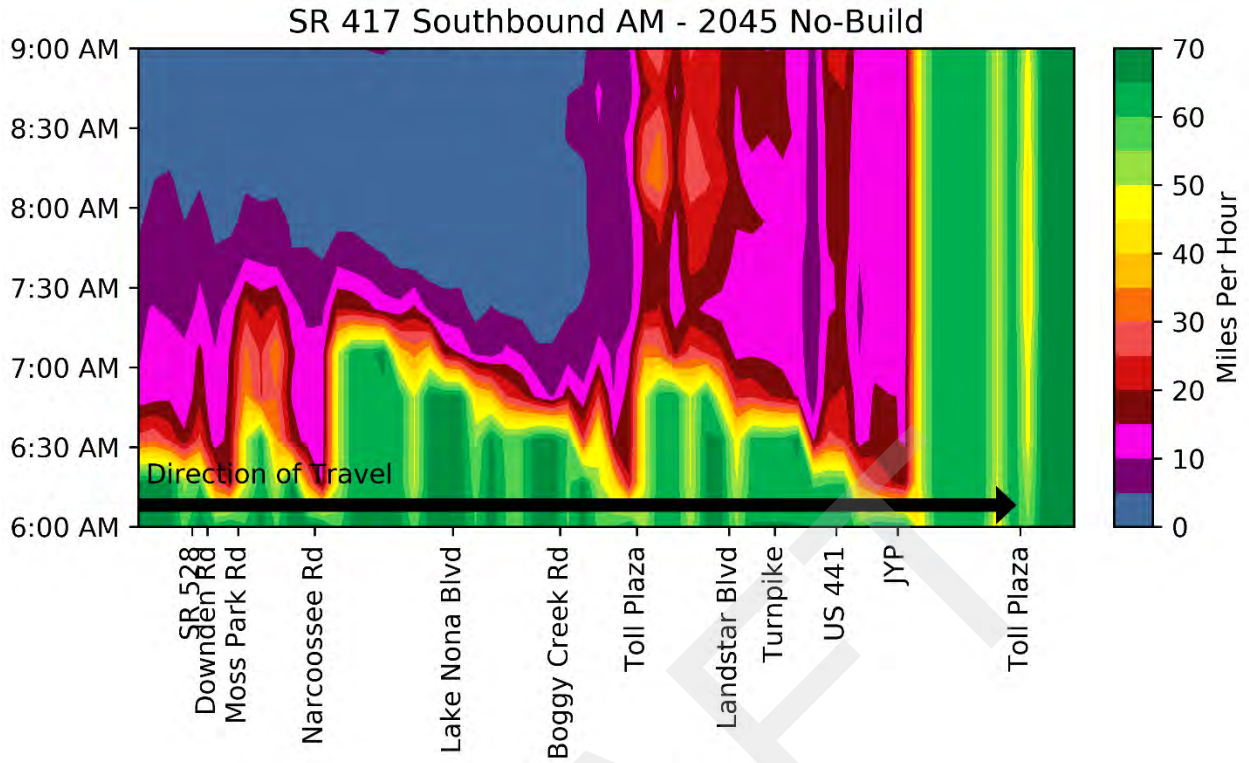

Figure 37: Southbound SR 417 – No-Build 2045 AM Speed Contours

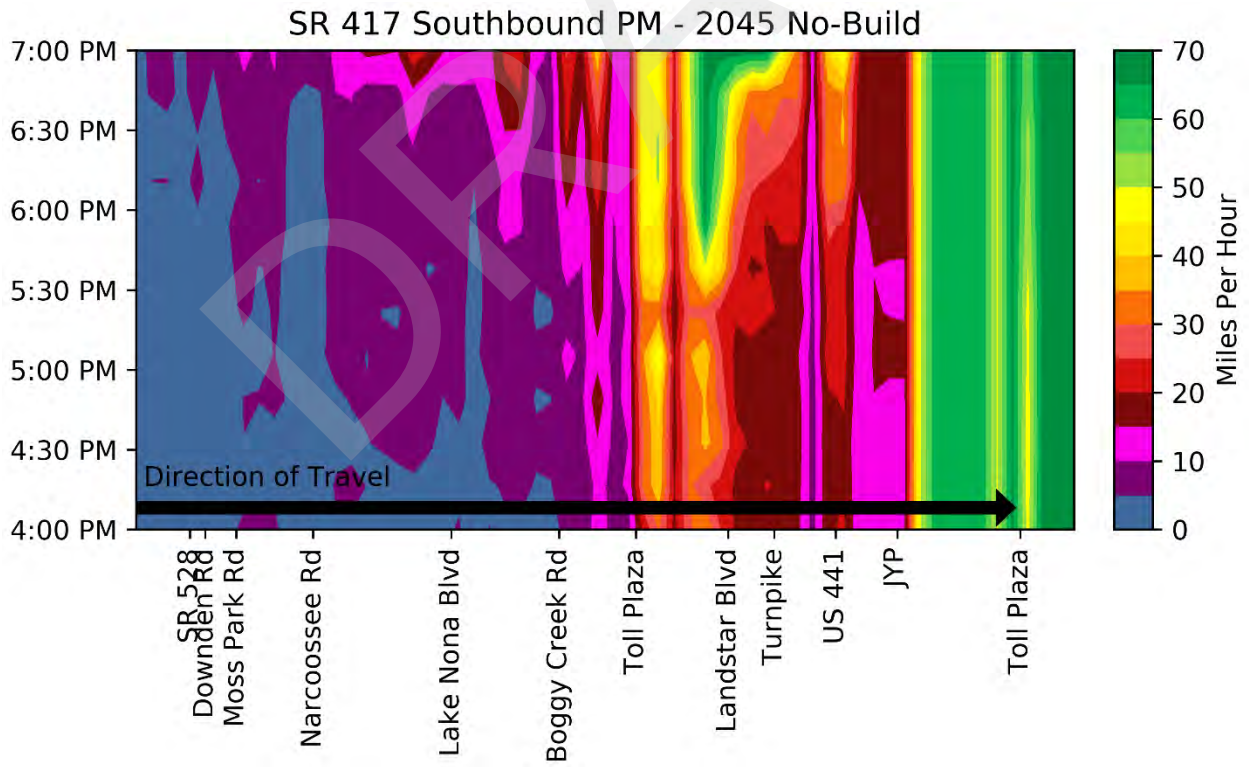

Figure 38: Southbound SR 417 – No-Build 2045 PM Speed Contours

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The key performance metrics for southbound SR 417 in 2045 are summarized in **Table 7**. The average travel time along the facility is expected to be up to more than 13 times the free-flow travel time in the 2045 AM peak hour. The maximum D/C ratio is expected to be over 2.0 during 2045. Average speeds of less than 11 MPH are expected along the facility during the 2045 peak hours.

Table 7: Southbound SR 417 – No-Build 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Average Travel Time (min)	100.6	233.6	183.3
Space Mean Speed (mi/h)	28.8	8.6	10.3
Average Density (pc/mi/ln)	62.5	109.8	100.9
Max Demand to Capacity (D/C)	2.16	2.14	2.16
Max Volume to Capacity (V/C)	1.02	1.00	1.00
Vehicle Hours Delay (hrs)	1,905,798	25,451	145,101
Vehicle Miles Traveled (veh-miles / interval)	976,657	41,606	47,000
Length (mi)	20.5		
Free Flow Speed Travel Time (min)	17.6		

7.2.2 Future No-Build Operational Summary

The operational analysis shows severe congestion with speeds as low as 5 MPH expected during the 2045 peak hours. Travel times in both directions are expected to be more than 10 times the free-flow travel times during the 2045 peak hours. The analysis conducted shows the need for additional capacity along the facility in both directions. The following sections will summarize the operational analysis results of the programmed widening and proposed PTSU improvements.

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7.2.3 Future Build Operational Results (Widening Alternative)

The previously summarized No-Build analysis showed the need for widening of the SR 417 facility. The following summarizes the specific locations of congestion by direction and by time period for the programmed widening of SR 417 from the existing four lanes to six lanes for 2045.

7.2.3.1 Northbound SR 417 Operations

Figure 39 illustrates the speed contours along northbound SR 417 for the 2045 AM peak hour. Even with the widening of the facility to six lanes, congestion (speeds as low as 20 MPH) is still expected between the Turnpike and Landstar Boulevard interchanges during the 2045 AM peak hour. A small bottleneck is also expected near the Moss Park Road interchange during the 2045 AM peak hour. The remainder of the facility is expected to operate at speeds of 50 MPH or higher.

The speed contours for the 2045 PM peak hour are illustrated in **Figure 40**. The speed contours show a bottleneck near the Landstar Boulevard interchange which results in slowdowns that propagate to the beginning of the study limits during the 2045 PM peak hour.

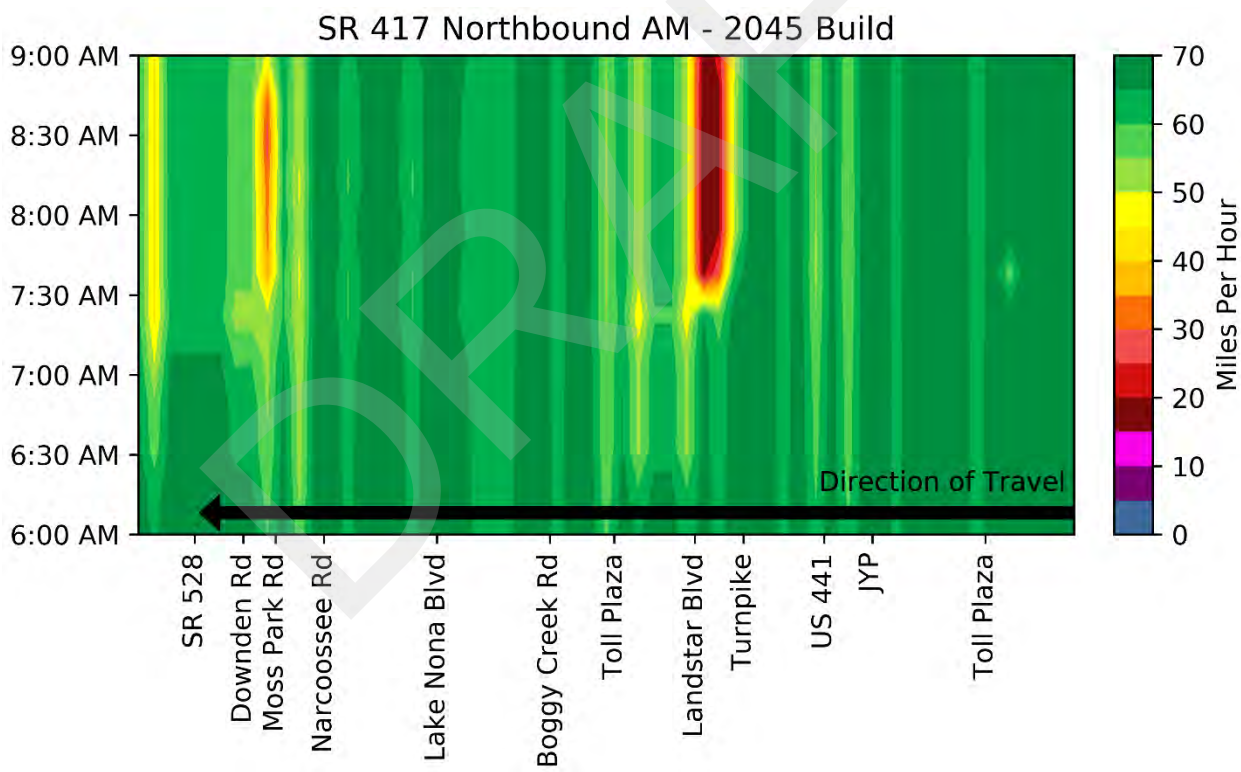

Figure 39: Northbound SR 417 – Build 2045 AM Speed Contours

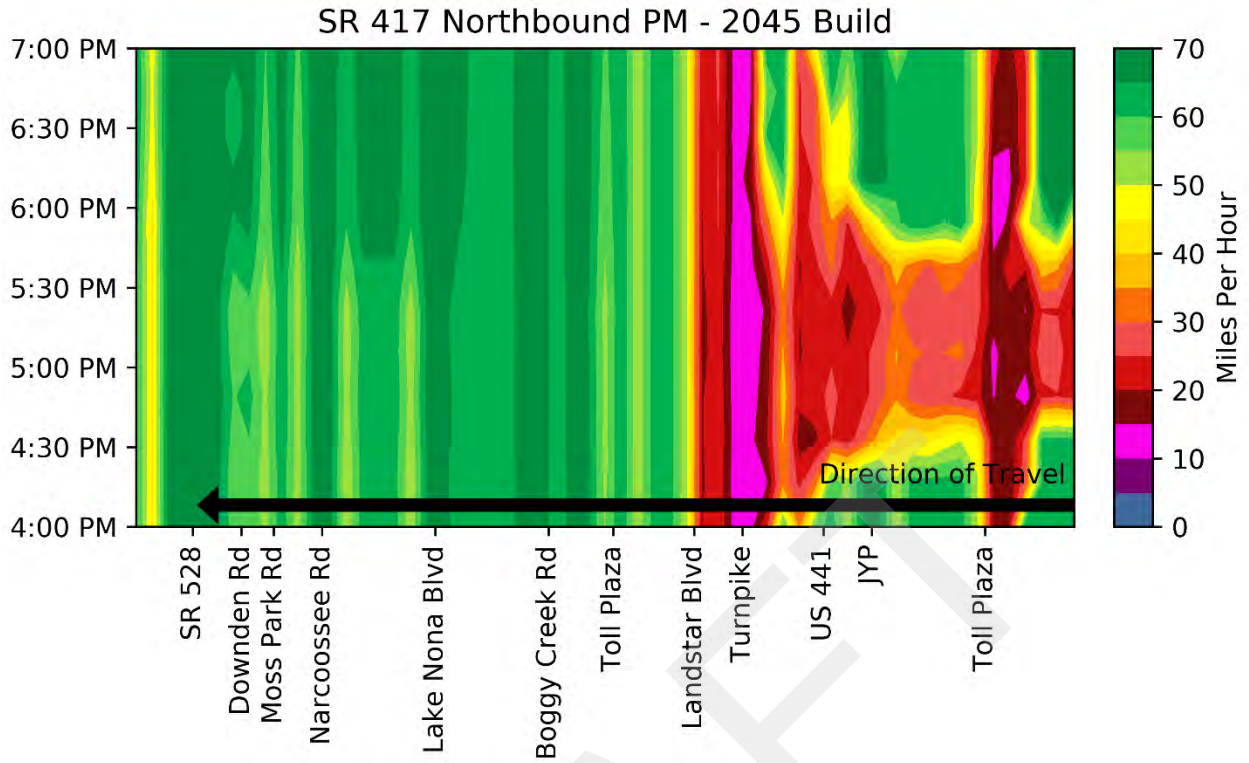

Figure 40: Northbound SR 417 – Build 2045 PM Speed Contours

The key performance metrics for the northbound Build scenario in 2045 are summarized in **Table 8**. The average travel time along the facility is expected to improve over the No-Build. The free-flow travel time is approximately 18 minutes and during the AM and PM peak hours and it is expected to be approximately 23 minutes and 37 minutes, respectively. The maximum D/C ratio drops to 1.25 showing there are still additional capacity needs. Average speeds of approximately 55 MPH and 36 MPH are expected along the facility during the 2045 AM and PM peak hours, respectively.

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Table 8: Northbound SR 417 – Build 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Average Travel Time (min)	22.0	22.8	37.1
Space Mean Speed (mi/h)	59.9	55.1	36.1
Average Density (pc/mi/ln)	16.8	26.1	41.9
Max Demand to Capacity (D/C)	1.25	1.11	1.25
Max Volume to Capacity (V/C)	1.00	1.00	1.00
Vehicle Hours Delay (hrs)	22,592	846	6,386
Vehicle Miles Traveled (veh-miles / interval)	1,476,710	94,959	104,344
Length (mi)	21.5		
Free Flow Speed Travel Time (min)	18.4		

7.2.3.2 Southbound SR 417 Operations

Figure 41 illustrates the speed contours along the southbound facility for the 2045 AM peak hour. Even with the widening of the facility to six lanes, congestion (speeds less than 20 MPH) is still expected across the study limits during the 2045 AM peak hour.

The speed contours for the 2045 PM peak hour are illustrated in **Figure 42**. Even with the widening of the facility to six lanes, a bottleneck is expected between Landstar Boulevard and the adjacent Toll Plaza during the 2045 PM peak hour. Downstream of this bottleneck, speed contours show the facility operating with speed of 50 MPH or higher during the 2045 PM peak hour; however, this is due to the active bottleneck noted.

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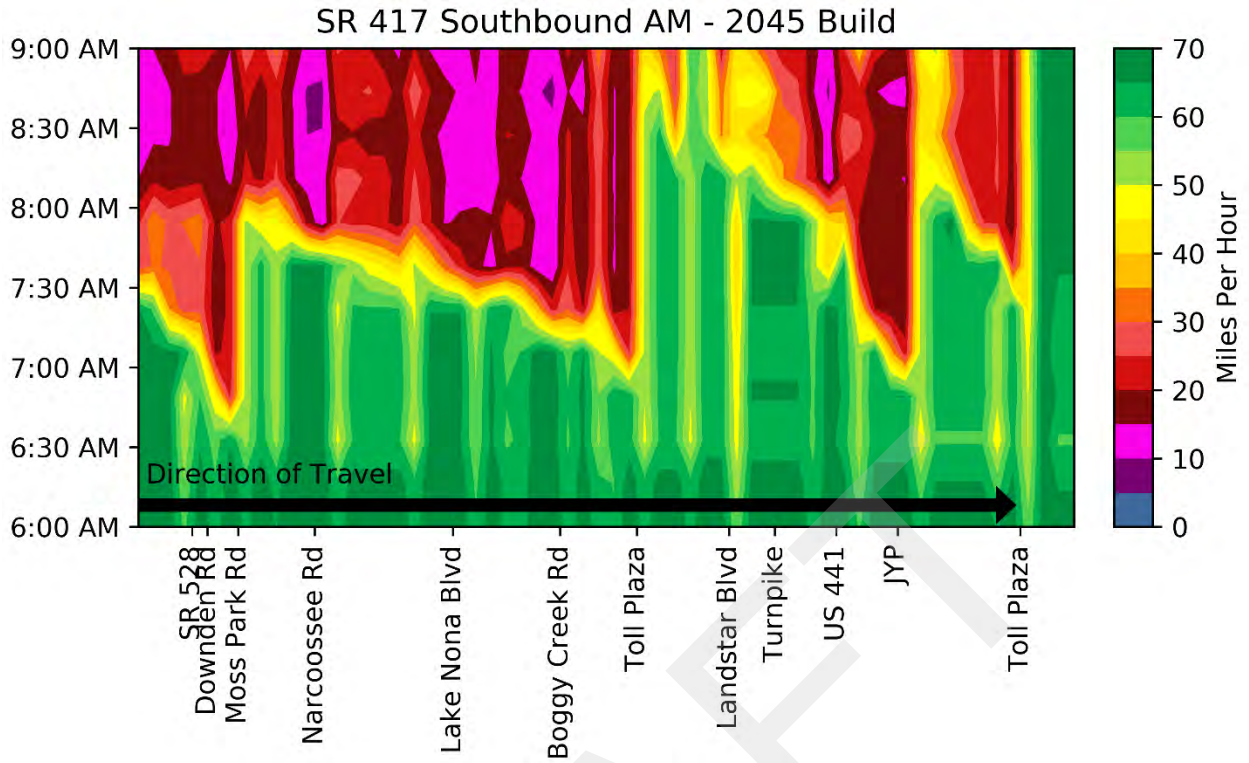

Figure 41: Southbound SR 417 – Build 2045 AM Speed Contours

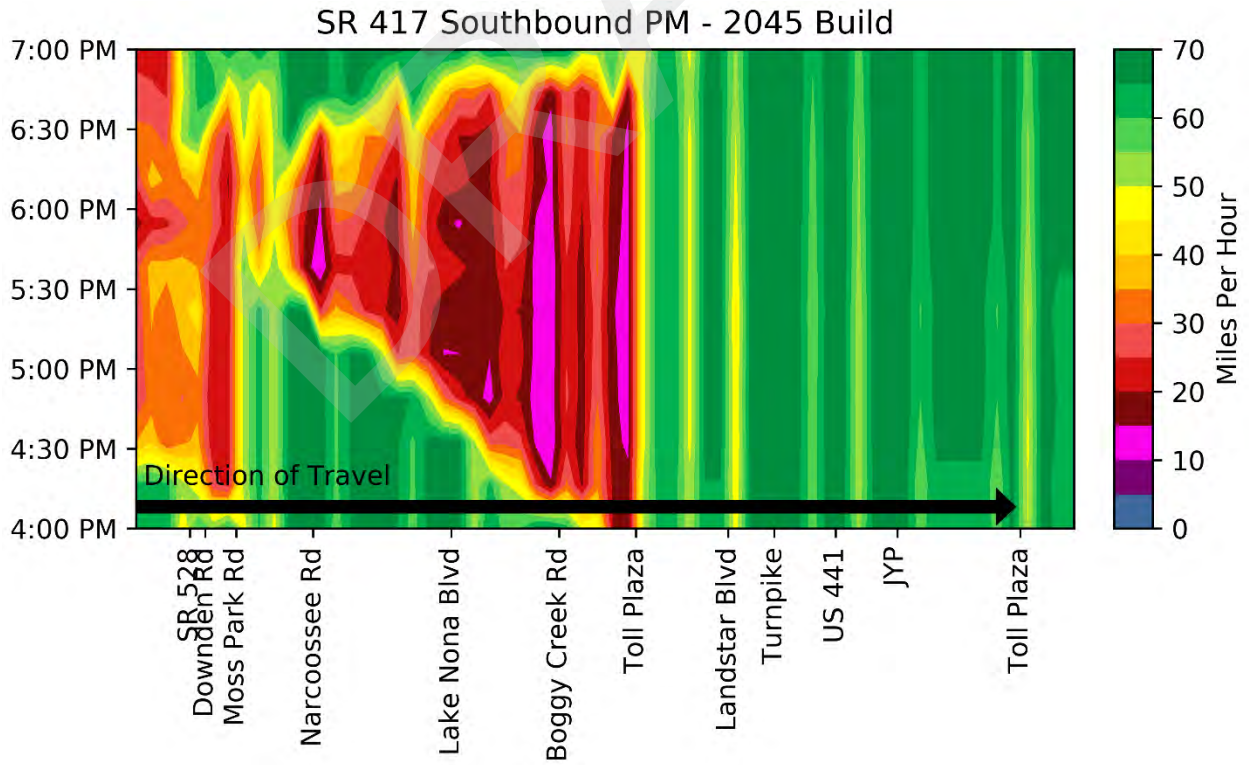

Figure 42: Southbound SR 417 – Build 2045 PM Speed Contours

Table 9 summarizes the key performance metrics for the southbound Build scenario in 2045. The average travel time along the facility is expected to improve over the No-Build. The free-flow travel time is approximately 18 minutes and during the AM and PM peak hours and it is expected to be approximately 49 minutes and 37 minutes, respectively. The maximum D/C ratio drops to 1.44 showing there are still additional capacity needs. Average speeds of approximately 27 MPH and 34 MPH are expected along the facility during the 2045 AM and PM peak hours, respectively.

Table 9: Southbound SR 417 – Build 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Average Travel Time (min)	24.8	48.8	36.8
Space Mean Speed (mi/h)	54.6	26.9	33.5
Average Density (pc/mi/ln)	22.2	56.7	43.3
Max Demand to Capacity (D/C)	1.44	1.36	1.44
Max Volume to Capacity (V/C)	1.00	1.00	1.00
Vehicle Hours Delay (hrs)	66,665	5,214	7,967
Vehicle Miles Traveled (veh-miles / interval)	1,487,326	95,735	93,383
Length (mi)	20.5		
Free Flow Speed Travel Time (min)	17.6		

7.2.4 Future Build (Widening Alternative) Operational Summary

The widening of SR 417 from four to six lanes is expected to provide significant improvement over the No-Build configuration through the design year (2045). Average travel times, average speeds, and vehicle hours of delay are all expected to improve throughout the day for both the northbound and southbound directions. The operational analysis does show that there are still capacity needs despite the six-lane widening. While this ConOps document focuses on the design year (2045) analysis, the analysis conducted identified a need for additional capacity beyond the 6-lane widening for a spot location (Landstar Boulevard and the adjacent Toll Plaza) along southbound SR 417 by 2025. Traffic should be monitored to understand how traffic actually grows versus the projections prior to adding more capacity. This is discussed in greater detail in the SR 417 Future Conditions Operational Analysis Report submitted under separate cover.

While the traffic analysis noted a potential opportunity to implement PTSU for recurring congestion relief at a spot location as early as 2025, it is expected that the PTSU will be used primarily as an incident management strategy in 2025. The analysis indicates that PTSU can be implemented as a systemwide strategy for recurring congestion relief in 2035 and through the design year (2045). The following section summarizes the operational analysis results of the widening alternative combined with the proposed PTSU improvements.

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7.2.5 Future Build Operational Results (Widening and PTSU)

The previously summarized Build (Widening) analysis showed improvement over the No-Build condition; however, additional capacity is expected to be needed to alleviate recurring congestion. The following summarizes the specific locations of congestion by direction and by time period for the programmed widening of SR 417 from the existing four lanes to six lanes with the PTSU improvements.

Based on the provided future demand volumes, the analysis shows that PTSU can be activated in the following approximate time periods and years for recurring congestion relief. These time periods could be used as a starting point when PTSU is used for recurring congestion relief in the future; however, monitoring of the actual volumes for PTSU opening triggers should be done as the project is implemented.

2025

- Northbound – not needed
- Southbound – potential need around the Landstar Boulevard interchange and adjacent Toll Plaza
    - 7:15 – 9:15 AM
    - 4:45 – 6:45 PM

2035

- Northbound – potential need from Landstar Boulevard to US 441
    - 4:00 – 6:30 PM
- Southbound – systemwide implementation
    - 7:00-9:30 AM
    - 3:45-6:45 PM

2045

- Northbound – systemwide implementation
    - 7:00-9:00 AM
    - 3:00-7:30 PM
- Southbound – systemwide implementation
    - 6:15-9:30 AM
    - 2:45-6:45 PM

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The following figures (**Figure 43 - Figure 46**) shows the hourly volume and rate of change of volume throughout the day for the southbound and northbound facilities in 2045. The rate of change of volume is shown as the difference in hourly volume in a 15-minute time period compared to the previous 15-minute time period. The time periods for implementation of PTSU for recurring congestion relief is shown with blue shading on the graph and summarized by direction in **Table 10**. To account for day-to-day variations in volume and potential delays in the opening process (the sweep vehicle arrives late to start the sweep, the sweep vehicle stops to clear debris from the shoulder, etc.), it is desirable to target the completion of a sweep approximately 30 minutes before these time periods begin, and open the shoulder up to 30 minutes before the start of congestion.

Before the AM PTSU, the volume rises rapidly in the southbound direction before reaching over 7,000 vehicles per hour during the time PTSU is needed. In the PM and in the southbound direction, a similar rise to over 7,000 vehicles per hour is expected. For the northbound direction, the build up to the AM peak is rapid, but reaches just under 5,000 vehicles per hour. Similar to the southbound direction, a rapid rise to over 7,000 vehicles per hour is expected for the PM peak. Volume rate of change and hourly volume can be monitored in the future to determine when the PTSU needs to be opened (trigger for opening PTSU).

Table 10: Estimated PTSU Time Periods for 2045

Direction	AM	PM
Southbound	6:15-9:30 AM	2:45-6:45 PM
Northbound	7:00-9:00 AM	3:00-7:30 PM

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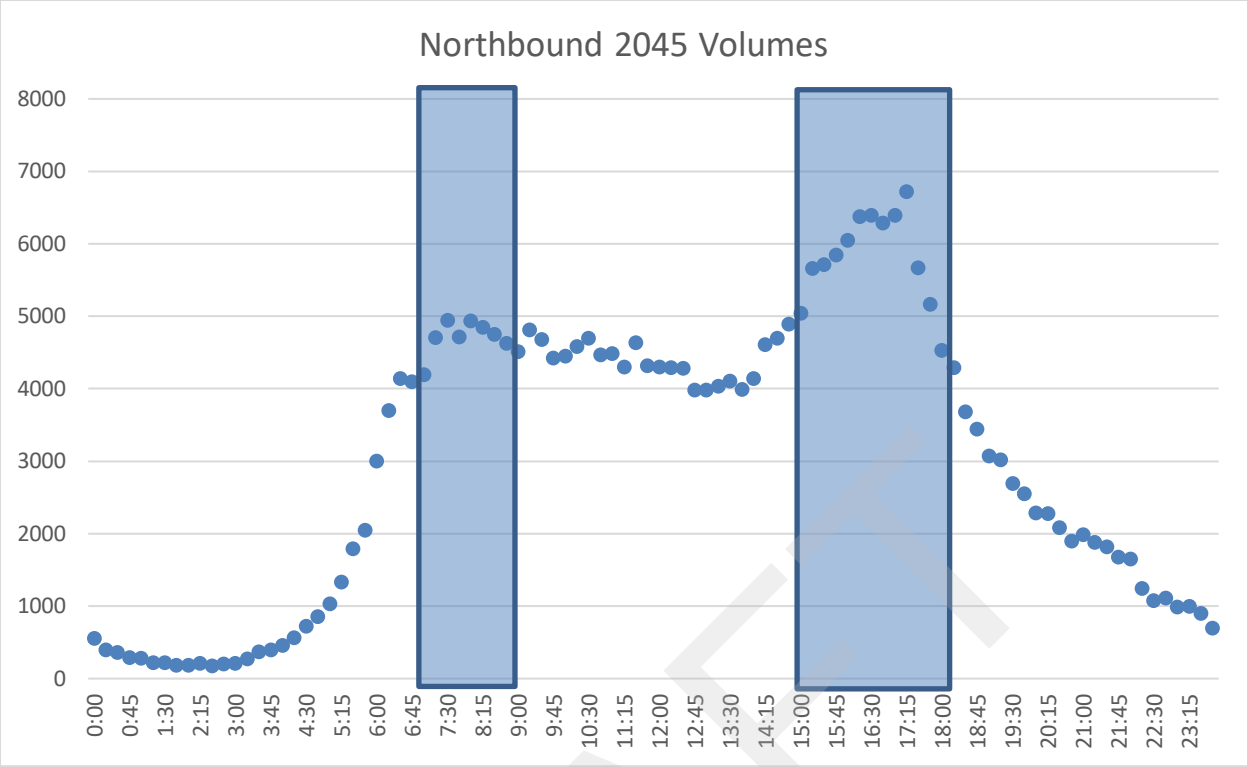

Figure 43: Northbound 2045 Volumes

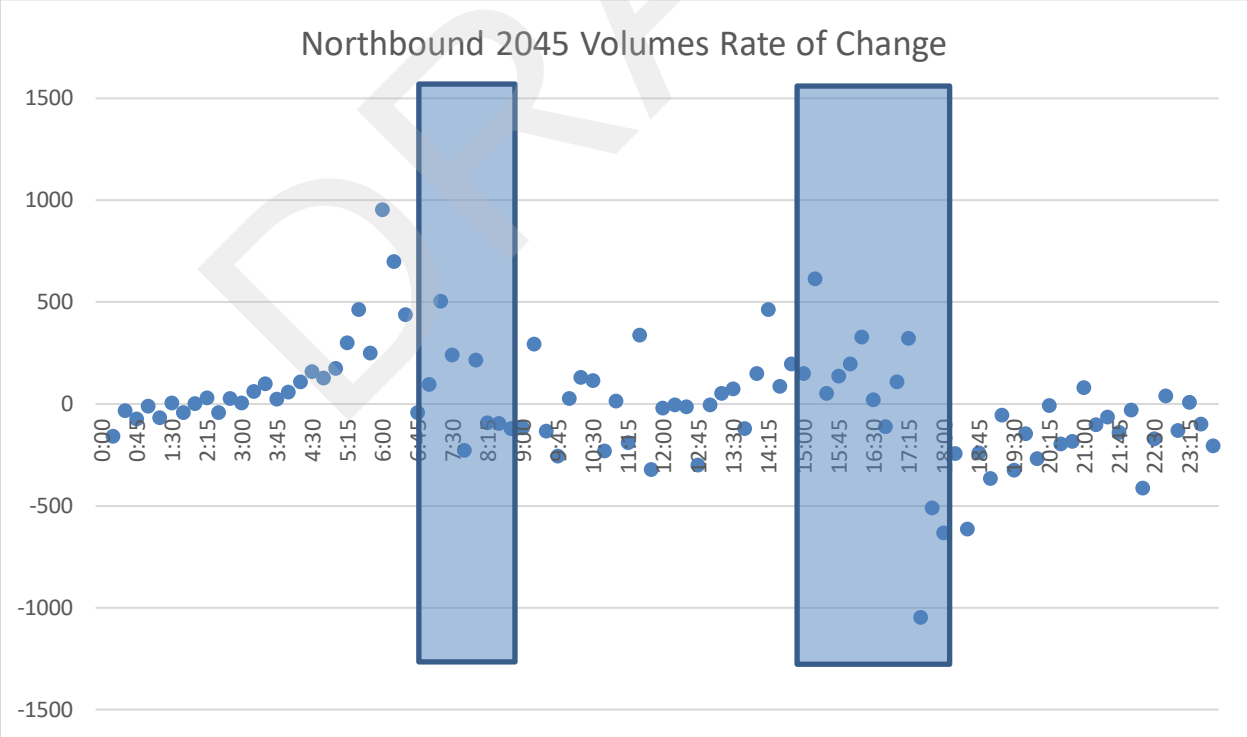

Figure 44: Northbound Volume Rate of Change

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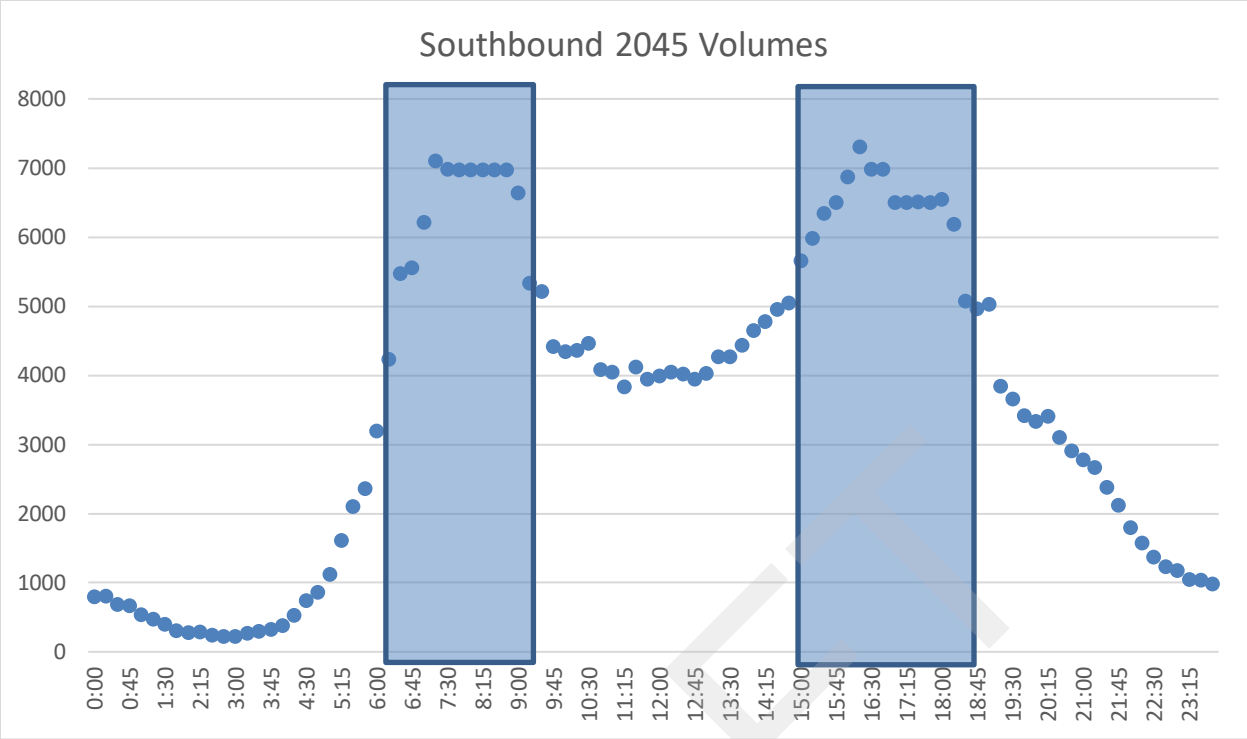

Figure 45: Southbound 2045 Volumes

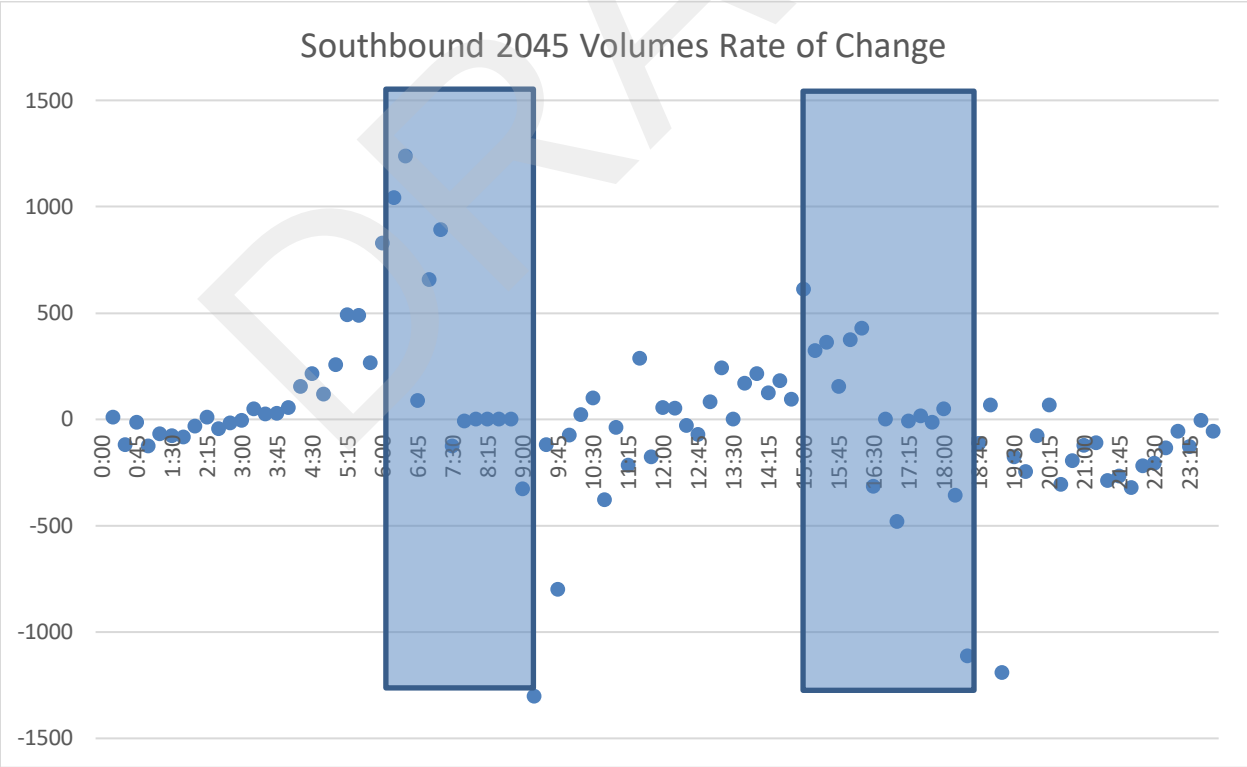

Figure 46: Southbound 2045 Volume Rate of Change

7.2.5.1 Northbound SR 417 Operations

Figure 47 and **Figure 48** illustrate the speed contours along the northbound facility for the 2045 AM and 2045 PM peak hours, respectively. The PTSU is expected to alleviate the congestion that was still expected under the widening alternative. The facility is expected to operate at speeds of 50 MPH or higher during the 2045 peak hours.

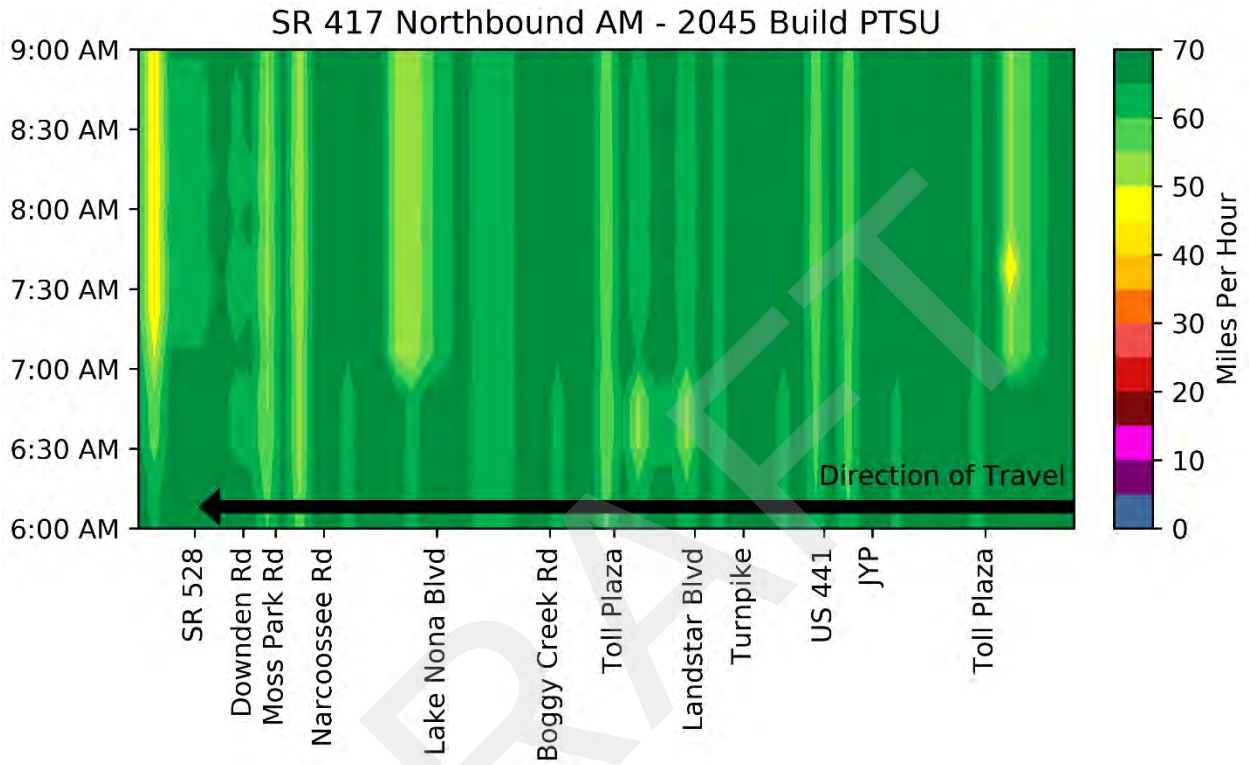

Figure 47: Northbound SR 417 – Build (with PTSU) 2045 AM Speed Contours

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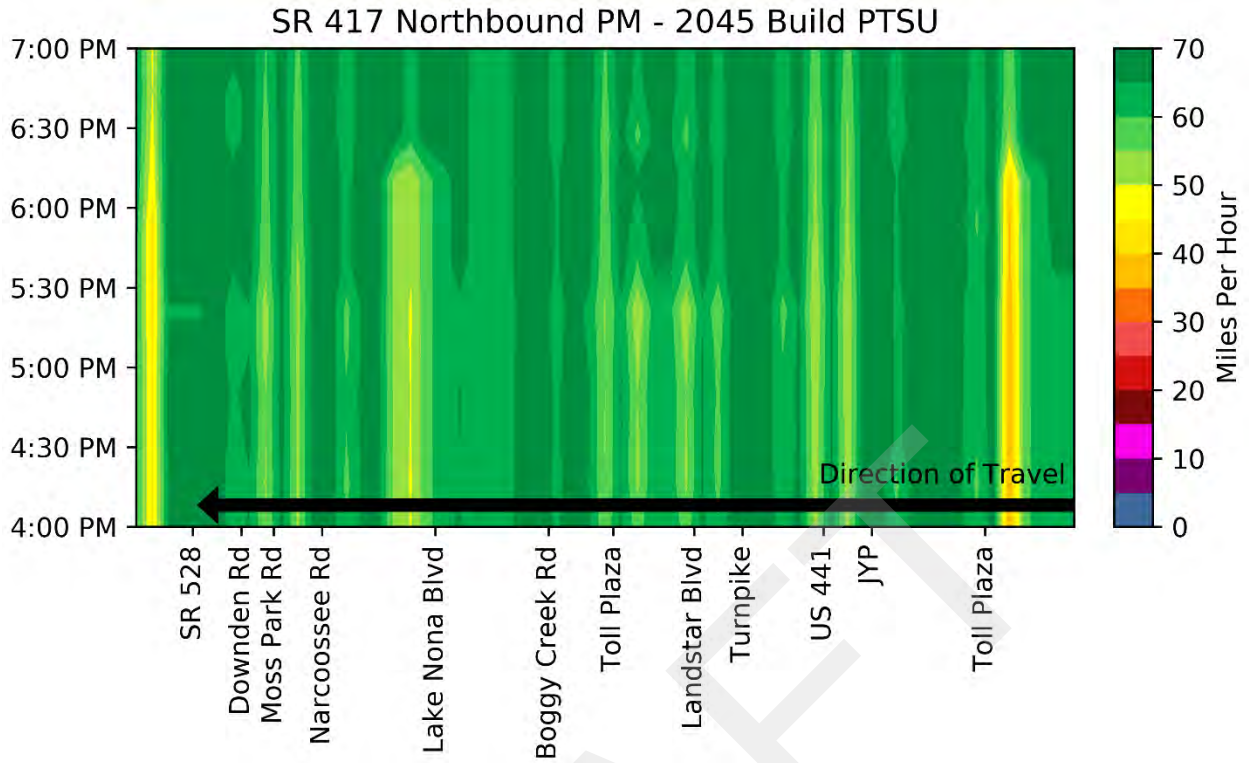

Figure 48: Northbound SR 417 – Build (with PTSU) 2045 PM Speed Contours

The key performance metrics for the northbound Build (with PTSU) scenario in 2045 are summarized in **Table 11**. The average travel time along the facility is expected to improve over the Build (widening alternative). The free-flow travel time is approximately 18 minutes and during the AM and PM peak hours and it is expected to be approximately 21 minutes and 22 minutes, respectively. Average speeds of approximately 61 MPH and 59 MPH are expected along the facility during the 2045 AM and PM peak hours, respectively.

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Table 11: Northbound SR 417 – Build (with PTSU) 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Average Travel Time (min)	20.2	21.0	21.8
Space Mean Speed (mi/h)	63.7	61.0	58.6
Average Density (pc/mi/ln)	13.5	19.3	24.2
Max Demand to Capacity (D/C)	1.24*	1.11*	1.24*
Max Volume to Capacity (V/C)	1.00	1.00	1.00
Vehicle Hours Delay (hrs)	12,063	600	2,701
Vehicle Miles Traveled (veh-miles / interval)	1,479,654	99,135	124,584
Length (mi)	21.5		
Free Flow Speed Travel Time (min)	18.4		

***Note:** The location of the maximum D/C ratio occurs along SR 417 within the influence area of the SR 528 on-ramp. This location is outside the widening limits of this project.

7.2.5.2 Southbound SR 417 Operations

Figure 49 illustrates the speed contours along the southbound facility for the 2045 AM peak hour. The contours show speeds of 50 mph for most of the corridor. However, a bottleneck is anticipated between the Toll Plaza on-ramp and the adjacent Landstar Boulevard off-ramp. The slowdown shown in the contour is partially due to the speed limit decrease (from 70 to 65 mph) downstream of the location during PTSU for SSD requirements. However, this area is also slightly over capacity in 2045 even with the PTSU lane. The analysis estimates this segment to be over capacity by approximately 5% during the AM peak hour. When a freeway facility reaches capacity, travel times increase sharply, so only a few percent over capacity has a significant effect on traffic operations. There are many factors going into the calculation of both demand and capacity which make it difficult to predict exactly 25 years into the future. Should demands not reach the forecasts in 2045, the PTSU should be adequate at this location, providing more design life for the current design.

The speed contours for the 2045 PM peak hour are illustrated in **Figure 50**. The speed contours generally show the facility operating with speed of 50 MPH or higher during the 2045 PM peak hour. However, the same bottleneck expected in the 2045 AM peak hour is anticipated during the 2045 PM peak hour.

Traffic should be monitored to understand how traffic actually grows versus the projections prior to adding more capacity.

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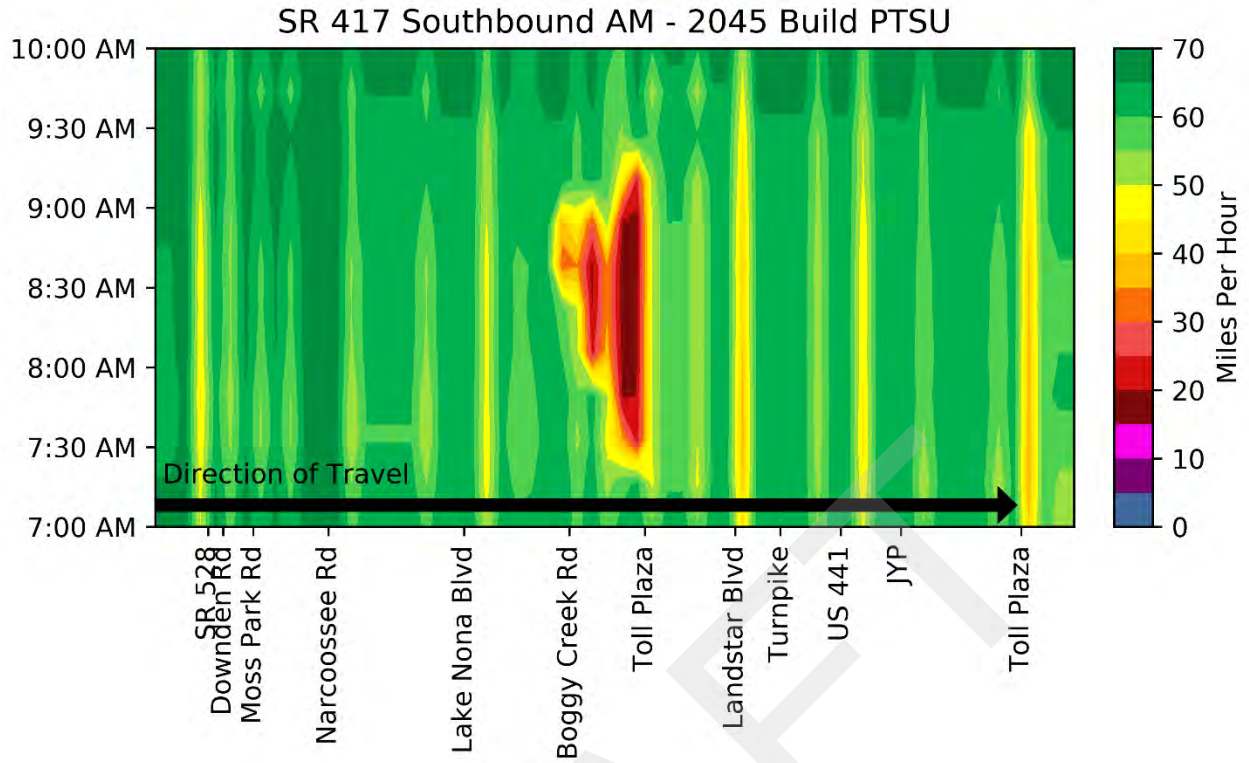

Figure 49: Southbound SR 417 – Build (with PTSU) 2045 AM Speed Contours

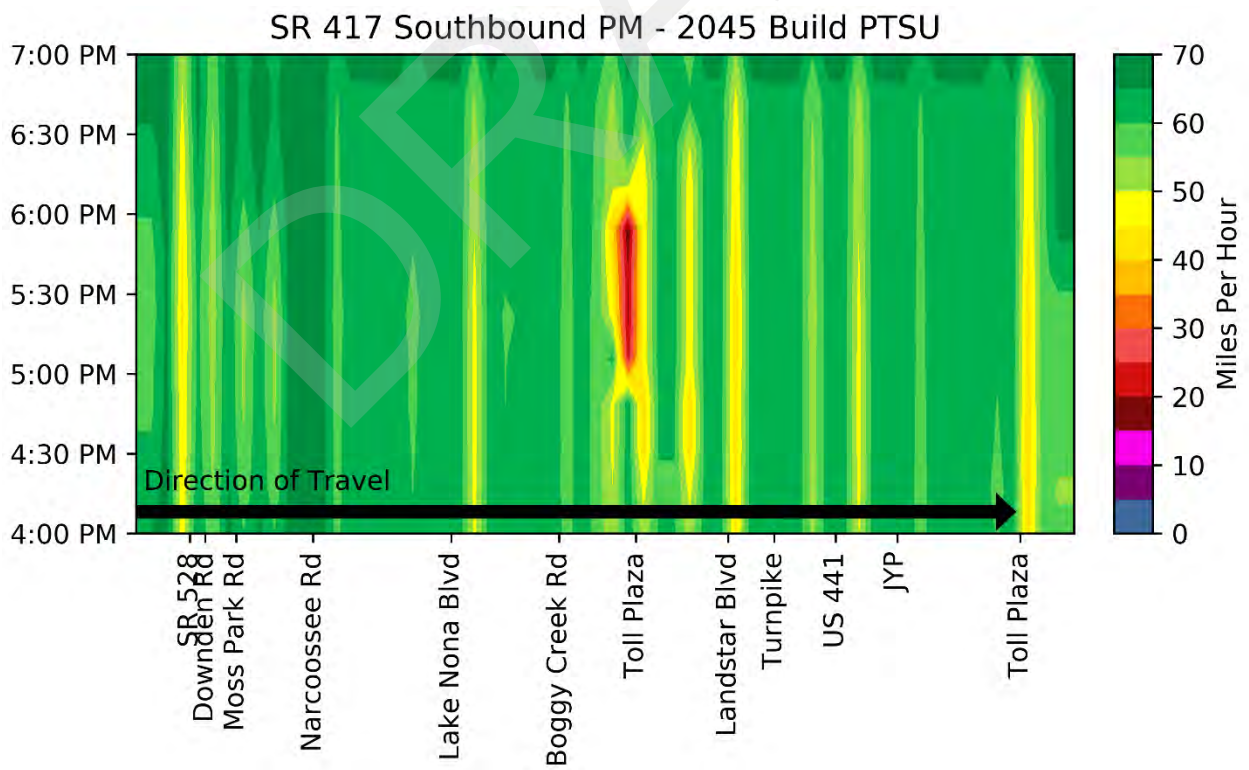

Figure 50: Southbound SR 417 – Build (with PTSU) 2045 PM Speed Contours

Table 12 summarizes the key performance metrics for the southbound Build (with PTSU) scenario in 2045. The average travel time along the facility is expected to improve over the Build during the 2045 AM peak hour. The free-flow travel time is approximately 18 minutes and during the 2045 AM and PM peak hours and it is expected to be approximately 24 minutes and 22 minutes, respectively. Average speeds of approximately 50 MPH and 55 MPH are expected along the facility during the 2045 AM and PM peak hours, respectively.

Table 12: Southbound SR 417 – Build (with PTSU) 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Average Travel Time (min)	19.9	24.4	22.3
Space Mean Speed (mi/h)	62.0	49.7	54.7
Average Density (pc/mi/ln)	14.6	31.6	26.5
Max Demand to Capacity (D/C)	1.11	1.04	1.11
Max Volume to Capacity (V/C)	1.00	1.00	1.00
Vehicle Hours Delay (hrs)	4,869	674	890
Vehicle Miles Traveled (veh-miles / interval)	1,494,474	128,227	120,431
Length (mi)	20.5		
Free Flow Speed Travel Time (min)	17.6		

7.2.5.3 Future Build (Widening and PTSU) Operational Summary

The combination of the widening of SR 417 from four to six lanes and the PTSU improvements is expected to provide improvements to the SR 417 facility. The PTSU scenario results show improvements over the build in key performance metric areas such as average facility travel times, average speed, maximum D/C ratio, vehicle hours of delay, and vehicle miles traveled. These benefits shown with the PTSU are expected in both peak hours. The analysis does show that a bottleneck is expected to remain in the design year (2045) along southbound SR 417 between Landstar Boulevard and the adjacent Toll Plaza. There are many factors going into the calculation of both demand and capacity which make it difficult to predict exactly 25 years into the future. Should demands not reach the forecasts in 2045, the PTSU should be adequate at this location, providing more design life for the current design. Traffic should be monitored to understand how traffic actually grows versus the projections prior to adding more capacity.

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7.2.6 Build Alternatives Comparison

The following figures show a comparison of the widening-only and widening with PTSU alternatives in 2045. In the northbound direction, benefits are found in both the 2045 AM and PM peak hours. The PTSU mitigates congestion predicted in the Build (no PTSU) scenario in both peak hours. **Figure 51** shows the 2045 speed contours for the Build and PTSU scenarios for the northbound direction in the AM and PM peak hours.

Table 13 summarizes a side-by-side comparison of key performance metrics. The PTSU scenario results show improvements over the build in key performance metric areas such as average facility travel times, average speed, maximum D/C ratio, vehicle hours of delay, and vehicle miles traveled. These benefits shown with the PTSU are expected in both peak hours.

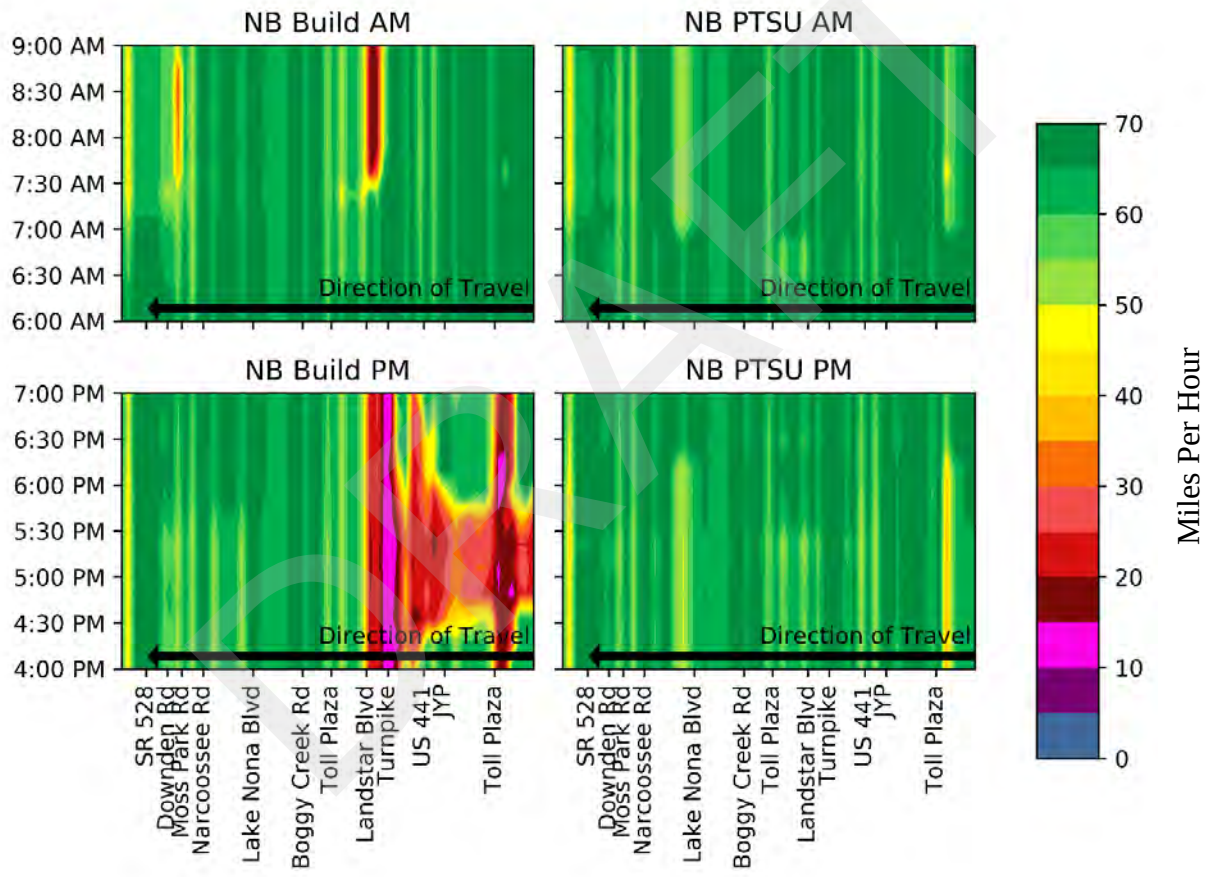

Figure 51: Comparison of 2045 Results – Northbound SR 417

Table 13: Comparison of 2045 Results – Northbound SR 417

Performance Metric	Build - Widening			Build – Widening + PTSU		
	All Day	AM	PM	All Day	AM	PM
Average Travel Time (min)	22.0	22.8	37.1	20.2	21.0	21.8
Space Mean Speed (mi/h)	59.9	55.1	36.1	63.7	61.0	58.6
Average Density (pc/mi/ln)	16.8	26.1	41.9	13.5	19.3	24.2
Max Demand to Capacity (D/C)	1.25	1.11	1.25	1.24*	1.11*	1.24*
Max Volume to Capacity (V/C)	1.00	1.00	1.00	1.00	1.00	1.00
Vehicle Hours Delay (hrs)	22,592	846	6,386	12,063	600	2,701
Vehicle Miles Traveled (veh-miles / interval)	1,476,710	94,959	104,344	1,479,654	99,135	124,584
Length (mi)	21.5					
Free Flow Speed Travel Time (min)	18.4					

***Note:** The location of the maximum D/C ratio occurs along SR 417 within the influence area of the SR 528 on-ramp. This location is outside the widening limits of this project.

Figure 52 illustrates the speed contours for the Build and PTSU scenarios during the AM and PM peak hours for the southbound direction. **Table 14** summarizes the key performance metrics for both the Build and PTSU scenarios. The PTSU provides substantial benefit for the southbound direction in both 2045 peak hours, mitigating the bottlenecks identified in the Build (no PTSU) scenario with the exception of the remaining bottleneck expected between Landstar Boulevard and the adjacent Toll Plaza.

The PTSU scenario results show improvements over the build in key performance metric areas such as average facility travel times, average speed, maximum D/C ratio, vehicle hours of delay, and vehicle miles traveled. These benefits shown with the PTSU are expected in both peak hours.

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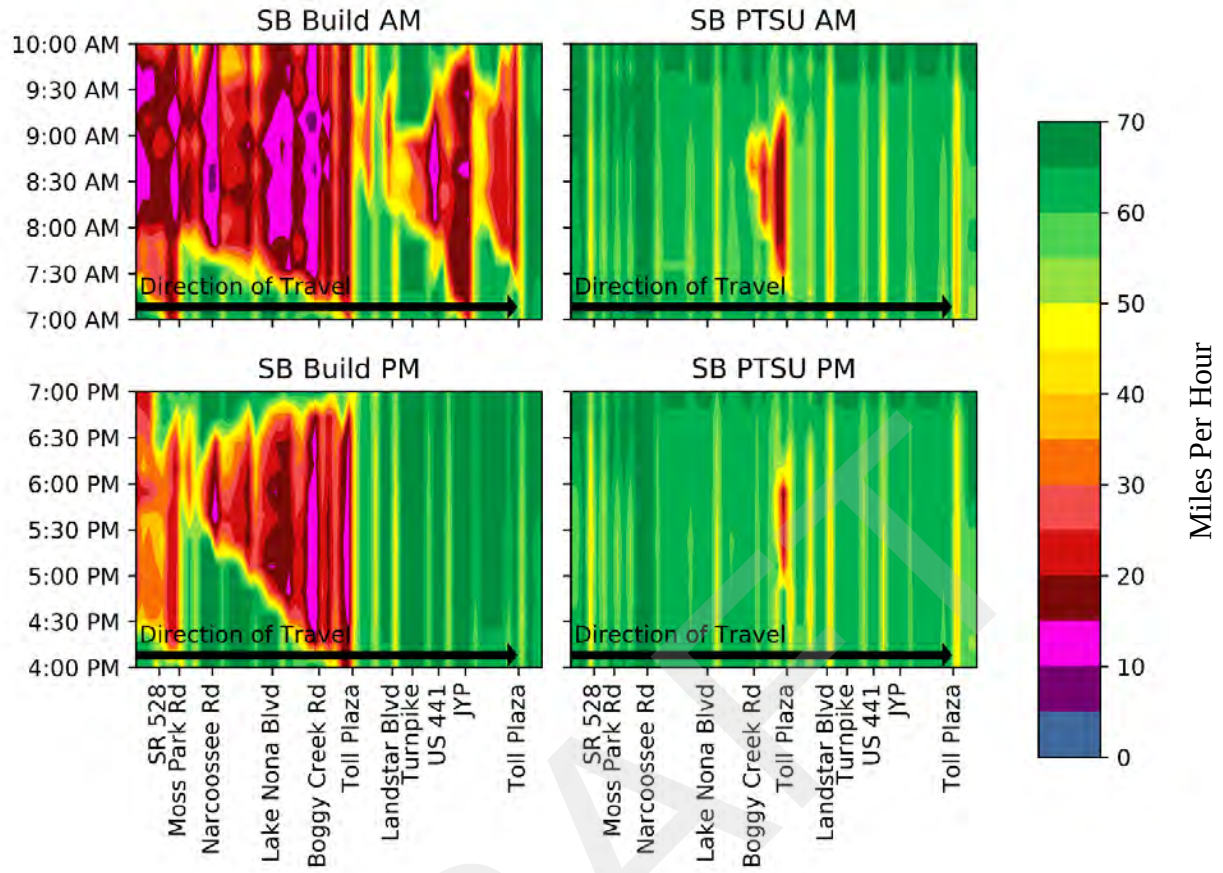

Figure 52: Comparison of 2045 Results – Southbound SR 417

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Table 14: Comparison of 2045 Results – Southbound SR 417

Performance Metric	Build - Widening			Build – Widening + PTSU		
	All Day	AM	PM	All Day	AM	PM
Average Travel Time (min)	24.8	48.8	36.8	19.9	24.4	22.3
Space Mean Speed (mi/h)	54.6	26.9	33.5	62.0	49.7	54.7
Average Density (pc/mi/ln)	22.2	56.7	43.3	14.6	31.6	26.5
Max Demand to Capacity (D/C)	1.44	1.36	1.44	1.11	1.04	1.11
Max Volume to Capacity (V/C)	1.00	1.00	1.00	1.00	1.00	1.00
Vehicle Hours Delay (hrs)	66,665	5,214	7,967	4,869	674	890
Vehicle Miles Traveled (veh-miles / interval)	1,487,326	95,735	93,383	1,494,474	128,227	120,431
Length (mi)	20.5					
Free Flow Speed Travel Time (min)	17.6					

7.2.7 Future Operational Analysis Summary

The following are the key points identified from the Future Conditions Operational Analysis.

- The No-Build scenario shows severe congestion as early as 2025, showing the need for capacity improvements in the opening year (2025).
- Additional capacity beyond the 6-lane widening is expected to be needed for a spot location along southbound SR 417 by 2025, indicating PTSU could be used for recurring congestion relief in 2025 at the spot location between (Landstar Boulevard and the adjacent Toll Plaza).
    - While the traffic analysis noted a potential opportunity to implement PTSU for recurring congestion relief at a spot location as early as 2025, it is expected that the PTSU will be used primarily as an incident management strategy in 2025. The analysis indicates that PTSU can be implemented as a systemwide strategy for recurring congestion relief in 2035 and through the design year (2045).
- Based on the provided future demand volumes, the analysis indicates that the PTSU is going to show operational benefits through the design year (2045).
- The PTSU is expected to mitigate the congestion expected along northbound SR 417 through the design year (2045) peak hours.
- The PTSU is expected to provide significant congestion relief along southbound SR 417 through the design year (2045) peak hours.
    - Based on the provided traffic forecasts, there is still some congestion expected in 2045 with the PTSU lane between the Toll Plaza on-ramp and the adjacent Landstar Boulevard off-ramp. There is uncertainty in traffic projections and this segment of SR 417 is expected to be just overcapacity (within 10%). Traffic should be

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monitored to understand how traffic actually grows versus the projections prior to adding more capacity.

- Based on the provided future demand volumes, the analysis shows that PTSU can be activated in the following approximate time periods and years for recurring congestion relief. These time periods could be used as a starting point when PTSU is implemented for recurring congestion relief in the future; however, monitoring of the actual volumes for PTSU opening triggers should be done as the project is implemented.

2025

- Northbound – not needed
- Southbound – potential need around the Landstar Boulevard interchange and adjacent Toll Plaza
    - 7:15 – 9:15 AM
    - 4:45 – 6:45 PM

2035

- Northbound – potential need from Landstar Boulevard to US 441
    - 4:00 – 6:30 PM
- Southbound – systemwide implementation
    - 7:00-9:30 AM
    - 3:45-6:45 PM

2045

- Northbound – systemwide implementation
    - 7:00-9:00 AM
    - 3:00-7:30 PM
- Southbound – systemwide implementation
    - 6:15-9:30 AM
    - 2:45-6:45 PM

- These time periods and years are approximate based on the traffic projections provided and the traffic analysis conducted. As PTSU is implemented, actual field measured volumes should be used to establish the time periods for PTSU as a strategy to mitigate recurring congestion.

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7.3 Cost, Schedule, and Procurement Options

The SR 417 PTSU project is unique in that it is being implemented in conjunction with a major roadway widening project estimated to cost $580 million[2]. Some costs typically incurred on PTSU projects – such as patching older pavement on the shoulder – will not be incurred due to the magnitude of roadway work taking place. Other costs may be reduced due to the magnitude of other design and construction activities taking place on the corridor. The FHWA Decision Support Framework and Parameters for D-PTSU report provides estimated cost ranges for key components of D-PTSU projects. **Table 15** uses these costs to estimate the approximate costs of ITS components for SR 417.

Table 15: SR 417 ITS Component Cost

Component	Cost Range[1]	Quantity	Low Cost	High Cost
Gantry structure	$400,000[2]	65	$26,000,000.00	$26,000,000.00
Traffic sensors	$5,000 - $20,000	10[4]	$50,000	$200,000
Camera	$10,000-$20,000	130[5]	$1,300,000.00	$2,600,000.00
Incident management DMSs	$160,000-$220,000	14	$2,240,000.00	$3,080,000.00
LCS	$130,000-$230,000[3]	65	$8,450,000.00	$14,950,000.00
VSL System	$50,000-$250,000	1	$50,000	$250,000
Cantilever structure[6]	$200,000	2	$400,000	$400,000
ITS Component Total			$38,490,000	$47,480,000

[1]Per FHWA
[2]FHWA provides range for cantilever and gantry structure spanning all lanes. High end of range used to reflect gantry
[3]Cost of a 4-panel system (i.e. LCSs for one gantry). FHWA gives a cost of $100,000 - $170,000 for a 3-panel system
[4]Assumption based on number of new traffic sensors. Actual quantity to be determined by SR 417 design teams
[5]Assume 2 per gantry, Actual quantity of cameras will be determined by SR 417 design teams
[6]For static warning signs upstream and downstream of PTSU. Cost estimated as half of a gantry structure.

In addition to the ITS components noted in **Table 15**, other costs associated with PTSU will include the following:

- Systems Engineering activities
- SunGuide software modifications or licenses for commercial PTSU software
- Training of Road Rangers, FDOT and CFX staff, and law enforcement on operating procedures
- Public outreach
- One additional TMC operator per shift
- One additional Road Ranger (person) per shift
- One additional Road Ranger vehicle
- Additional law enforcement
- Ongoing operation and maintenance of PTSU ITS equipment (costs presented in Section 5.6.4)

As noted in Section 1.1, construction of the five SR 417 widening projects is expected to completed by the end of the 2023 construction season. At this time, a contract to procure and install ITS

[2] https://www.cfxway.com/wp-content/uploads/2019/07/2020-03-12-Agenda-w_attachments-3.pdf

equipment to operate PTSU is not in place, but the intent is for the system to be operational around the time roadway work is complete.

7.4 System Engineering Plan

Following acceptance of this Concept of Operations Report, CFX will develop a Systems Engineering Plan. This plan will detail software engineering requirements, discuss security needs, present a threat analysis and vulnerability assessment, and discuss training and testing processes. Preparation of the Systems Engineering Plan will require extensive coordination with FDOT District 5 because much of the content will involve processes, hardware, and software in or operated from the RTMC. It may be beneficial to develop a combined Systems Engineering Plan for SR 417 and SR 429 PTSU since RTMC processes and activities for these two projects will essentially be the same.

7.5 Performance Measurement for System Validation

Performance measures provide accountability to the public and enhance communication between the operators and users of the facility. They can aid in setting policy, allocating resources and reporting on results. Outcome measures relate to how well the agencies are meeting their mission and stated goals. These measures enable the agencies to report on the benefits of the facility programs from the perspective of the ultimate customer – the traveling public. Output measures relate to how well the agencies are achieving the specific action items of each goal.

Table 16 provides a performance measurement plan to assess the benefits of the project. This plan will require before and after studies to measure the benefits on an annual basis.

Table 16: Potential Performance Measures for System Validation

Benefits	Performance Measures
Improve Corridor Mobility	Reduce Average Travel Times (in Minutes)
	Reduce Average Vehicle Delays (in Vehicle Hours)
Increase Corridor Safety	Reduce Incident Clearance Times on Corridor (in Minutes Reduce Secondary Crashes (in crashes per year)
Increase Corridor Capacity	Increase Peak Hour Traffic Volumes (in vehicles per hour)

8. Notes

There are no notes at this time.

9. Appendices

There are no appendices at this time

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10. Glossary

The following terms are used in this document and have the meanings indicated here:
DCS = Data Collection Sensor. An Automatic Vehicle Identification system used to read encrypted E-Pass tags in vehicles that pass by data collection sites. This information is used to calculate travel times throughout the system.
D-PTSU – Dynamic part-time shoulder use. A type of part-time shoulder use in which the shoulder is opened to vehicles in response to real-time traffic conditions
LCS = Lane Control Signal. Dynamic (electronic) signs placed above each lane that indicate if the lane is open, closed, or closing. Traditional LCSs are blank-out signs that only can display certain indications such as a green arrow, red X, or yellow X. SR 417 will use small dynamic message signs (DMSs) will full color displays, but they will generally display green arrows, red Xs, or yellow Xs.
PTSU – Part-time Shoulder Use. A transportation systems management and operations strategy that allows use of the left or right shoulder as a travel lane during some, but not all, hours of the day.
RTMC – the FDOT District 5 Regional Traffic Management Center. CFX does not have their own TMC and operates their facilities from the RTMC through a longstanding agreement with FDOT
SSD – Stopping Sight Distance. The distance required for a driver, travelling at certain speed, to perceive the need to stop, apply brakes, and come to a complete stop.
TMS = Traffic Monitoring Sensor. A side fire Microwave Vehicle Detection Sensor which is used to determine speed, volume and capacity of vehicles on the lane by lane basis throughout the system.

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Modified By:	Pete Jenior, PE, PTOE	5/11/2020
	Michael Eagle, PE	5/18/2020
	Pete Jenior, PE, PTOE	5/21/2020
	Michael Eagle, PE	5/21/2020
	Pete Jenior, PE, PTOE	5/22/2020
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	Michael Eagle, PE	8/3/2020
	Pete Jenior, PE, PTOE	9/22/2020
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List of Acronyms and Abbreviations

ATCS.....Adaptive Traffic Control System
ATM.....Active Traffic Management
ATMS.....Advanced Traffic Management System
CAD.....Computer Assisted Dispatch
CCTV.....Closed Circuit Television
CFX.....Central Florida Expressway Authority
COIN.....Central Office Incident Notification
CONOPS.....Concept of Operations
DCS.....Data Collection Sensor
DMS.....Dynamic Message Sign
DSRC.....Dedicated Short Range Communication
FDOT.....Florida Department of Transportation
FHWA.....Federal Highway Administration
FMS.....Freeway Management System
GIS.....Geographic Information System
HAR.....Highway Advisory Radio
IT.....Information Technology
ITS.....Intelligent Transportation System
LCS.....Lane Control Signal
LED.....Light Emitting Diode
MUTCD.....Manual of Uniform Traffic Control Devices
MVDS.....Microwave Vehicle Detection System
NIMS.....National Incident Management System
PDMS.....Portable Dynamic Message System
PIO.....Public Information Officer
PTSU.....Part Time Shoulder Use
RTMC.....Regional Traffic Management Center
SME.....Subject Matter Expert
SOP.....Standard Operating Procedures
TAP.....Traffic Authorized Products
TIM.....Traffic Incident Management
TMC.....Traffic Management Center
TMP.....Traffic Management Plan
TMS.....Traffic Monitoring Sensor
VSLS.....Variable Speed Limit Sign

1. Overview

The Central Florida Expressway Authority (CFX) is in the process of completing design plans for the widening of SR 429 from Stoneybrook West Parkway to SR 414. This portion of SR 429 currently has two lanes in each direction and a grass median. The widening will be accomplished by building inward. A third lane will be built in each direction, a 19' left shoulder will be paved, and a concrete median barrier will be added. The SR 429 corridor has seen major growth in recent years. This, coupled with ongoing major expressway projects in the area, creates uncertainty in future traffic volume forecasts and the potential for recurring congestion within the design life of the widening project. To provide operational flexibility at project opening and into the future, CFX will implement part-time shoulder use (PTSU) on the left shoulder of SR 429 in conjunction with the widening project. PTSU is also known as "hard shoulder running" and "temporary shoulder use". In the near term, PTSU will be implemented to enable opening of the left shoulder for incident management, such as crashes blocking right-side general purpose lanes. In the long term PTSU will be implemented to enable opening of the left shoulder as a congestion mitigation strategy. Lane control signals will be placed over all lanes including the left shoulder, creating the opportunity to open and close the shoulder and lanes dynamically in response to incidents on the roadway. **Figure 1** depicts the proposed typical section of SR 429 – the two outside lanes in each direction appearing in lighter gray are existing, and inside lanes appearing in darker gray are proposed.

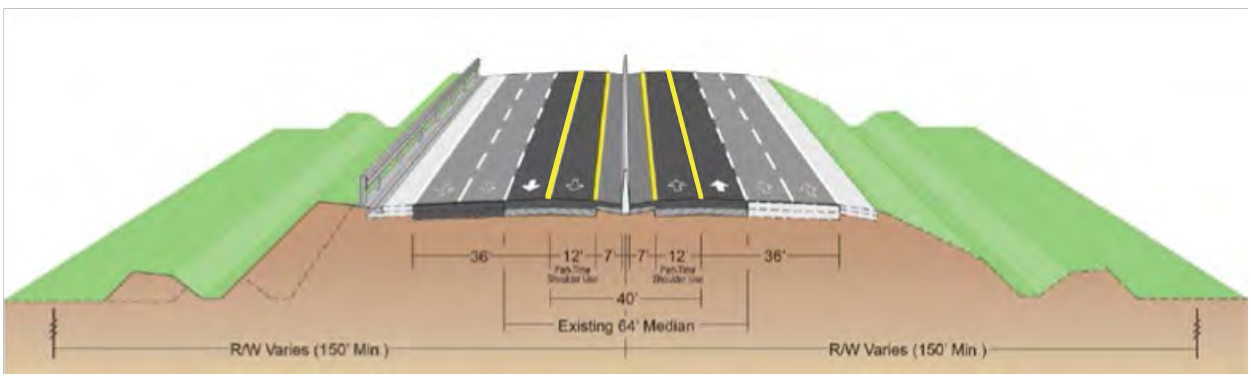
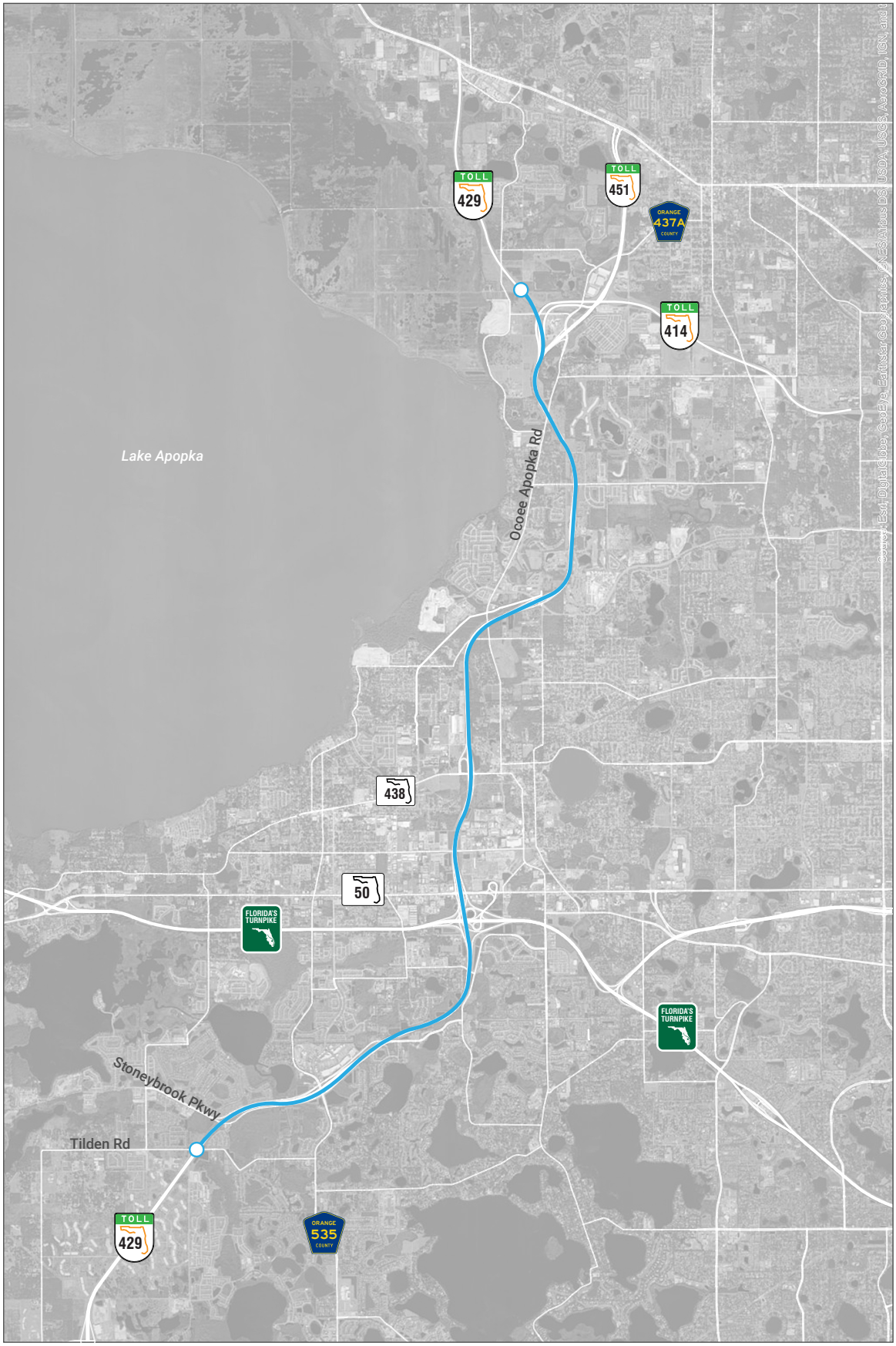


Figure 1: Proposed Typical Section

Figure 2 depicts the limits of improvements along SR 429.

This Concept of Operations (ConOps) serves to document the consensus built among the partnering agencies and is written for the project development team. As a critical component to the systems engineering process, the ConOps provides a framework for the future development of functional/design requirements.



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Project Limits

Scale in Feet

0 7,000 North

FIGURE 2

1.1 Identification

Project Name: SR 429 PTSU/Incident Management System.
Financial Project Identification: 429-152, 153 and 154.
Federal Aid Project Number: None.

The widening of SR 429 is currently being designed by three consultant teams under three separate CFX contracts:

- Project 429-154, from Stoneybrook West Parkway to south of Florida's Turnpike;
- Project 429-152 from south of Florida's Turnpike to West Road; and
- Project 429-153 from West Road to SR 414.

These three projects will be bid and constructed separately, and construction of all three is expected to be completed by the end of the 2023 construction season.

These three construction projects will complete the infrastructure work necessary for PTSU, including the construction of a full-depth left shoulder, the construction of sign structures, and installation of ITS devices such as DMSs and cameras. A separate contract may be used for some systemwide PTSU elements such as Regional Traffic Management Center (RTMC) software; such a contract would likely encompass PTSU systems on both SR 429 and SR 417. A separate ConOps document is being prepared for SR 417 PTSU.

1.2 Purpose and Intended Audience

The purpose of this document is to provide the project stakeholders with the operational concept for the SR 429 PTSU System. This document will communicate CFX's operational needs and presents an understanding of the operational expectations and stakeholder roles.

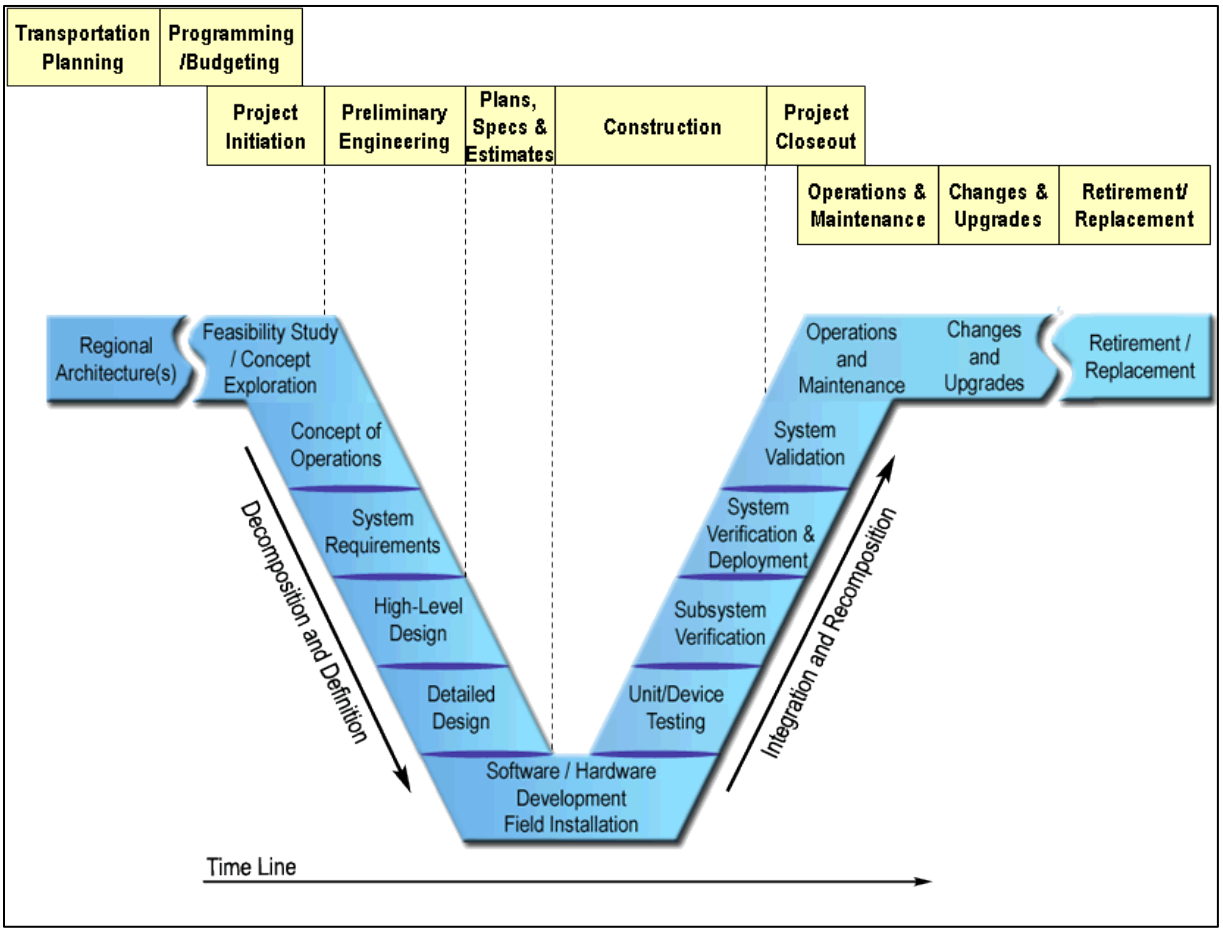
1.3 Document Overview

This document follows the latest version of the ConOps template established in the Florida Statewide Systems Engineering Management Plan dated March 2005. The document structure includes the following:

- Section 1: Overview
- Section 2: Current System Situation
- Section 3: Change Justification
- Section 4: Concepts for the Proposed System
- Section 5: Operational Scenarios
- Section 6: Summary of Impacts
- Section 7: Analysis of Proposed System
- Section 8: Notes
- Section 9: Appendices
- Section 10: Glossary

Development of a ConOps is an initial, critical step in the systems engineering process. Systems engineering is a comprehensive planning and management process which encompasses all major

phases of the system lifecycle. A key focus of this process is an objective, needs-driven requirements development approach and an emphasis on ensuring that the requirements used to design the system can be traced to documented stakeholder needs and goals. This focus, along with the comprehensive nature of the overall process, has led the Federal Highway Administration (FHWA) to mandate the use of the systems engineering process when using federal funding on certain types of transportation projects (23 CFR, Rule 940). An overview the process elements typically used in transportation projects is shown below in **Figure 3**. While Federal Funds will not be used for this project, CFX has elected to follow a similar systems engineering process to help define objectives and needs.



Source: FHWA

Figure 3: Systems Engineering V-Diagram

1.4 High-Level System Overview

The SR 429 project is a combination of a traditional widening project (i.e. the addition of a general purpose lane) and a PTSU project with Active Traffic Management (ATM) treatments. Goals of the SR 429 project include:

- Addressing future traffic growth
- Improving highway safety

- Mitigating future noise impacts
- Enhancing hurricane and other evacuation
- Improving mobility on the Central Florida expressway system
- Improving congestion due to traffic incidents

PTSU systems nationally vary greatly in terms of appearance to drivers and real-time responsiveness to traffic conditions. The PTSU system on SR 429 will be a modern, state-of-the-art system incorporating the following Active Traffic Management (ATM) strategies:

- Dynamic PTSU (variable hours of operation for the shoulder), controlled on a real-time basis from a TMC. This differs from Static PTSU, where the hours of operation are pre-determined and fixed. Dynamic PTSU (D-PTSU) will be deployed at a later date when traffic volumes reach a threshold that triggers regular re-occurring congestion, and will begin as a relatively low "level" of dynamic PTSU as described in Section 4.3.1.
- Closed-circuit television (CCTV) cameras providing full remote monitoring capability of the shoulder and visual confirmation of displays on PTSU-related devices (lane control signs, incident management DMSs, variable speed limit signs)
- Traffic Monitoring Sensors continuously collecting lane-by-lane volume and speed data at bottleneck locations, which on SR 429 are entrance and exit ramp gores
- Operations staff monitoring the facility (Discussions with D5 are ongoing for use of the FDOT District 5 RTMC)
- Dynamic Lane Assignment for general purpose lanes - lanes can be closed (through the use of overhead signs) for incident management purposes
- Variable Speed Limits to reduce the speed on all lanes when the shoulder is open due to stopping sight distance restrictions, further described in Section 4 of this document

The term "PTSU" is used in this document for brevity to generally describe the entire system represented by the bullets above.

Figure 4 through **Figure 7** show conceptual configurations of dynamic signs planned for SR 429. These signs will be located on gantry structures placed approximately every half mile, which is consistent with other PTSU facilities in the US. All gantry structures will have the following signs:

- A lane control signal (LCS) over each lane and the left shoulder. The LCSs will be small, full-color/full matrix DMSs.
- A speed limit sign with an embedded dynamic panel for the numerals within a regulatory panel on the left-side and right-side support poles. A yellow beacon will be located above each speed limit sign. The beacon will be in dark mode when the speed limit is 70 MPH and flashing yellow mode when the speed limit is reduced below 70 MPH. In some cases, speed limit signs may be placed on standalone poles rather than gantry support structures due to site-specific constraints.
- One of three additional signs
    - Type 1 – has a static sign indicating the meanings of red Xs, green arrows, and yellow Xs
    - Type 2 – has a (smaller) incident management dynamic message sign
    - Type 4 – has a static guide sign
    - Type 5 – has a (larger) travel time dynamic message sign

A nomenclature of "Type X gantry" has been developed for CFX's facilities. An additional type (Type 3) was developed for use elsewhere on the CFX system but not proposed for SR 429. In general, gantries alternate between Type 1 and Type 2 applications. Type 4 is used in areas with high guide sign density where there is insufficient space for separate lane control signal gantries and overhead guide sign structures. These signs and their specific place are further described in Section 4.3.2.

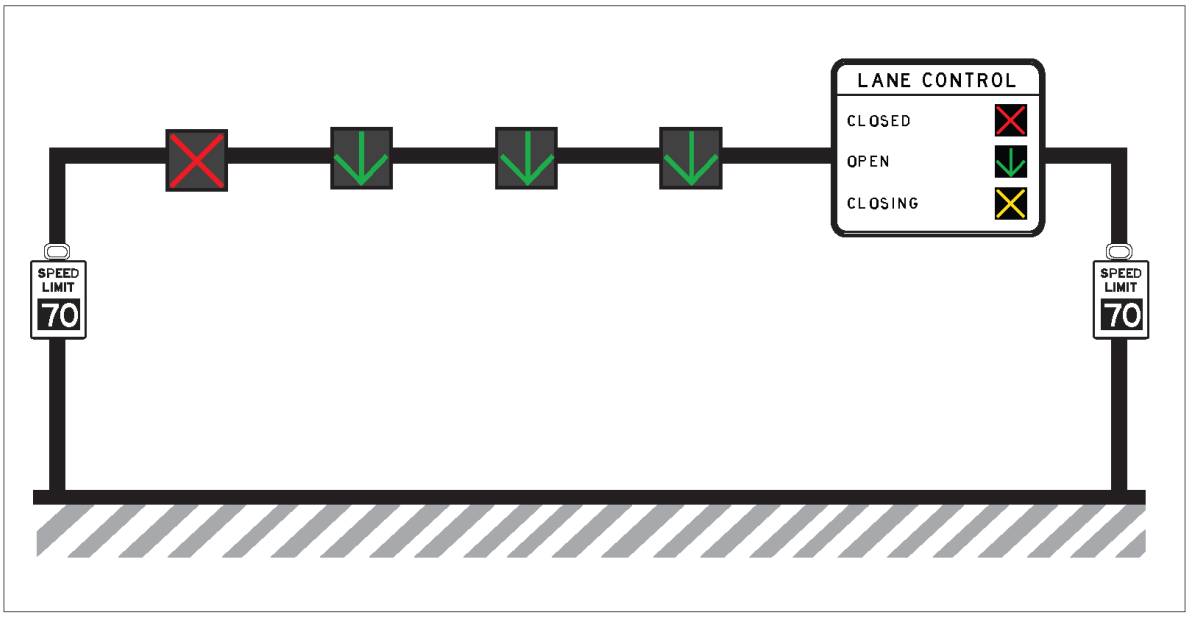


Figure 4: Example of Type 1 Sign Gantry with LCS Instructions

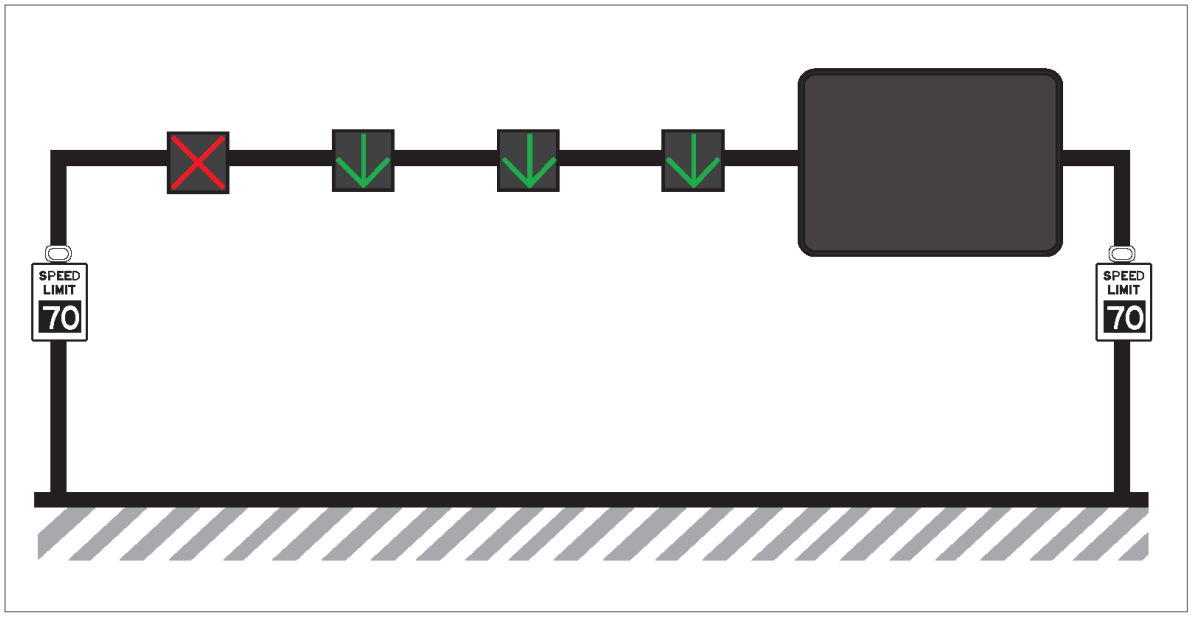


Figure 5: Example of Type 2 Sign Gantry with an Incident Management DMS

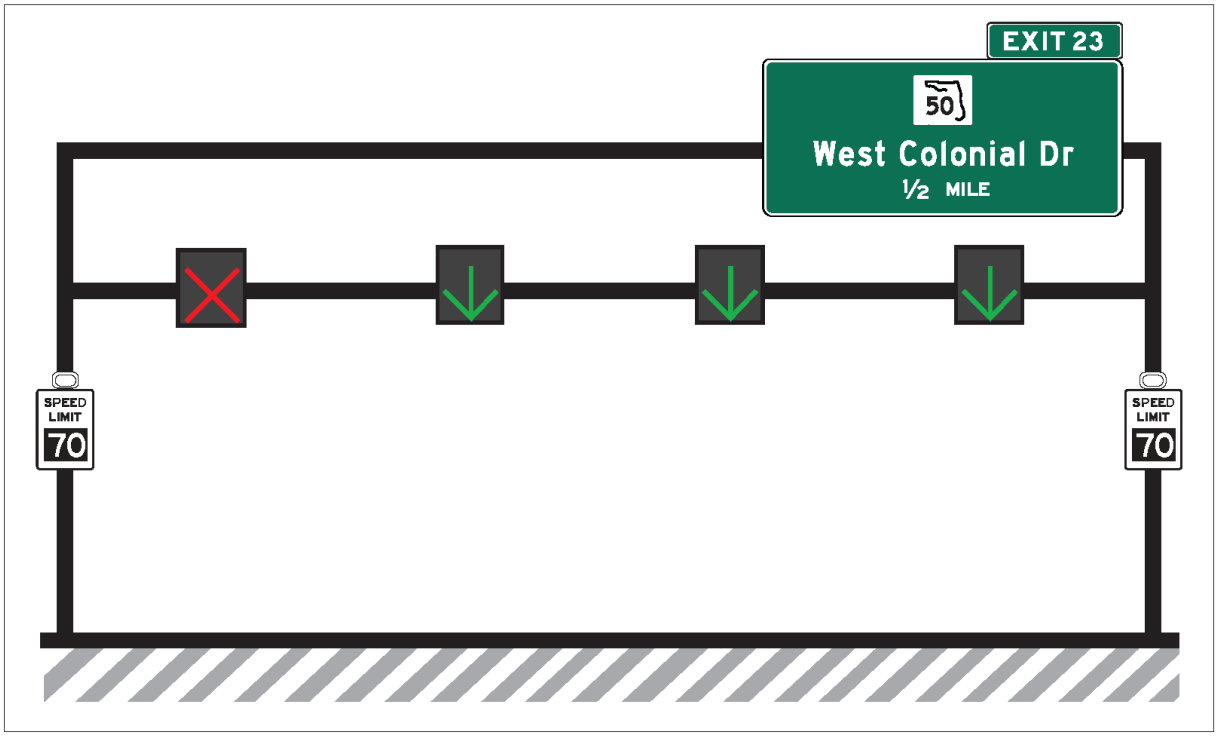


Figure 6: Example of Type 4 Sign Gantry with Exit Guide Sign

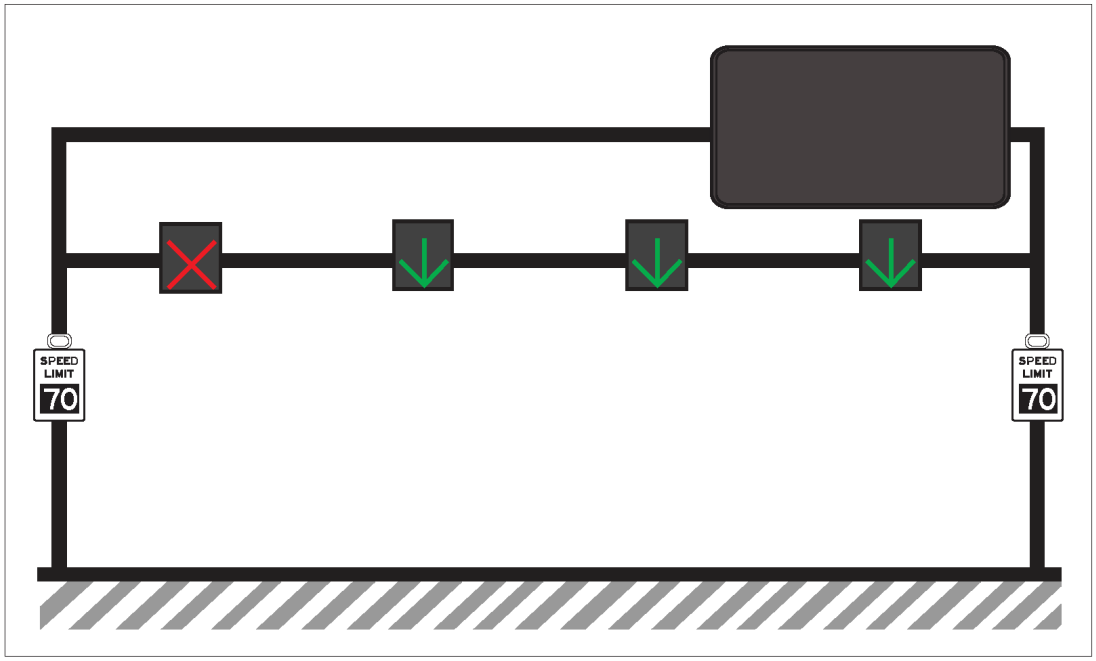


Figure 7: Example of Type 5 Sign Gantry with a Travel Time DMS

1.5 Stakeholders

The SR 429 project includes the following stakeholders that are further described within Section 4 of this ConOps document:

- FDOT Central Office
- FDOT District 5 RTMC Traffic Incident Managers
- FDOT District 5 RTMC Operators
- CFX Operational Staff, including maintenance technicians and engineers
- Towing Companies
- Road Rangers / CFX Expressway Service Patrol
- Emergency Responders
- Law Enforcement, including Florida Highway Patrol (FHP) and local law enforcement
- Drivers along the SR 429 corridor

1.6 Referenced Documentation

The following documents were reviewed in the course of the development of this ConOps document and, where appropriate, referenced in this document:

- Hard Shoulder Running (HSR) Interstate 4 - Eastbound from Kirkman Road to World Drive, Westbound for SR 434 to Dirksen Drive. Concept of Operations. Submission 1. Prepared for Florida Department of Transportation. June 6, 2016. Available from: Jeremy Dilmore Jeremy.Dilmore@dot.state.fl.us

- Statewide Active Traffic Management Study. Concept of Operations. Revised Submission. Prepared for the Ohio Department of Transportation. March 15, 2017. Available from: John MacAdam John.MacAdam@dot.ohio.gov
- US 23 Active Traffic Management. Concept of Operations. Version 3. Prepared for Michigan Department of Transportation. April 2015. Available from: Stephanie Palmer PalmerS3@michigan.gov
- I-90 Smart Corridor Concept of Operations. Update. Prepared for Illinois Tollway. February 2017. Available from: Elyse Morgan emorgan@getipass.com
- I-76 ITS Enhancements. Concepts of Operations. Prepared for Pennsylvania Department of Transportation. Available from Pennsylvania Department of Transportation District 6-0 Traffic Unit
- Decision Support Framework and Parameters for Dynamic Part-Time Shoulder Use: Considerations for Opening Freeway Shoulders for Travel as a Traffic Management Strategy. Federal Highway Administration. November 2019. Available at: https://ops.fhwa.dot.gov/publications/fhwahop19029/index.htm
- *A Policy on Geometric Design of Highways and Streets, 7th Edition.* American Association of State Highway and Transportation Officials. 2018.
- Topic No. 750-010-002, Rule 14-15.012, F.A.C., Speed Zoning for Highways, Roads and Streets in Florida, FDOT. March 1997 (Revised: August 2018).
- NCHRP 03-123 Technical Memorandum for Task 2 - Summary of Effective Practices. NCHRP Project 03-123 Proposed Practices for the Application of Dynamic Lane Use Control. January 31, 2017. Available at http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP03-123_Task2TechMemo.pdf

2. Current System Situation

2.1 Background, Objectives, and Scope

SR 429 currently is a well-managed expressway with elements such as DMS for displaying travel times or other special messages, CCTV coverage monitored in a TMC, lane-by-lane speed and volume sensors, travel time system used to post messages on the DMS, Road Ranger expressway service patrols, and electronic toll collection. The existing system is further described in Section 2.3. While these elements are adequate for managing SR 429 in its current form, the widening project will require upgrades and replacement of some of this equipment due to the roadway changes occurring in the current median. Following widening and the introduction of PTSU, SR 429 will require additional ITS equipment such as lane control signals, incident management DMSs, variable speed limits, and TMC support for both.

2.2 Operational Constraints

The SR 429 facility experiences recurring congestion during the weekday AM and PM peak hours. An operational analysis of the existing conditions was conducted based on April 2019 volumes provided by CFX. The following summarizes the specific locations of congestion by direction and by time period.

2.2.1 Northbound Facility Operations

The following summarizes the existing northbound facility operations including the existing speed contours in the weekday AM and PM peak hours as well as the travel times along the facility.

2.2.1.1 Speed Contours

During the AM peak hour, the northbound direction experiences congestion near the Florida Turnpike interchange. As shown in **Figure 8**, speeds drop due to congestion caused by the SR 429 northbound off-ramp to Turnpike. This congestion extends upstream approximately 1 mile (between CR 535 and Turnpike).

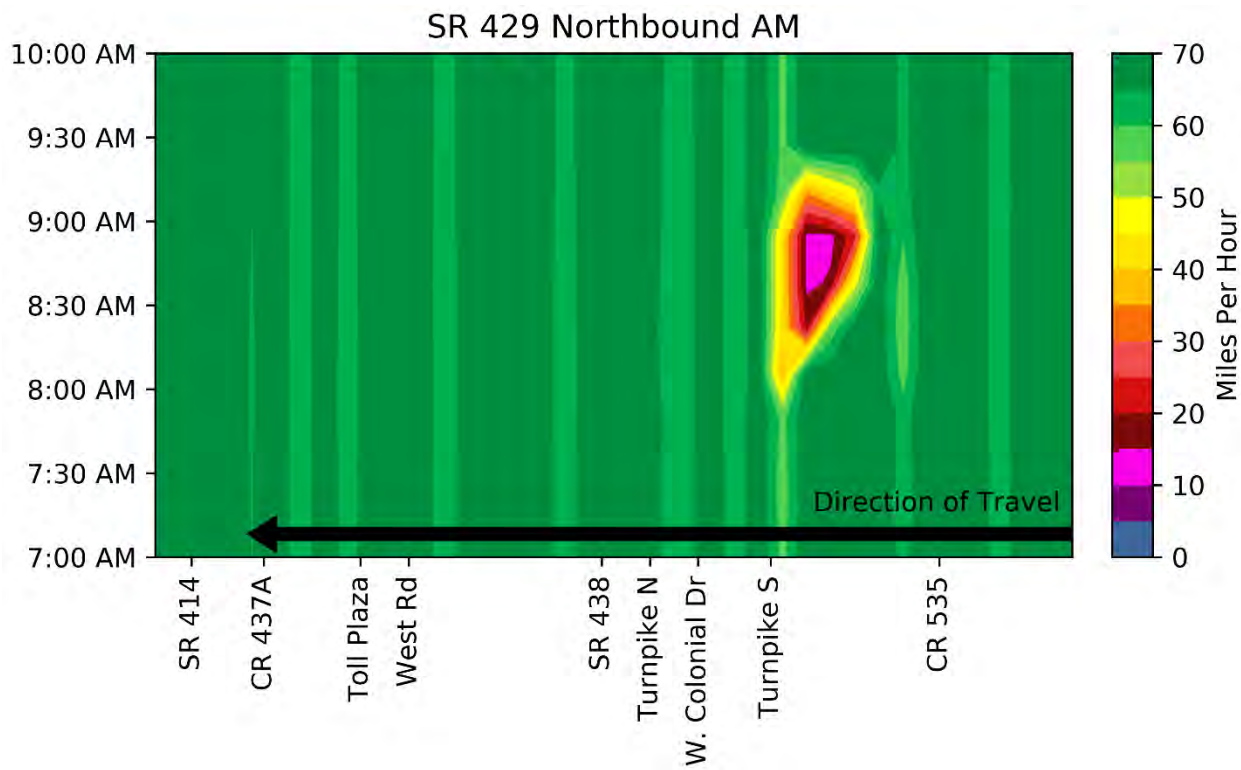


Figure 8: Northbound AM Speed Contours (Based on April 2019 data provided by CFX)

During the PM peak hour, the northbound direction experiences congestion between West Colonial Drive (SR 50) and the SR 438/Plant Street interchange for approximately 1.5 miles. As illustrated in **Figure 9**, speeds drop due to congestion caused by friction associated with the SR 438 on-ramp and the short weaving distance (approximately 300 feet) between the Turnpike on-ramp and SR 438 off-ramp. This existing weave will be addressed as part of the widening project and will reconfigure the northbound SR 429 off-ramp to SR 438 as a jug handle ramp, extending the weave distance along SR 429.

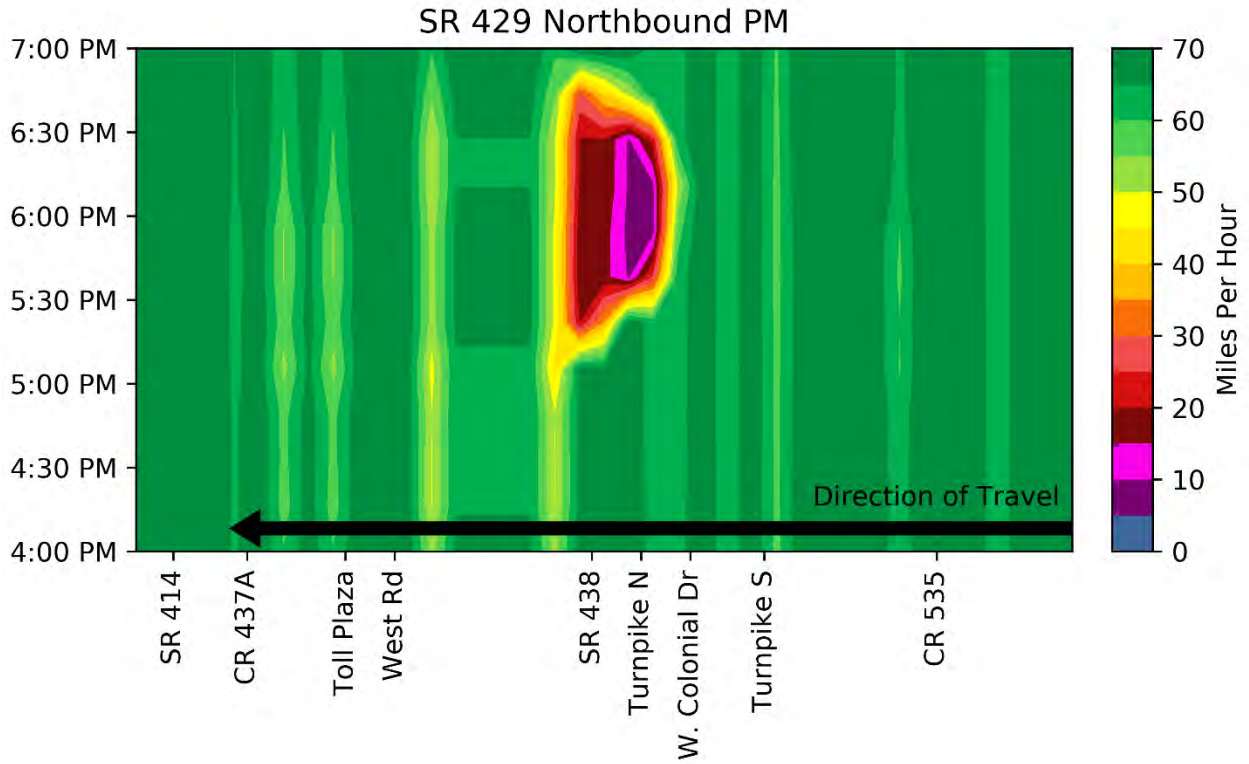


Figure 9: Northbound PM Speed Contours (Based on April 2019 data provided by CFX)

2.2.1.2 Travel Times

The facility travel time throughout the day is shown in **Figure 10**. The northbound travel times show distinct AM and PM peaking characteristics during the average weekday (Tuesday-Thursday). Weekday AM travel times are approximately 25 percent higher than the free-flow travel time at the height of the AM peak hour. The PM travel times during the weekday are approximately 50 percent higher than the free-flow travel time. A slight increase (less than 10 percent) in travel time due to a midday peak was also observed in the Sunday data.

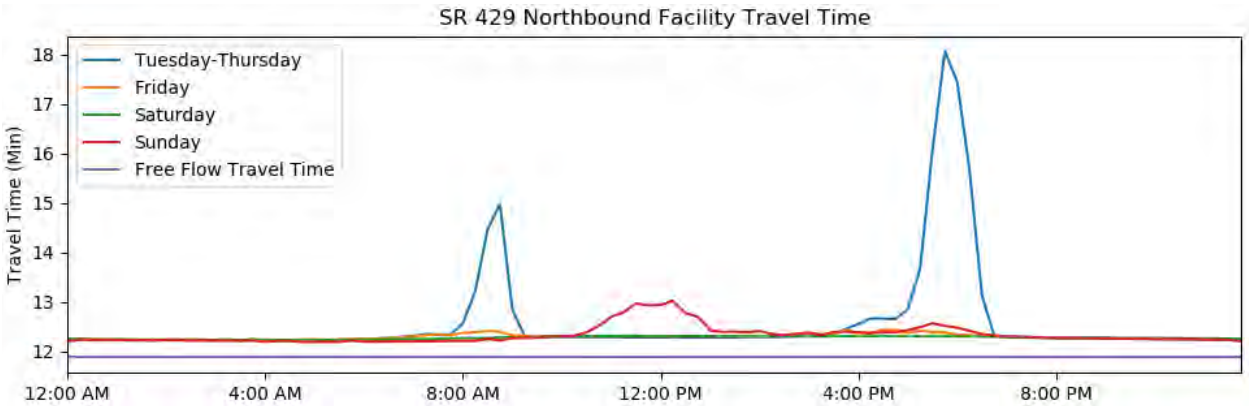


Figure 10: Northbound Facility Travel Times

2.2.2 Southbound Facility Operations

The following summarizes the existing southbound facility operations including the existing speed contours in the weekday AM and PM peak hours as well as the travel times along the facility.

2.2.2.1 Speed Contours

For the average weekday scenario, the primary bottlenecks are experienced at the West Road / Clarcona Ocoee Road on-ramp, West Colonial Drive (SR 50) off-ramp, Turnpike off-ramp, and the SR 438 on-ramp (shown in **Figure 11**). Queuing condition with speeds less than 35 MPH occur at the Toll Plaza on-ramp and West Road / Clarcona Ocoee Road off-ramp weaving segment and extend further to the West Road / Clarcona Ocoee Road on-ramp. Queuing conditions are also experienced from upstream of the SR 438 off-ramp with the conditions extending to further before the SR 438 on-ramp.

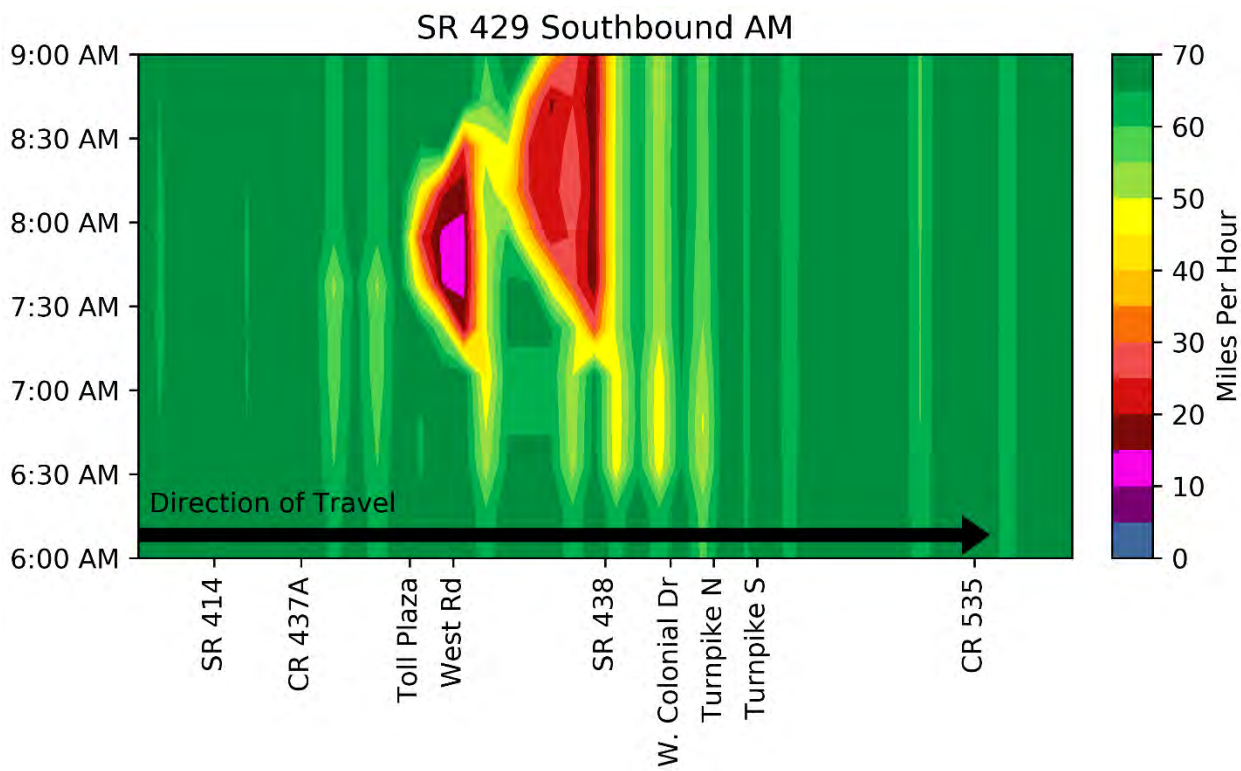


Figure 11: Southbound AM Speed Contours (Based on April 2019 data provided by CFX)

As illustrated in **Figure 12**, the average weekday PM peak hour does not experience speeds below 50 mph. Under higher demand conditions (peak season travel, special events, etc.), congestion has been observed during the PM peak hour between the CR 535 and Turnpike interchanges.

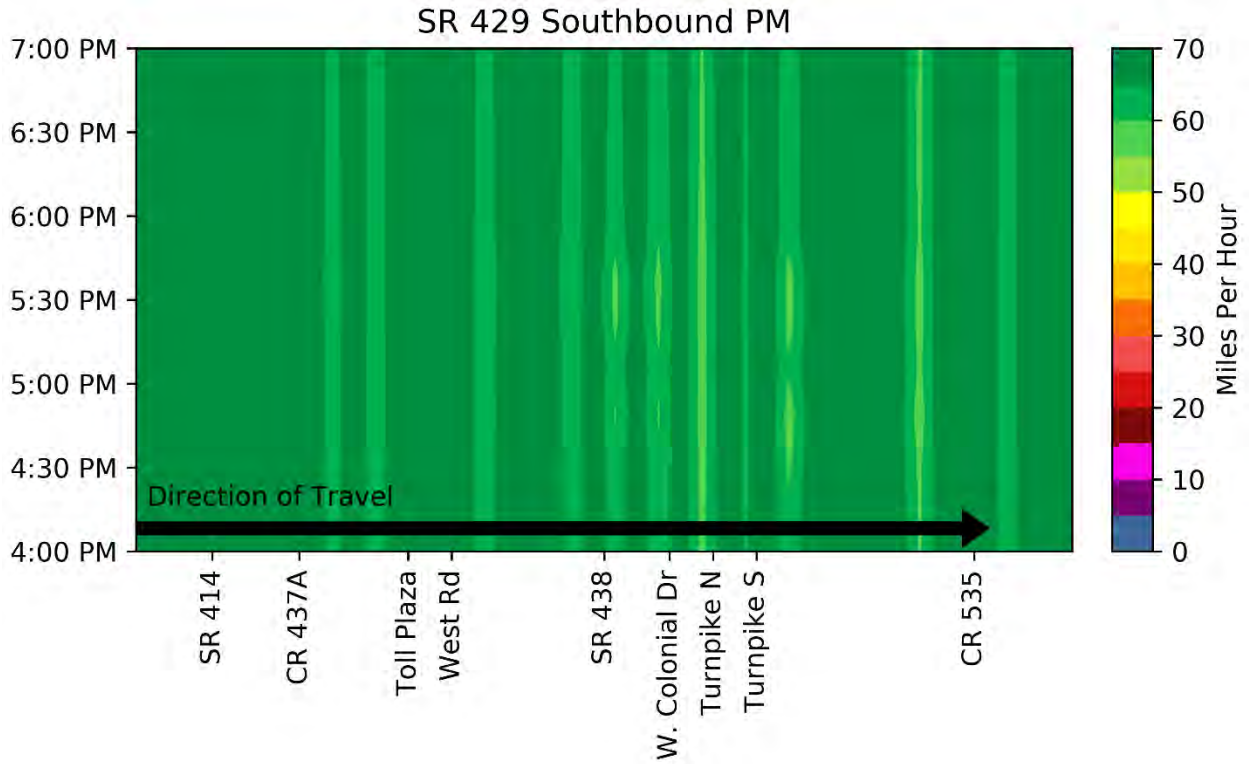


Figure 12: Southbound PM Speed Contours (Based on April 2019 data provided by CFX)

2.2.2.2 Travel Times

The facility travel time throughout the day is shown in **Figure 13**. The southbound travel time data shows in increase in travel time due to a sharp AM peak period during the average weekday (Tuesday-Thursday). Travel times during the AM peak are approximately 50 percent higher than the free flow travel time (18 minutes compared to 12 minutes). The Friday data indicates a slight increase (less than 10 percent) in travel time due to an AM peak; however, the magnitude is less than the average weekday.

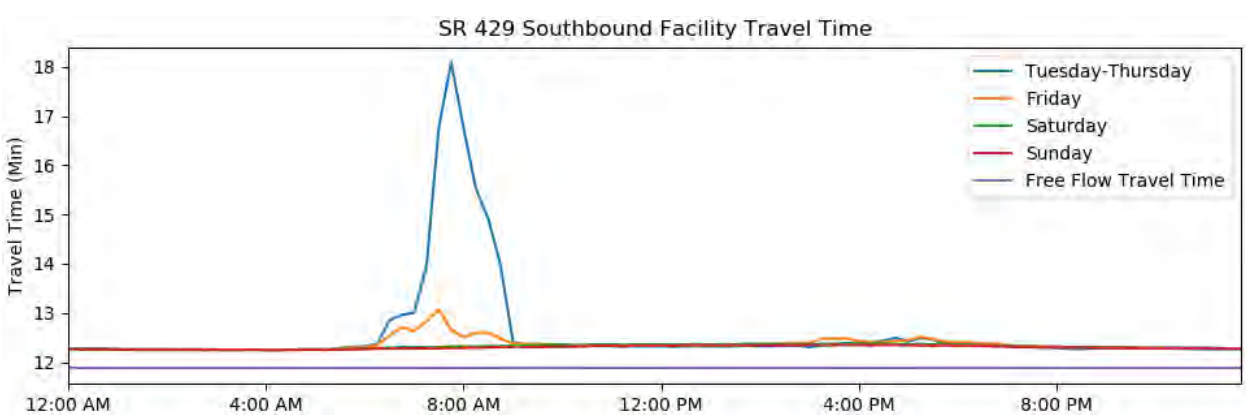


Figure 13: Southbound Facility Travel Times

2.2.3 Incidents

CFX maintains a log of incidents on SR 429 requiring closure of lanes or the shoulder. This data is pulled from the SunGuide software system, maintained by the Florida Department of Transportation (FDOT). Data in 2019 was available from February to November and was reviewed and summarized in **Table 1.**

Table 1: SR 429 Incident Data (2019)

Incident Type	SR 429 Northbound			SR 429 Southbound		
	Average Per Month	% of Incidents	Average Duration (min)	Average Per Month	% of Incidents	Average Duration (min)
Shoulder Closure	132	93.9%	N/A	118	94.3%	N/A
One Lane Closure		2.5%	32		3.4%	29
Two Lane Closure		1.1%	42		0.9%	124
Three Lane Closure		0.2%	113		0.1%	79

More than 90% of incidents on SR 429 involve a blockage of the shoulder. The data does not specify which shoulder (right or left) was blocked. Lane closures occur approximately 10 times per month (5 times per direction). Closures of single lane last about half an hour on average, and closures of two or three lanes last longer.

This data provides an indication of how often the PTSU system may be activated in the future, recognizing that higher exposure (traffic volume) in future years creates the potential for a higher number of incidents.

2.2.4 Existing Operational Summary

The existing facility experiences average weekday congestion in the northbound direction during both the AM and PM peak hours. The southbound facility experiences congestion during the AM peak hour. Travelers can experience around 50 percent increases in travel time along the facility during the peaks. As traffic continues to grow, the congestion drivers experience along the facility will continue to worsen. This has driven the need to widen the facility and incorporate the PTSU system to provide CFX with a future option to manage recurring congestion should traffic volumes reach their projected levels.

2.3 Description of the Current Traffic Management and ITS System

CFX has implemented many ITS devices along SR 429 and throughout the rest of their roadway network. These devices are owned and maintained by CFX, but operated from the FDOT District 5 RTMC in Sanford, Florida. CFX has a longstanding agreement with FDOT District 5 through which FDOT staff and consultants manage CFX facilities, including SR 429.

The following is a general description of the ITS elements that are currently deployed on their system:

- Dynamic Message Signs (DMS) – electronic, overhead or roadside signs that inform motorists of current traffic conditions, including travel times, and display response plan messages and toll messages. Systemwide, CFX has 57 3-Line DMSs spaced at major interchanges throughout the system and 52 Two Line Toll DMS (TDMSs) located at the approach of each mainline toll plaza building.
- Portable Dynamic Message Signs (PDMS) – smaller, mobile message signs often used for work zones or near incident sites
- Data Collection Sensors (DCSs) and Traffic Monitoring Sensors (TMSs) – DCS are placed at every exit point and 3-Line DMS to provide updated travel time information. TMS devices are placed at every ingress point, egress point and split ramp on the system to detect every movement. Existing DCSs and TMSs will be sufficient for PTSU. TMSs are also known as microwave vehicle detection systems (MVDSs) and are a non-intrusive traffic detection technology that detects the presence of vehicles and records their volume, speed, and characteristics. Travel time information displayed on DMSs is collected through the DCS devices and filtered through CFX's data server to post travel time messages on the DMS located throughout the system. Incident Management messages are generated by District 5 RTMC staff.
- Closed Circuit Television (CCTV) Cameras – closed-circuit television used to visually monitor roadway conditions and detect incidents (manually through human observation of videos). CCTVs are placed approximately every mile and are spaced to provide full coverage of the existing roadway network
- Emergency Service Patrols (Road Rangers) – CFX provides vehicles dedicated to assisting disabled vehicles, detecting congestion, and responding to incidents, from 6:00 a.m. to 10:00 p.m., 365 days a year.
- Electronic Toll Collection – known as E-PASS, the Authority's electronic toll collection system uses in-vehicle transponders with roadside and overhead gantry readers to automatically deduct tolls from instrumented vehicles. The E-PASS technology is also compatible with FDOT's SunPass.
- Wrong Way Driver Systems – these are currently deployed at 38 off-ramp locations systemwide and will be expanded as part of the on-going widening projects as well as a standalone WWD project.
- Fiber Optic Communication – existing fiber optic communication system along SR 429 provides high capacity connection to all existing ITS devices with capacity to expand the number and type of devices. This system connects the devices to CFX Headquarters and the District 5 RTMC.

CFX uses the statewide SunGuide software to operate the current infrastructure 24/7/365 from the FDOT District 5 RTMC. Additionally, CFX staff uses SunGuide to view cameras and post messages to the DMS as necessary. CFX also owns and operates the CFX Data Server software which creates travel times and sends travel time messages to DMS signs in an automated fashion. Consulting staff pulls data from SunGuide for traffic reviews.

In addition to CFX's ITS infrastructure, FDOT District 5 has many roadside devices in the vicinity of SR 429 which are tied into the RTMC. The FDOT Freeway Management System (FMS) was developed as an ITS initiative and is the hardware and software infrastructure through which the RTMC monitors the roadway network in District 5. The FDOT's SunGuide FMS uses CCTV cameras and traffic sensors to gather traffic data, analyze the data, and disseminate output to the RTMC, its users, and the public. Computer-Aided Dispatch (CAD) is integrated to add user-provided traffic data and initiate traffic incident response.

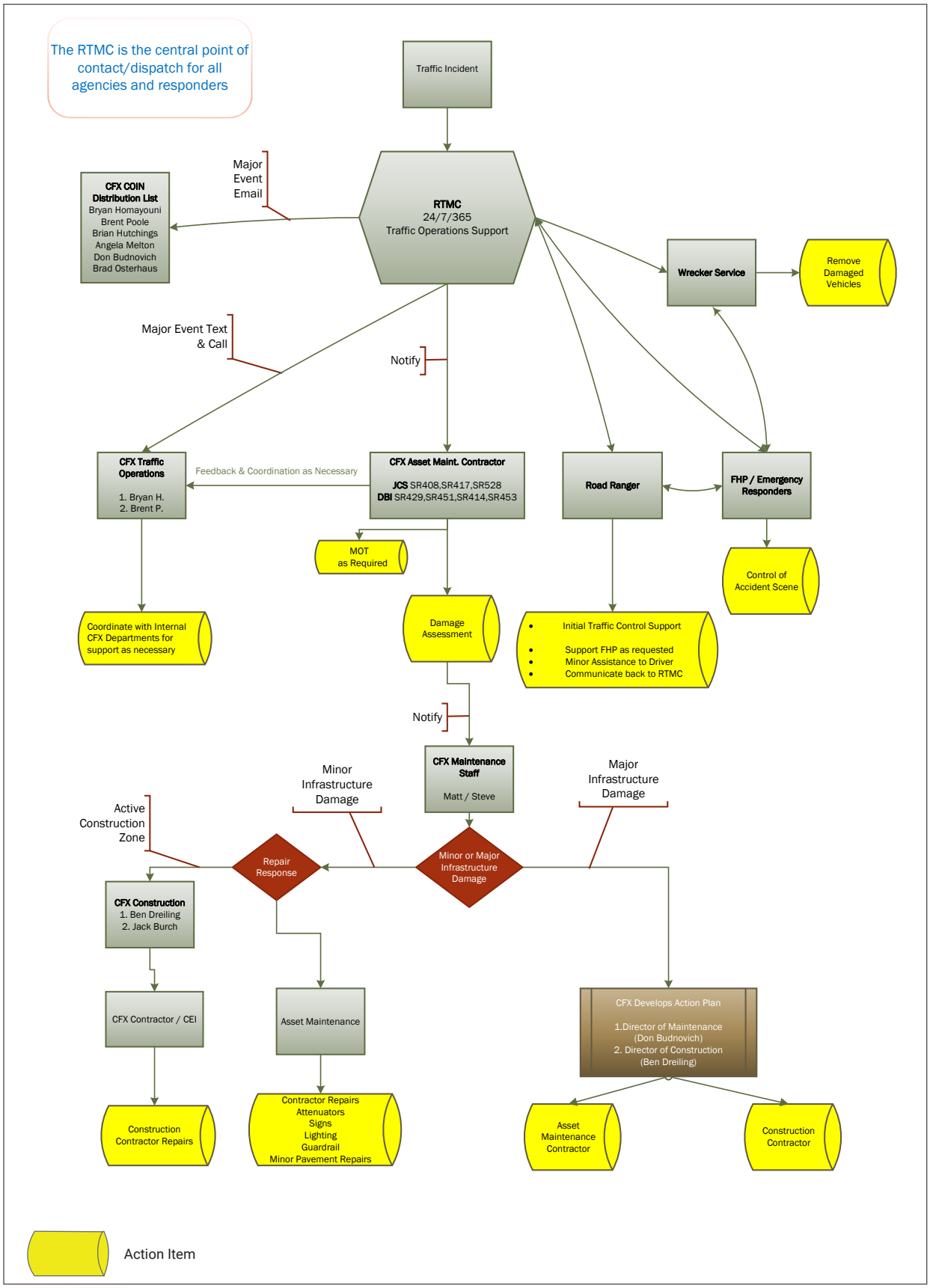
2.4 User Class Profiles

FDOT District 5 currently maintains a number of traffic management system tools which focus on roadway monitoring and incident management, including existing vehicle detection, CCTV cameras at selected locations, dynamic message signs and highway advisory radio that warn of upcoming congestion and incidents. The RTMC has developed an Incident Management Plan and CFX uses this plan with support from the RTMC.

CFX's incident management plan is shown in **Figure 14**. Following the detection of an incident, the following stakeholders are notified:

- Wrecker service – to remove damaged vehicles
- FHP/Emergency Responders – to control the accident scene
- Road Rangers – for initial traffic control, supporting/assisting others, and communicating back to RTMC
- Asset Maintenance Contractor – to assess damage and provide MOT as required
- CFX Traffic Operations (if a major incident)
- CFX Central Office Incident Notification (COIN) Distribution List (if a major incident)

Additional activities occur if there is infrastructure damage or if the incident occurred in an active construction zone.



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Traffic Incident Plan

Figure 14

2.5 Support Environment

CFX has an ITS maintenance contract that maintains the existing ITS infrastructure (devices & layer 2 network equipment) and a fiber optic network maintenance contract that maintains the fiber optic network and layer 3 network equipment. In terms of operation, all CFX devices are routed to CFX Headquarters which has a center to center connection with the FDOT District 5 RTMC who provides operational support.

3. Change Justification

Tremendous growth is occurring in Central Florida. Recurring congestion is present on portions of SR 429 today, and additional capacity is needed to serve current and future demands. The addition of one lane in each direction will provide sufficient capacity in the near-term but not in the long-term, and the addition of two lanes in each direction would be complex and expensive to construct because it would require outward widening. As a result, CFX has chosen to widen SR 429 inward using the existing grass median and the proposed typical sections has three general purpose lanes in each direction and a wide left shoulder, part of which is used for PTSU. Other active traffic management (ATM) treatments are being added as well. The changes and their justification are described further in the sections below.

3.1 Justification for Changes

As described in Section 2.2, both directions of SR 429 experience LOS F operation in the AM Peak today and northbound SR 429 experiences LOS F in the PM Peak. As a result, CFX is undertaking a widening project to transform SR 429 from a 4-lane expressway to a 6-lane expressway by building inward and utilizing the existing grass median. However, a 6-lane SR 429 is not anticipated to serve peak period demand on a recurring basis beyond 2035 and may not serve peak period demand in earlier years. At that time, an 8-lane configuration would be required to meet peak period demand. However, a future 8-lane widening of SR 429 is expensive and would take longer than the 6-lane widening due to the need to widen outward from the current roadway footprint. The current cross-section of SR 429 does not permit 8 lanes with a left shoulder sufficiently wide enough to store disabled vehicles. Additionally, one incident on SR 429 causes severe congestion and improved mitigation of incidents will improve travel time reliability.

To alleviate the need for outward widening and to alleviate the need to widen SR 429 twice in a relatively short timeframe, PTSU will be used to provide additional capacity during peak hours and maintain a shoulder wide enough to store disabled vehicles during most hours of the day. The PTSU system will be able to provide improved traffic flow under both recurring and nonrecurring congestion scenarios.

Several projects in the area will impact regional travel patterns and are expected to have a significant effect on future SR 429 volumes. CFX will be constructing a new alignment project between SR 429 and US 27 (SR 516) south of the Turnpike. This project is anticipated to open in 2023. In addition, FDOT is currently building a connection/interchange between the Wekiva Parkway and I-4 in Seminole County that will fully connect SR 429 with I-4. Both projects are expected to increase the volumes along SR 429. FDOT will also be widening I-4 to an ultimate

10-lane section past SR 417, further increasing volumes on that interstate. All these regional projects will require additional capacity on SR 429 in a quicker manner than future 8-lane widening can be made.

CFX staff has determined that PTSU is the preferred option for future capacity improvements and should be used for improved incident management in the near-term. The CFX Board was briefed on this decision and had no objections during the March 2020 board meeting.

3.2 User Needs

Table 2 summarizes user needs defined for the project by the stakeholders that have been identified for the project.

Table 2: User Needs

User Need ID	User	Need
UN001	FDOT Central Office	Provide clear and consistent messages to drivers
UN002	FDOT District 5 RTMC Traffic Incident Managers	Increase Safety of Vehicle Travel on Corridor
UN003	FDOT District 5 RTMC Operators	Increase Vehicle Throughput on Corridor
UN004	CFX Operational Staff	Decrease Amount of Vehicle Delay on Corridor, Increase Safety of Vehicle Travel on Corridor
UN005	Towing Companies	Decrease Amount of Vehicle Delay on Corridor
UN006	Road Rangers / CFX Expressway Service Patrol	Decrease Amount of Vehicle Delay on Corridor
UN007	Emergency Responders	Increase Safety of Vehicle Travel on Corridor
UN008	Law Enforcement	Increase Safety of Vehicle Travel on Corridor
UN009	Drivers	Decrease Average Travel Time on Corridor

4. Concepts for the Proposed System

This section describes how the PTSU system will operate and the roles of various users.

4.1 Background, Objectives, and Scope

PTSU for mixed traffic (all vehicles) is proposed on the left shoulder of both directions of SR 429 from Stoneybrook West Parkway to SR 414 in conjunction with a construction project that will add an additional general-purpose lane in each direction. The primary objective of the project is to provide peak period congestion relief in future years when traffic volumes are expected to increase. A second objective is to improve incident management through the use of general-purpose lane closures when incidents are present and, in some cases, offset the loss of general-purpose lane capacity by opening the shoulder. The PTSU system will include the following components:

- A shoulder used for part-time travel
- Lane control signals above all lanes and the left shoulder
- Variable speed limit signs
- Incident Management dynamic message signs
- Closed-circuit TV cameras
- Traffic Monitoring Sensors

PTSU will also involve changes in operating procedures for RTMC staff, law enforcement, emergency responders, Road Rangers, and CFX maintenance staff described in Section 4.5.

4.2 Operational Policies and Constraints

CFX will need to address certain institutional and jurisdictional issues in collaboration with regional transportation agencies and facility stakeholders. These institutional issues need to be resolved by developing common policies and approaches to the challenges that arise. Partnering agreements should be incrementally developed during the design phase to document consensus among the parties on issues related to organization; operational concepts; and specific roles and responsibilities for each partner.

The PTSU system will be operated from the FDOT District 5 RTMC, and law enforcement activities will be handled by the Florida Highway Patrol (FHP) and local law enforcement agencies. Incidents will be handled by local fire departments and Road Rangers depending on the severity of the incident. Removal of disabled vehicles will be handled by towing firms contracted with CFX.

Initial discussions between CFX, District 5, and FHP have been held as part of the development of this ConOps document and preliminary roles and responsibilities are documented in Sections 4.4 and 4.5. Ultimately, agreements between key stakeholders should be documented in memorandums of understanding (MOUs) or similar documents prior to the opening of the PTSU system. An MOU can be updated as additional details of the PTSU system are developed in the design phase and experience is gained following the opening of the system to traffic.

4.3 Description of the Proposed System

The following elements will be implemented on SR 429 as part of the PTSU project and are changes necessary from the existing system:

- Dynamic Part Time Shoulder Use (D-PTSU) enables use of the left shoulders as travel lanes on flexible basis in response to incidents or traffic conditions. Core hours of PTSU operation will be established and, aside from incidents, deviations from these hours will be planned in advance and communicated to stakeholders.
- Lane Control Signals provide status information about individual traffic lanes (and the shoulder) at regular intervals and directs drivers to open lanes. General purpose lanes can be closed if they are blocked.
- Variable Speed Limits will decrease the speed limit when the shoulder is open or when there is an incident. Specific speed reductions are described in Section 4.3.3.
- Increased fiber optic network capacity will connect these devices to the RTMC. An additional 72 SM fiber is being installed on both sides of SR 429.

The following sections provide additional information on these treatments.

4.3.1 Dynamic Part-time Shoulder Use

Part-time shoulder use (PTSU), also known as hard shoulder running, is typically used to address recurring congestion by adding temporary capacity during peak periods to the peak direction of travel. Dynamic PTSU, or D-PTSU, has variable hours of operation that are controlled by facility operators in real time and the shoulder can be opened for recurring congestion, nonrecurring congestion, or incident management (i.e. diverting traffic around incidents). The shoulder can also be rapidly closed if it becomes blocked. The open/closed status of the shoulder is communicated to drivers with overhead lane control signals. There are no static signs displaying the hours of operation because they may vary.

The degree to which D-PTSU facilities are “dynamic” varies greatly, and one key factor influencing this is the degree to which stakeholders have experience with PTSU or, more broadly, Active Traffic Management (ATM). The addition of PTSU on SR 429 is atypical because it is accompanied by the addition of a general-purpose lane and will not be immediately used for congestion relief when the facility opens. PTSU will initially be used for incident management – Level 2A as described in **Table 3** - and later for both incident management and congestion relief.

Since PTSU will be new to Florida, routine PTSU operation on SR 429 for congestion-related purposes should begin at Level 2B, as described in **Table 3**. CFX should establish, but not post in the field, core hours of operation for the SR 429 shoulder to be open. Aside from incident situations, deviations from these hours should be planned in advance by RTMC staff and communicated to law enforcement, emergency responders, and CFX maintenance forces. Reasons for opening the shoulder outside of core hours of operation include planned special events or extended hours during peak season. As time goes on and stakeholders in Central Florida become more accustomed to PTSU, CFX may transition to Level 3 or Level 4 operation.

Table 3: Levels of Part Time Shoulder Use (Adapted from FHWA Decision Support Framework and Parameters for Dynamic Part-Time Shoulder Use)

Level	Title	Description
0	No part-time shoulder use (PTSU)	Shoulder is never opened to traffic.
1	Static PTSU	Shoulder is only opened to traffic at predictable, fixed hours of day and days of week.
2A	Dynamic PTSU for incident management	No planned openings or congestion-related openings, but the shoulder is opened for incidents.
2B	Dynamic PTSU with core hours and scheduled variation	Shoulder is opened to traffic during recurring "core" hours and days of the week and may also be opened outside of those core hours in a scheduled, pre-determined manner for special events or seasonal variations.
3	Dynamic PTSU with core hours and unscheduled variation	Shoulder is opened to traffic during recurring "core" hours and days of the week and may also be opened outside of those core hours in response to real-time or anticipated traffic conditions.
4	Fully Dynamic PTSU	Shoulder is opened and closed purely in response to or in anticipation of factors such as traffic congestion, demand surges, events, incidents, weather, maintenance needs, incident management needs, or enforcement needs. There are no "core" hours and days of the week when the shoulder is always opened regardless of traffic conditions.

The levels presented in **Table 3** are intended to capture the potential range of PTSU operational practices. Levels 2A and 2B represent the lowest levels of “dynamic” operation. Level 2A requires a high degree of activity management from a TMC to detect and respond to incidents, but drivers rarely observe PTSU and TMC activities such as monitoring traffic conditions (speed, volume, etc.) and predicting when it is necessary to open the shoulder to avoid congestion is not necessary. Level 2B requires the establishment of processes and protocols for routinely opening the shoulder, but it does not require TMC activities such as monitoring traffic conditions (speed, volume, etc.) and predicting when it is necessary to open the shoulder to avoid congestion.

Levels 3 and 4 involve a high degree of traffic monitoring and prediction at a TMC. On facilities with a high degree of congestion year-round, Level 3 and Level 4 operation may be indistinguishable to routine drivers because the shoulder will nearly always be open at certain times on certain days of the week. There are no US facilities best characterized as Level 4 for general purpose traffic at this time, but some European facilities operate in this manner.

D-PTSU can be implemented with LCSs over all lanes or just the shoulder. Placement of LCSs over all lanes requires a higher degree of TMC management because of the potential to close general purpose lanes in response to incidents.

The degree to which PTSU facilities are “dynamic” is a continuum, and it is possible for a facility to have characteristics of multiple levels. The level of current and recently-removed D-PTSU facilities in the United States (US) is best characterized as follows:

- US 23, Michigan – This facility is opened during weekday peak periods and on Saturdays when the University of Michigan has home football games. This is best characterized as a Level 2B facility that is transitioning to Level 3.
- I-670, Ohio – This facility opened in Fall 2019 as a Level 2B facility. The TMC has the capability to transition to a higher level, and the current level is unknown.
- I-90 (Illinois Tollway), Illinois – This facility was primarily implemented for incident management purposes. The shoulder is opened to general purpose traffic due to incidents or construction/maintenance projects that close general purpose lanes. This is best characterized as a Level 2A facility. The left shoulder is routinely open to buses in response to congestion, and this facility is effectively a Level 4 facility for buses. This is also the only bus-on-shoulder facility in the US that uses a dynamic sign to indicate when buses are permitted to use the shoulder; on other facilities the driver determines if is usage criteria (such as low travel speeds) are being met.
- I-70, Colorado – This facility was built to serve recreational traffic returning to Denver from the mountains. It was initially opened on weekends and holidays in the winter and summer, and is now opened on weekends and holidays year-round. Opening is planned in advance, but there is greater variation in the closure time than most PTSU facilities due to the greater variability in recreational traffic. This is best characterized as a Level 3 facility.
- I-85, Georgia – This facility is an auxiliary lane between 2 interchanges approximately one mile apart. It was initially opened during fixed hours in the PM peak period on weekdays (Level 1), but these hours are now adjusted in response to traffic conditions. This is best characterized as a Level 3 facility.
- I-66, Virginia – This facility opened as a Level 1 facility in 1992, but was converted to D-PTSU in 2015. The conversion enabled the shoulder to be open in the off-peak direction during peak periods and on weekends if traffic conditions justified it. After 2015 this was best characterized as a Level 3 facility. PTSU was removed in 2018 as part of a major widening project.
- I-35W, Minnesota – PTSU was initially opened in peak periods on weekdays. In later years PTSU was opened before the AM peak and remained open until after the PM peak on weekdays and was also open during daytime hours on weekends as well because traffic levels routinely required the shoulder to be open to prevent congestion. Over its entire life, this was best characterized as a Level 3 facility. PTSU was removed in 2018 as part of a major widening project
- I-405, Washington – PTSU is opened in the PM peak period on weekdays. On Fridays and on Thursdays during the summer, the peak occurs earlier, and the shoulder opens earlier. This is best characterized as a Level 2B facility.

Many of these facilities have opened within the past 5 years, and operating practices are rapidly evolving as agencies gain experience with PTSU.

On SR 429, the left shoulder will be 19 feet wide. The shoulder will be separated from the leftmost general-purpose lane by a solid yellow stripe, like a typical shoulder. A second solid yellow stripe will be 12 feet beyond the first stripe. This will separate the portion of the shoulder used for part-time travel (i.e. the “shoulder lane”) from the permanent shoulder (i.e. the “shoulder beyond the shoulder lane”). This is consistent with left-side PTSU facilities in other states.

4.3.2 Dynamic Lane Use Control

Lane control signals (LCS) will be located over each lane and the left shoulder. This enables the RTMC to dynamically close or open individual traffic lanes or the shoulder as warranted and provide advance warning of the closure(s) to safely merge traffic into adjoining lanes. Closures of general-purpose lanes are typically done in response to incidents blocking the lanes and are intended to inform drivers of downstream conditions and reduce secondary crashes. The corridor will need to be continuously monitored to enable lane closures in real time.

Chapter 4M of the Manual on Uniform Traffic Control Devices (MUTCD) covers lane control signals. The following meanings of indications applicable to expressways are provided:

- Downward green arrow – road users are permitted to drive in the lane
- Yellow X – road users should prepare to vacate the lane
- Red X – road users are not permitted to use the lane

At this time, SR 429 LCSs are planned to use these indications, with supplemental text messages above them in some cases as described in Section 5. PTSU systems in other states have employed different signing concepts. CFX will continue to re-evaluate these alternate approaches as more data is available, more facilities open, and the MUTCD evolves. The system will be set up to allow for flexibility in this regard by using small DMSs instead of older-style blank-out LCSs with fixed number of display possibilities. **Table 4** summarizes a review of lane control signal sizes on recent PTSU installations in the US.

Table 4: Lane Control Signal Sizes Summary

State	Facility	Years Open	Lane Control Signal	
			Used For	Approximate Size
Washington	I-405	2017-present	Shoulder	5’ by 5’
Michigan	US 23	2017-present	All Lanes	6’8” high by 5’4” wide
Ohio	I-670	2019-present	All Lanes	Individual lane control signals not used. DMSs displaying lane status and other messages are 10’ high and 13’ to 60’ wide
Colorado	I-70	2015-present	Shoulder	4’ by 4’
Virginia	I-495	2015-present	Shoulder	4’ by 4’
Virginia	I-66	2015-2018*	All Lanes	4’ by 4’

* Lane control signals installed for all lanes in 2015 replaced lane control signals for shoulder only installed in 1992.

The sizes in the examples listed in **Table 4** do not necessarily refer to the “signal face” dimension used in Chapter 4M of the MUTCD. Some dimensions may be for the entire lane control signal hardware unit and include the housing surrounding the signal face. SR 429 will use LCSs with a nominal dimension of 6’ high and 5’ wide. The rectangular shape will permit a text message above the arrow or X symbol.

LCSs will be located on gantry structures installed specifically for the PTSU project. Each gantry will have lane control signals overhead and variable speed limit signs with an embedded DMS for speed limit displays on both supporting poles. Each gantry will have a dedicated cabinet and controller. Gantries are distinguished from one another as follows:

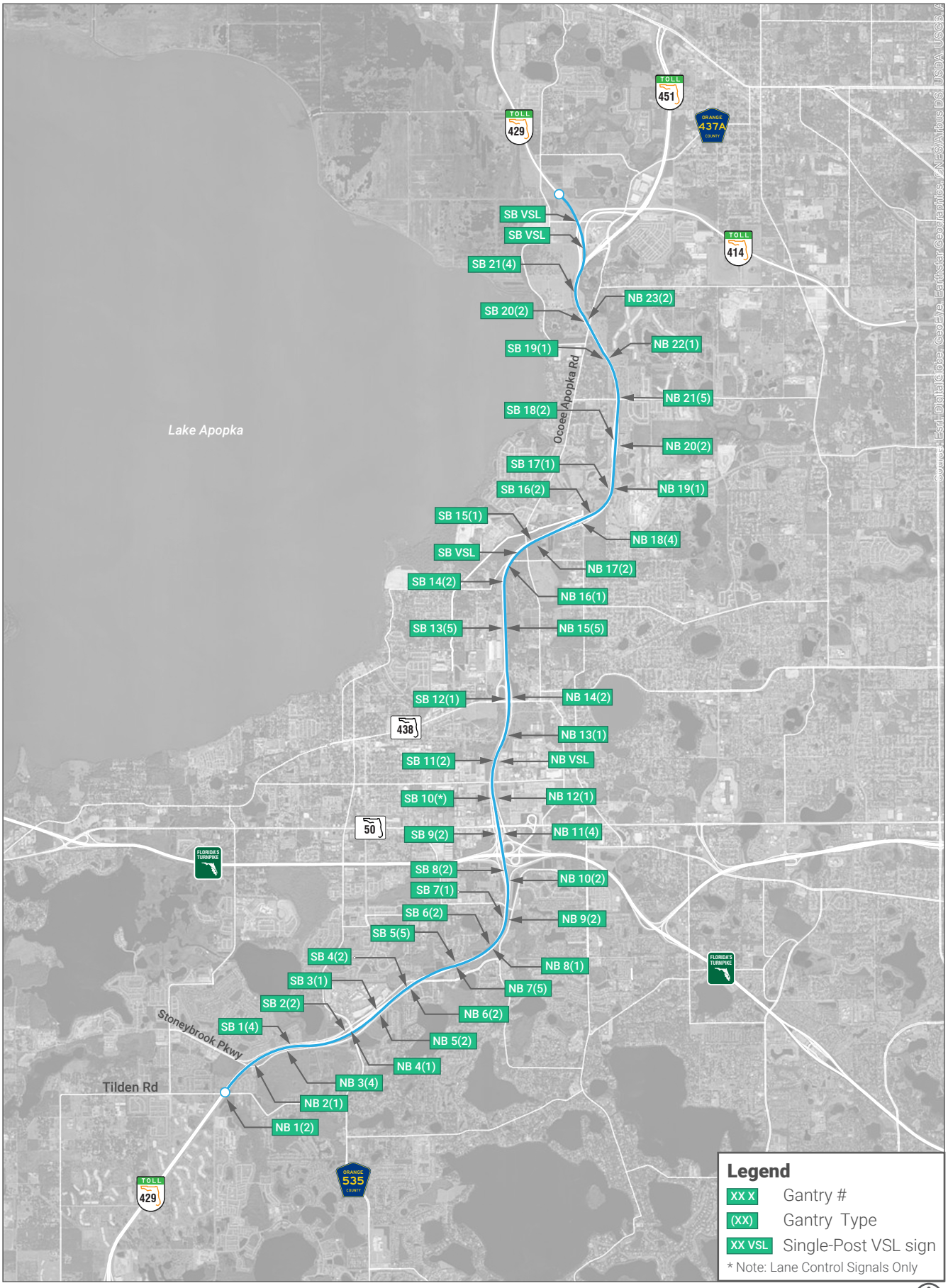
- Type 1 – a static sign over the right shoulder providing the meaning of green arrow, yellow X, and red X displays.
- Type 2 – a small, incident management DMS over the right shoulder
- Type 4 – a static guide sign above the lane control signals.
- Type 5 – a large, travel time DMS above the lane control signals

Chapter 1 presented conceptual drawings of these three types of gantries. Type 3 gantries are proposed for use on SR 417 but not SR 429.

A conceptual signing plan for SR 429 was developed in fall 2019. The following principles were used when developing this plan:

- Gantries should be placed approximately every half mile, consistent with other Dynamic PTSU facilities in the US
- Overhead sign structures (LCS gantries or static sign structures) should be a minimum of 800' apart
- Guide signs planned following the widening of SR 429 should generally remain in place or have slight location adjustments but not be eliminated.
- No more than one static guide sign or one large travel time DMS should be placed on a LCS gantry
- When possible, LCS gantries should alternate between Type 1 and Type 2. However, the need for Type 4 gantries often eliminates this possibility
- Type 1 gantries should be located downstream of system interchange on-ramps such as those from Florida's Turnpike

Figure 15 displays the location of LCS gantries proposed for SR 429, as well as several variable speed limit signs that are not part of LCS gantries (see section 4.3.3). The conceptual signing plans have greater detail. In addition to dynamic signs, the conceptual signing plan includes several static signs used upstream and downstream of PTSU.



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Gantry Type and Location

Figure 15

4.3.3 Variable Speed Limits

Variable speed limits will be used on SR 429 to address stopping sight distance issues and slow traffic in the vicinity of incidents. As depicted in Section 1, each gantry will have a speed limit sign on both supports (i.e. on the left side and the right side of the road). As previously shown in **Figure 15**, several additional VSL signs will be post-mounted at locations where no gantry is present or be mounted on non-gantry structures.

VSL signs will have an embedded dynamic panel to display the (variable) speed limit numerals with a static regulatory sign. Each VSL sign will include a yellow beacon located above the sign; the beacon will be in dark mode when the speed limit is 70 MPH and flashing yellow mode when the speed limit is reduced below 70 MPH. Lane control signals will continue to display arrow and X indications when variable speed limits are in effect. Each VSL sign will be visible from a CCTV camera so RTMC staff can confirm what is being displayed on it. RTMC software will automatically maintain a log of the speed displayed on each VSL sign with 1-minute resolution.

When the shoulder is open for congestion-related purposes, the speed limit will be reduced to 55 MPH in 5 MPH increments as described in subsequent sections. When there is an incident, the speed limit will be reduced to 60 MPH or 50 MPH in 5 MPH increments, as described in subsequent sections. Under no circumstances will the speed limit be reduced below 50 MPH. All VSL signs will be turned on and display a speed limit – the "normal" 70 MPH speed limit or a reduced speed limit – at all times (unless there is a loss of power or other failure event).

Some PTSU facilities have used variable speed limits for all lanes, including US 23 in Michigan, I-670 in Ohio, the 2015 upgrade of I-66 in Virginia, and I-35W in Minnesota. Use of variable speed limits has traditionally been intended to slow traffic prior to an incident or downstream queue rather than mitigate deficient design criteria. In these cases, the speed limit varies if certain traffic conditions are present and not by default when the shoulder is opened. Use of variable speed limits for these purposes is partially based on positive European experiences with PTSU and other active traffic management strategies in the 1990s. In the US, I-670 in Ohio and US 23 in Michigan always reduce the speed limit when the shoulder is open to traffic. These are left-side PTSU facilities and have SSD issues similar to SR 429.

4.3.3.1 Florida Regulations

Use of variable speeds in Florida is covered by FDOT manual *Topic No. 750-010-002, Rule 14-15.012, F.A.C., Speed Zoning for Highways, Roads and Streets in Florida, March 1997 (Revised: August 2018)*. This is codified under Florida Administrative Code and referenced in the Florida Design Manual, 2020. Section 10.1 of *Speed Zoning for Highways, Roads and Streets in Florida* indicates the following relevant to SR 429:

- VSL is permitted in Florida for multiple reasons, including to alleviate "non-ideal" roadway conditions
- "VSL systems shall not be implemented without adequate speed enforcement. A record shall be maintained on the day, hour, and minute a VSL change is made…"

- "FDOT mandates any automated system capable of adjusting or displaying posted speed limits on electronic signs require a human operator to review and accept system-generated speed limits prior to posting them on roadside signs"
- "…under no circumstances shall the reduced posted speed limit be more than 20 mph below the unconditioned maximum posted speed limit"
- A yellow beacon on the speed limit sign shall flash when speed limit is reduced

The FDOT manual also describes an operating procedure in which speed limits are reduced in 5 MPH increments. CFX has chosen to use this method to reduce speed on SR 429. Reduce Speed Ahead signs will not be used.

4.3.3.2 Curve Applications

Per the 2018 American Association of State Highway and Transportation (AASHTO) Green Book, "a driver's ability see ahead is needed for safe and efficient operation of a vehicle on a highway", and the sight distances needed for stopping are "applicable to all roads and streets." Stopping sight distance (SSD) is a function of a driver's break reaction time and braking distance. On level terrain with a 70 MPH design speed (the posted speed limit on SR 429), the design value of SSD is 730 feet per Table 3-1 of the 2018 AASHTO Green Book.

SSD is usually limited by crest vertical curves or roadside obstructions on sections with horizonal curvature. On SR 429, the proposed concrete median barrier will limit SSD, with the leftmost lane on left hand curve sections being the critical locations for SSD. Full-time lanes on SR 429 are being designed for 70 MPH SSD, but traffic travelling on the shoulder – when it is open – will be 12 feet closer to the median barrier and 70 MPH SSD will not be available at some curves. **Figure 16** depicts this situation, and **Figure 17** shows the curves on SR 429 where 70 MPH SSD is not available for the shoulder lane. On SR 429 this will be mitigated through the use of VSL that will reduce the speed limit. The speed limit will be reduced to 55 MPH when the shoulder is open for congestion-related purposes.

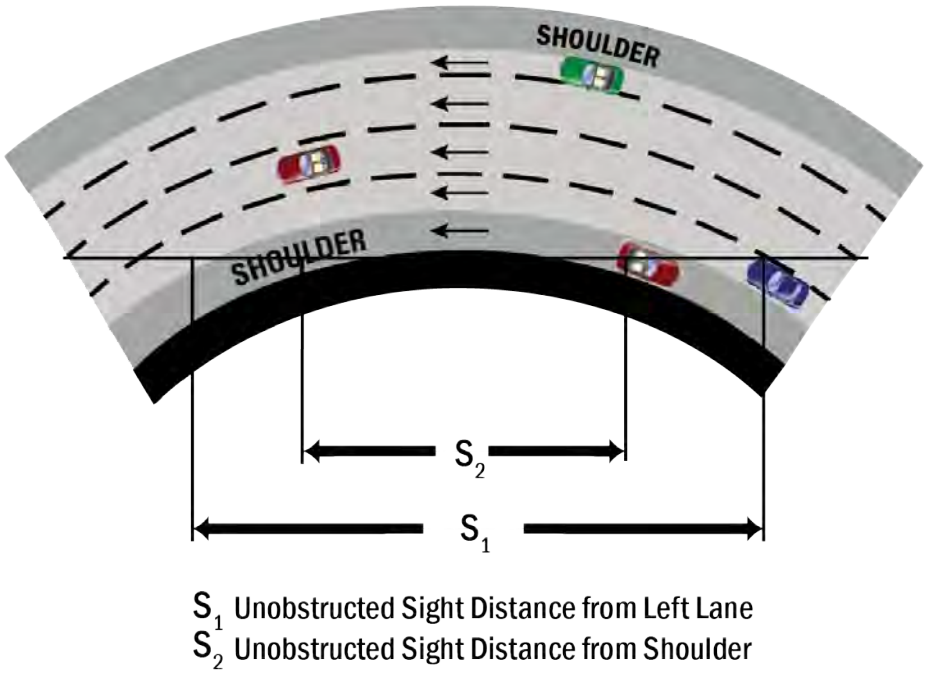
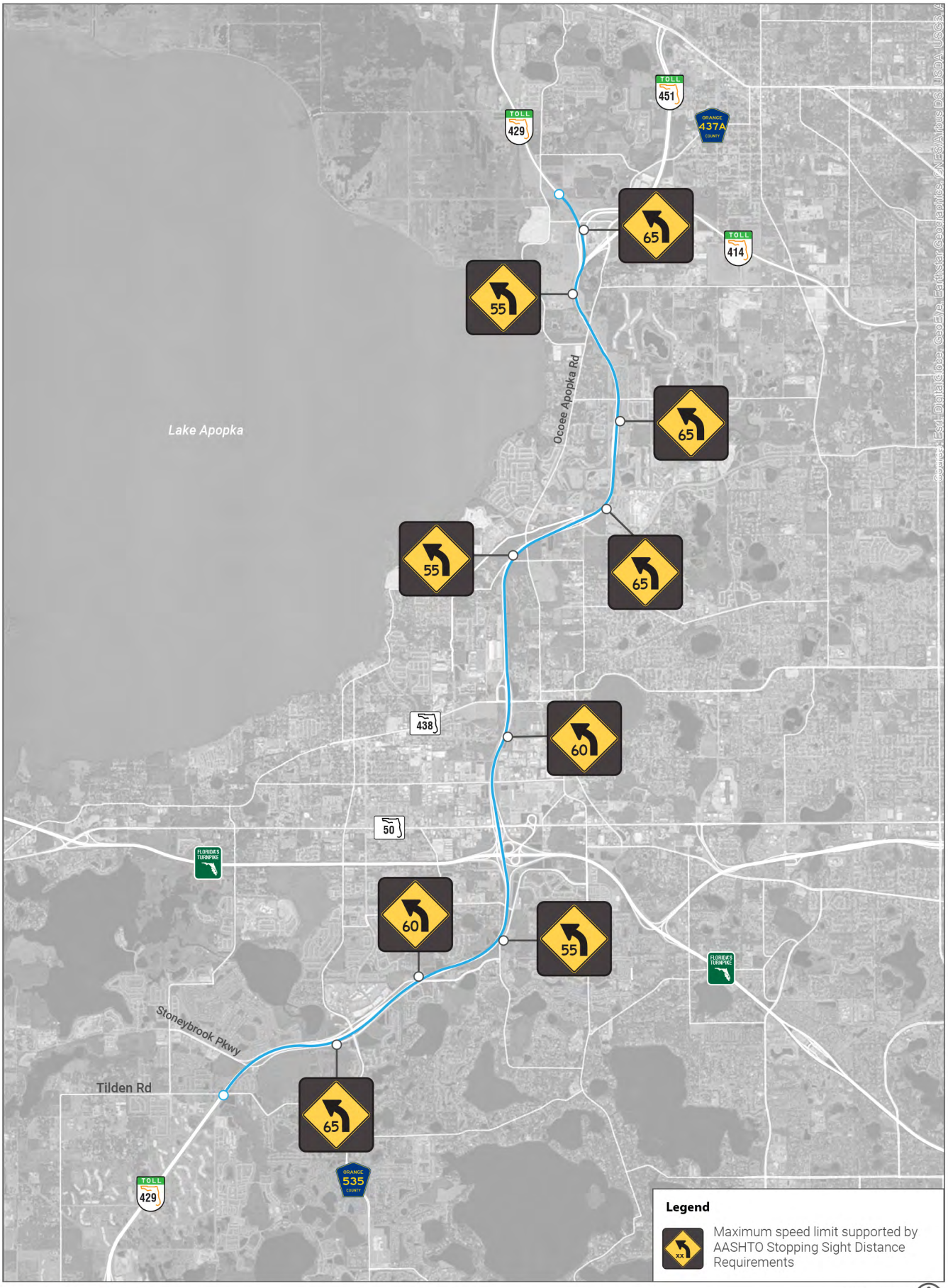


Figure 16: Median Barrier on Horizontal Curve Section Limiting Stopping Sight Distance when Shoulder Open to Travel



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SR 429 Part-Time Shoulder Use

Curves with Stopping Sight Distance Values Less than 70 MPH when Shoulder Opened and Recommended Speed Limits

Figure 17

As shown in **Figure 17**, the speed supported with the available SSD at the curves ranges from 55 to 65 MPH, and these curves are spread along SR 429. The speeds and locations illustrated in **Figure 17** were provided by each section design engineer for incorporation into this ConOps document. Redesign of the curves identified in **Figure 17** would involve relocating some portions of the existing expressway to the outside and is considered unfeasible, so VSL will be used. When the shoulder is closed and no incidents are present, the speed limit on SR 429 will remain 70 MPH. When the shoulder is open for congestion-related purposes, the speed limit on all lanes will be 55 MPH. Curves are frequent enough that decreases prior to each curve followed by a return to 70 MPH would result in a high number of speed limit changes that could be confusing to drivers, so the speed limit will be set at 55 MPH throughout the corridor when the shoulder is open throughout the corridor. For congestion-related PTSU, the speed reductions will occur as follows:

- 1st VSL sign on facility: 65 MPH
- 2nd VSL sign on facility: 60 MPH
- 3rd VSL sign on facility and subsequent signs: 55 MPH

If congestion is limited to a portion of the corridor and the shoulder is open on only a portion of the corridor – such as only south of Florida's Turnpike or only north of Florida's Turnpike – the speed reduction described in the bullets above could be implemented prior to the start of the portion of SR 429 where the shoulder is open.

In both directions, the limited number of VSL signs upstream of the start of PTSU and the reduction of the speed limit by 5 MPH increments will result in short portions at the start of PTSU facility having posted speeds greater than 55 MPH when the shoulder is open. In the northbound direction, the portion of SR 429 at the start of PTSU has 70 MPH SSD so there are no issues with this. In the southbound direction, the start of a curve with 55 MPH SSD occurs between the first and second gantry. To enable the speed to be reduced to 55 MPH prior to this curve, two sets of post-mounted VSL signs will be installed upstream of the first gantry.

4.3.3.3 Incident Applications

The VSL system will also be used when a lane is blocked by an incident. In these situations, the speed limit will be reduced to either 60 MPH or 50 MPH. The speed limit will be lowered to 50 MPH for a full closure of the road or an incident that opens the shoulder on a curve where only 55 MPH SSD is available. For other incident scenarios, the speed limit will be lowered to 60 MPH.

The speed limit will be decreased to 60 MPH as follows:

- 3rd VSL sign prior to incident: 65 MPH
- 2nd and 1st VSL signs immediately prior to incident: 60 MPH

The speed limit will be decreased to 50 MPH as follows:

- 5th VSL sign prior to the incident: 65 MPH
- 4th VSL sign prior to incident: 60 MPH
- 3rd VSL sign prior to the incident: 55 MPH
- 2nd and 1st VSL signs immediately prior to incident: 50 MPH

4.3.4 Regional Traffic Management Center (RTMC) Upgrades

To connect ITS devices to the RTMC, CFX has fiber optic infrastructure located on the outside of both directions of SR 429. The current fiber optic infrastructure consists of two 72 SM fibers placed in each direction of travel. An additional 72 count fiber cable will be added in both directions in conjunction with the widening projects to support PTSU.

The TMC will need software upgrades to operate the PTSU system. Some US agencies that operate PTSU have expanded their existing software when PTSU was added and others have purchased software from vendors, as described in the following list:

- US 23, Michigan – Michigan DOT purchased software from Delcan/Parsons
- I-670, Ohio – Ohio DOT's in-house TMC software, BuckeyeTraffic, was unable to operate the PTSU system. Ohio DOT purchased openTMS from Q-Free as a short-term solution. Ohio DOT is in the process of replacing BuckeyeTraffic with OHGOInsight, a customizable off-the-shelf software, and will eventually use OHGOInsight to operate PTSU.
- I-90, Illinois – The Illinois Tollway added PTSU functionality to their existing software
- I-70, Colorado – Colorado DOT uses in-house software (Colorado Traffic Management System) for their TMC and added functionally to operate PTSU.
- I-66, Virginia – Virginia DOT purchased iNet from Delcan/Parsons for the 2015 update to I-66. The software was retired in 2018 when PTSU was discontinued and a major widening project began.
- I-495, Virginia – Virginia DOT purchased OpenTMS from Q-Free to operate PTSU. I-495 has static PTSU (fixed hours) and only has lane control signals over the shoulder, so Virginia opted for OpenTMS despite their opinion that iNet had stronger capabilities for dynamic PSTU and features like those on I-66 including congestion-related variable speeds and lane control signals over all lanes.
- I-35W, Minnesota – Minnesota DOT uses IRIS, a software developed in-house but also available as open-source other agencies through a general public license. This software was used to operate I-35W PTSU until it was discontinued in 2018 when a major widening project began.

4.3.5 Detailed System Overview

PTSU functions will be achieved through the deployment and integration of new and existing roadside monitoring and control equipment for collecting data and managing traffic operations, traveler information systems that will provide regulatory and informational messages, and the implementation of the ultimate PTSU decision support and control software at the RTMC.

LCSs, VSL signs, and DMSs will be located on gantry structures. Each gantry will have a cabinet outfitted with uninterrupted power supply (UPS) to supply short-term power to LCSs in the event of a power failure. VSL signs and DMSs will be powered by a separate circuit and the VSL sign will have an independent UPS. A telemetry device that is interlocked with the communications fiber will be used to continuously report the status (voltage and current) of each circuit in a service panel, including the main supply. This will provide faster detection of trouble and a more cost-effective response. Each sign on the gantry will have a separate controller in the cabinet. Some

VSL signs will be post mounted at locations away from gantry structures. These post-mounted VSL signs will have media converters and switches to connect to the fiber optic network or the closest local hub cabinet and will be connected to a UPS in a nearby cabinet.

The communications link from the cabinets will connect to the new 72 SM fiber optic line's network tail circuits utilizing IP-based communications compatible with other ITS devices along the corridor that are maintained by CFX. CCTV cameras will be located to provide full coverage of the shoulder and will be located on both gantry structures and standalone poles as needed to support full coverage. CCTV cameras, regardless of location, will be connected via fiber following CFX standards and IP-addressing.

The PTSU system will perform data collection and condition monitoring activities using a series of sensors (e.g., TMS/DCS, CCTV cameras), each serving as an input to a central data processing and ultimate decision support module that will serve as the core of the PTSU system elements. The devices will collectively provide specific data and images/video that will capture current traffic data as the basis for formulating proactive strategies. The PTSU system may be able to automatically detect incidents on the shoulder; selection of specific software is ongoing at this time. The PTSU system and designated operators will then use this information to communicate to drivers on the roadway using sign messages. **Figure 18** depicts PTSU devices and associated inputs and output on SR 429. The PTSU system will maintain a log with times to the minute of the displays provided on each LCS and each VSL sign. The log will be stored in a format that is externally available so that it can be viewed by other stakeholders such as law enforcement.

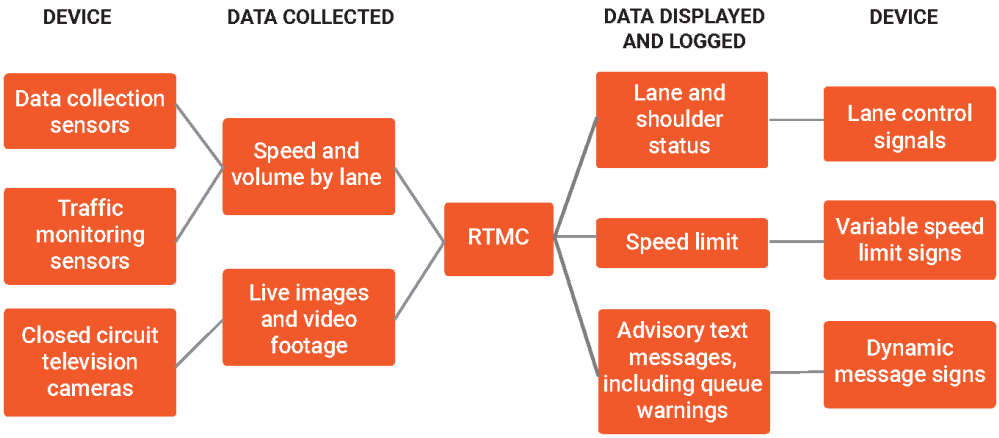


Figure 18: Data Inputs and Outputs

4.3.6 Key System Elements

Specific vehicle detection systems and CCTV cameras installed in support of PTSU will be connected into existing traffic management modules, such that all available information (from both new and existing systems) would be available to the baseline traffic management system as well as the specific PTSU system.

The PTSU system will be tightly integrated with existing RTMC traffic management systems activities as well as existing coordination with law enforcement and 511. It is intended for PTSU to serve as an extension of current TMC control, communications, and coordination capabilities. Specific components such as lane and speed control signage would be directly integrated with the PTSU control submodule, which in turn would receive its inputs from response plans developed within the decision support submodule.

Enhanced operator workstations will provide access to PTSU decision support plans as well as device display information, permitting rapid acceptance or modification to specific response plans or portions thereof, followed by deployment.

Within the decision support module, specific combinations of operational and geographic response strategies would be stored. This decision support module may be a feature added to SunGuide or a standalone software application; it is undetermined at this time. Strategies would be selected based on specific detector parameters along with incident detection alarms (shoulder lane incident detection cameras) and real-time information (either manually input by the TMC operator or provided via 511, Road Rangers, or law enforcement).

4.4 Modes of Operation

This section describes the steps that occur when the mode of operation changes. Section 5 of this document provides additional information on specific sign displays associated with these modes of operation. The modes of operation on SR 429 will be:

- Normal Conditions – Off Peak (shoulder closed)
- Normal Conditions – Peak Period (shoulder open)
- Congestion Off-Peak (shoulder open)
- Incident Blocking Lanes
- Minor Message Displays
- Work Zones
- Failure Conditions

The following sections describe these modes. More complex modes have scenario diagrams depicting specific actions taken by system stakeholders. These diagrams are based on diagrams included in the 2016 “Hard Shoulder Running (HSR) Interstate 4 - Eastbound from Kirkman Road to World Drive, Westbound for SR 434 to Dirksen Drive” Concept of Operations. The I-4 PTSU application would have been operated from the RTMC and the diagrams reflect processes that were developed for the RTMC that are applicable to the proposed project by CFX. The diagrams have been modified to reflect differences in the SR 429 system and recent conversations with CFX, FDOT, and other stakeholders.

4.4.1 Normal Conditions – Off Peak

In this mode, the shoulder operates in a 'normal' fashion allowing for disabled or damaged vehicles to pull off the roadway to the left for maintenance reasons (i.e. left shoulder use is not allowed for vehicles travel) and all general-purpose lanes are open. Police enforce the "closed" status of the shoulder, TMC staff monitor the facility and are prepared to initiate shoulder opening activities if a peak period is approaching or off-peak congestion occurs and they are prepared to close a general purpose lane if one becomes blocked.

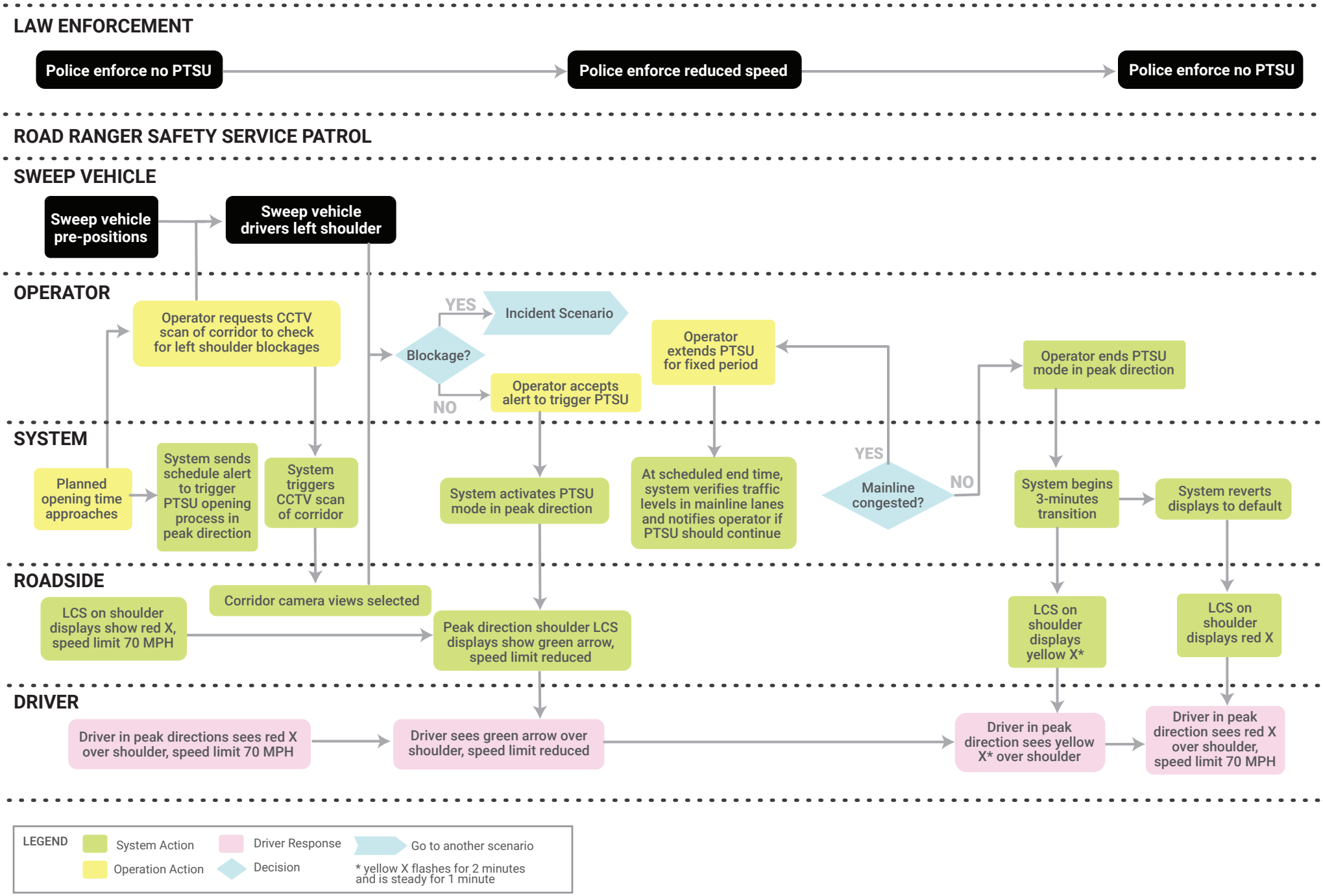
4.4.2 Planned Opening of Shoulder

In future years, recurring congestion is expected on SR 429 (without PTSU) and the shoulder is expected to be opened on a recurring basis. The estimated years and hours of the day that PTSU will first be needed are discussed in Section 7.2, and this forecast should be reassessed once the widening project and other expressway projects in the Central Florida area are completed and volumes have changed on SR 429.

Planned openings will require verification the shoulder is free of blockages, such as disabled vehicles or debris; this process is often referred to as a "sweep". Prior to the start of PTSU, the shoulder will be inspected from the RTMC with CCTV and in the field by a vehicle driving the shoulder from the start to the end of the PTSU section. Based on initial discussions with the RTMC, Road Rangers, CFX maintenance forces, or FHP Officers are potential stakeholders who could conduct sweeps. The primary responsibility of FHP Officers and Road Rangers today is to respond to incidents; this priority could make it challenging for them to be reliability available for sweeps. CFX will determine who will conduct sweeps closer to the start of PTSU operation and hire or contract with additional staff if needed to reliably have individuals available for sweeps.

Thirty minutes prior to the start of PTSU, a pre-positioned sweep vehicle should receive a message from the TMC operator and depart from a waiting area and drive the shoulder to verify it is clear. Specific locations for pre-positioning will be determined closer to the opening date of the system.

Following verification from the driver of the sweep vehicle and a subsequent camera sweep that the shoulder is clear, it will be opened to traffic. The shoulder will remain open until an incident blocking it occurs or the peak period passes, and traffic volumes decrease. The process for a planned opening of the shoulder is shown in **Figure 19**.



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Scenario 2 -Planned Opening of Shoulder

Adapted from Hard Shoulder Running (HSR) Interstate 4 - Eastbound from Kirkman Road to World Drive, Westbound for SR 434 to Dirksen Drive. Concept of Operations. 2016

Figure 19

Determining the planned hours of operation and thresholds for off-peak opening requires the identification of "triggers" for PTSU. The FHWA report "Decision Support Framework and Parameters for Dynamic Part-Time Shoulder Use" presents five methods for selecting and optimizing the opening time for a D-PTSU facility:

I. Demand-to-Capacity Patterns – Using sensors or traffic counts on the facility, an operating agency assesses historical demand profiles to determine levels of congestion relative to the available facility base capacity as well as the expected capacity with PTSU.

II. Empirical Performance Data – Using whole-year travel time reliability data, an operating agency explores the frequency and pattern of breakdown events to identify times when the facility experiences congestion.

III. Macroscopic Decision Parameter Optimization – Using the Highway Capacity Manual (HCM) 6th Edition freeway facilities method, an operating agency examines different types of decision parameters (speed vs. volume-based) and decision parameter values for a facility. It does this using an iterative approach to determine the optimum decision parameter for the facility, a process that can be automated through software.

IV. Microscopic Decision Parameter Refinement – Using calibrated microsimulation tools, an operating agency simulates the facility in question with the initial proposed decision parameter algorithm. It uses the simulation assessment to verify the concepts developed through the macroscopic optimization, which can be refined for the facility-specific geometry and traffic patterns.

V. Monitoring and Adjustment – Once D-PTSU is in place, adjust trigger values based on the performance of the expressway under the initial values.

Methods I and II are applicable to existing facilities experiencing congestion. They use data collected on the facility identify the conditions under which congestion occurs rather than trying to model it. Since the 6-lane SR 429 has not been constructed yet, these methods cannot be used.

Methods III and IV can be used on an existing or planned facility. The HCM 6th Edition freeway facilities method is implemented with FREEVAL software, which was used for the SR 429 traffic analysis described in Section 7.2 of this report. Analysis in this report focused on identifying the year, direction, and peak periods in which PTSU will be needed to prevent the onset of congestion, as opposed to specific volume and speed triggers which, coupled with daily volume profiles, would be used to open the shoulder. Triggers will change once the SR 429 is widened, so values developed now could not be used by the time PTSU is available.

In general, volume triggers are more effective than speed triggers for operators to use on a day-to-day basis because incremental volume increases can be observed and provide an indication of capacity being approached. Speed, on the other hand, remains relatively constant prior to traffic flow "breaking down" and the onset of congestion. Given the time required to conduct a sweep, a volume trigger is more likely to provide operators with sufficient time to open the shoulder before the onset of congestion, whereas a speed trigger may not. However, capacity of a given expressway is not a fixed value and many factors including vehicle mix, driver population (familiarity with roadway), and weather conditions cause fluctuations. For these reasons, congestion may occur even if volumes do not indicate it should under "normal" conditions, and if congestion and reduced speeds are observed it is still appropriate to open the shoulder and dissipate congestion after it has formed. Volume should be the primary trigger for opening the shoulder, but speed should be used as a secondary trigger.

Development of specific triggers (volume levels) should be done when the 6-lane SR 429 is completed and sensor data from the 6-lane facility can be used to understand what volume levels lead to breakdowns in traffic flow. **Figure 20** shows examples of volume and speed triggers, specially 1,500 passenger car equivalents per hour per lane and 50 miles per hour. The same volume and speed values are not necessarily appropriate for the entire day. In the AM peak, for example, volumes often rise more rapidly than in the PM peak. A lower volume trigger may be appropriate for the a.m. peak to maximize the likelihood there is enough time to conduct a sweep, whereas a higher volume trigger may be appropriate for the PM peak to minimize the likelihood of an unnecessarily early opening. Section 7.2 includes data on the current rate of volume changes from one 15-minute period to another throughout the day. There could be seasonal, day-of-week, or weather-related differences as well. A challenge with setting triggers is the need to use them proactively and allow for sweep time rather than merely reacting to congestion once it is observed and instantly opening the shoulder. Therefore, in addition to real-time sensor data, historical volume profiles are needed to understand how rapidly volume may increase at different times of day and days of the week. Historical volume profiles enable opening the shoulder prior to congestion but minimizing the number of "unneeded" openings in which volumes would have never reached congestion levels had the shoulder remained closed.

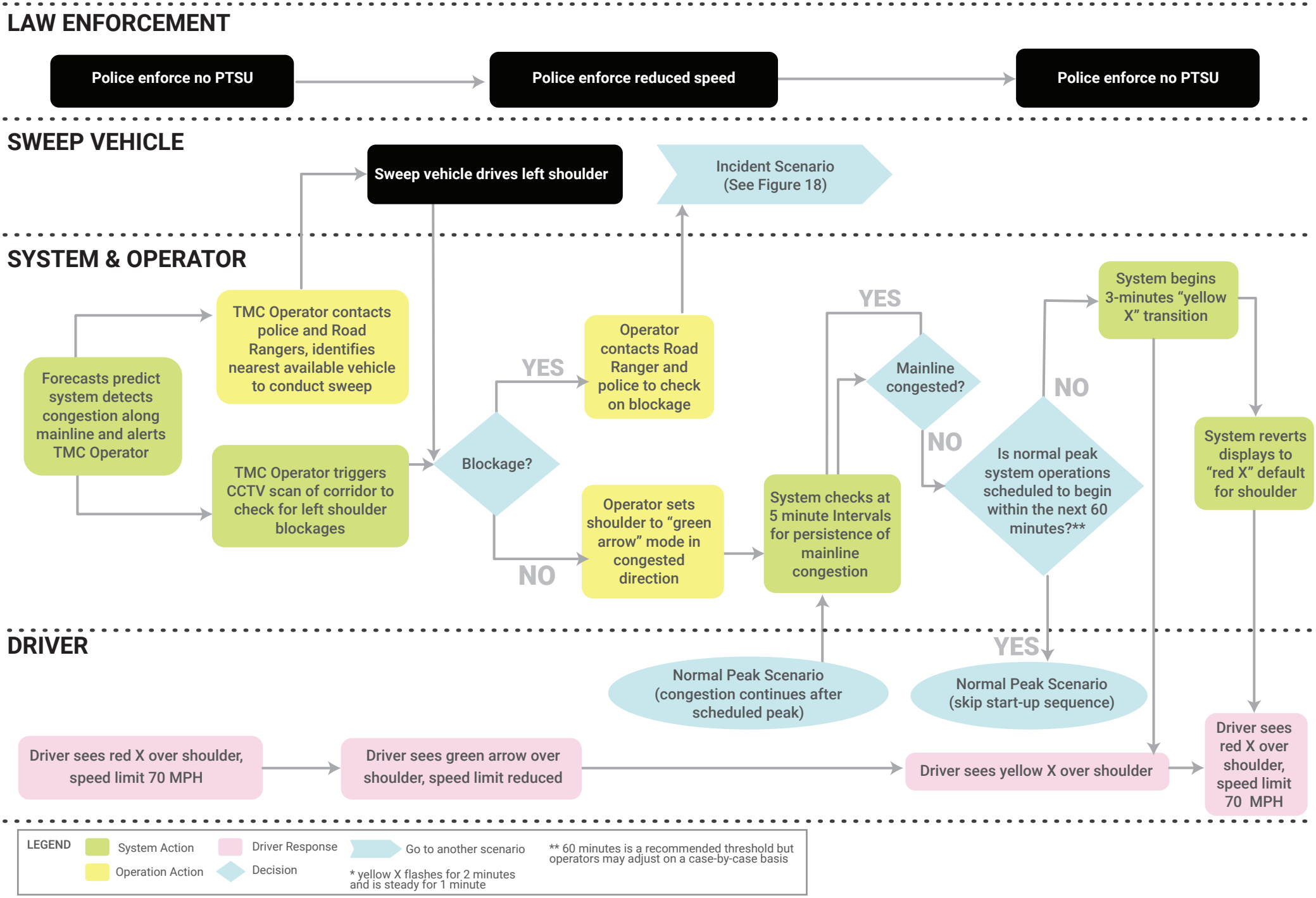
Figure 20: PTSU Triggers Based on Highway Capacity Manual Speed-Flow Curves (Source: FHWA Decision Support Framework and Parameters for Dynamic Part-Time Shoulder Use).

4.4.3 Congestion Off-Peak

Openings of the shoulder off-peak will occur for several reasons:

- Congestion is expected to occur in 45 minutes or less based on current volume and/or speed levels and historical traffic volume profiles for the day of the week in the current season. Initiating opening activities 45 minutes prior to the anticipated need for PTSU enables an authorized vehicle to travel to the starting of PTSU and conduct a sweep prior to the onset of congestion. Police, Road Rangers, or CFX maintenance staff may be used for off-peak sweeps; this will be determined at a later date. Common times for off-peak openings of shoulders are weekend days in the late morning or early afternoon and in the early afternoon of a weekday when the PM peak occurs earlier, such as on a Friday.
- Congestion is occurring. Unexpected traffic patterns may result in congestion not being predicted as described in the first bullet. In this case, a sweep should be conducted as quickly as possible and the shoulder opened as quickly as possible. Given the time required to sweep the shoulder, this is expected to be a relatively rare scenario and will only occur if there is reason to believe the congestion will be prolonged.
- An incident blocking right-side lanes occurs (see Section 4.4.4).
- Construction or maintenance activities close right-side lanes (see Section 4.4.6).

The process for an off-peak, congestion-related opening of the shoulder is shown in **Figure 21**. Once the shoulder is opened for off-peak congestion, it will typically remain open through the afternoon (in the case of a weekend) and into the evening hours (in the case of a weekday). Opening and closing the shoulder multiple times per day – except for the weekday AM peak and weekday PM peak – should be rare. If off-peak congestion has dissipated, operators will decide if scheduled opening of the shoulder is soon enough that that the shoulder should be kept open, and if so, keep the shoulder open. Based on the amount of time required to conduct a sweep and open the shoulder, it is recommended the shoulder be kept open if scheduled opening is within the next 60 minutes, although operators will have flexibility to adjust this threshold on a case-by-case basis.



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Scenario 3 - Off Peak congestion

Adapted from Hard Shoulder Running (HSR) Interstate 4 - Eastbound from Kirkman Road to World Drive, Westbound for SR 434 to Dirksen Drive. Concept of Operations. 2016

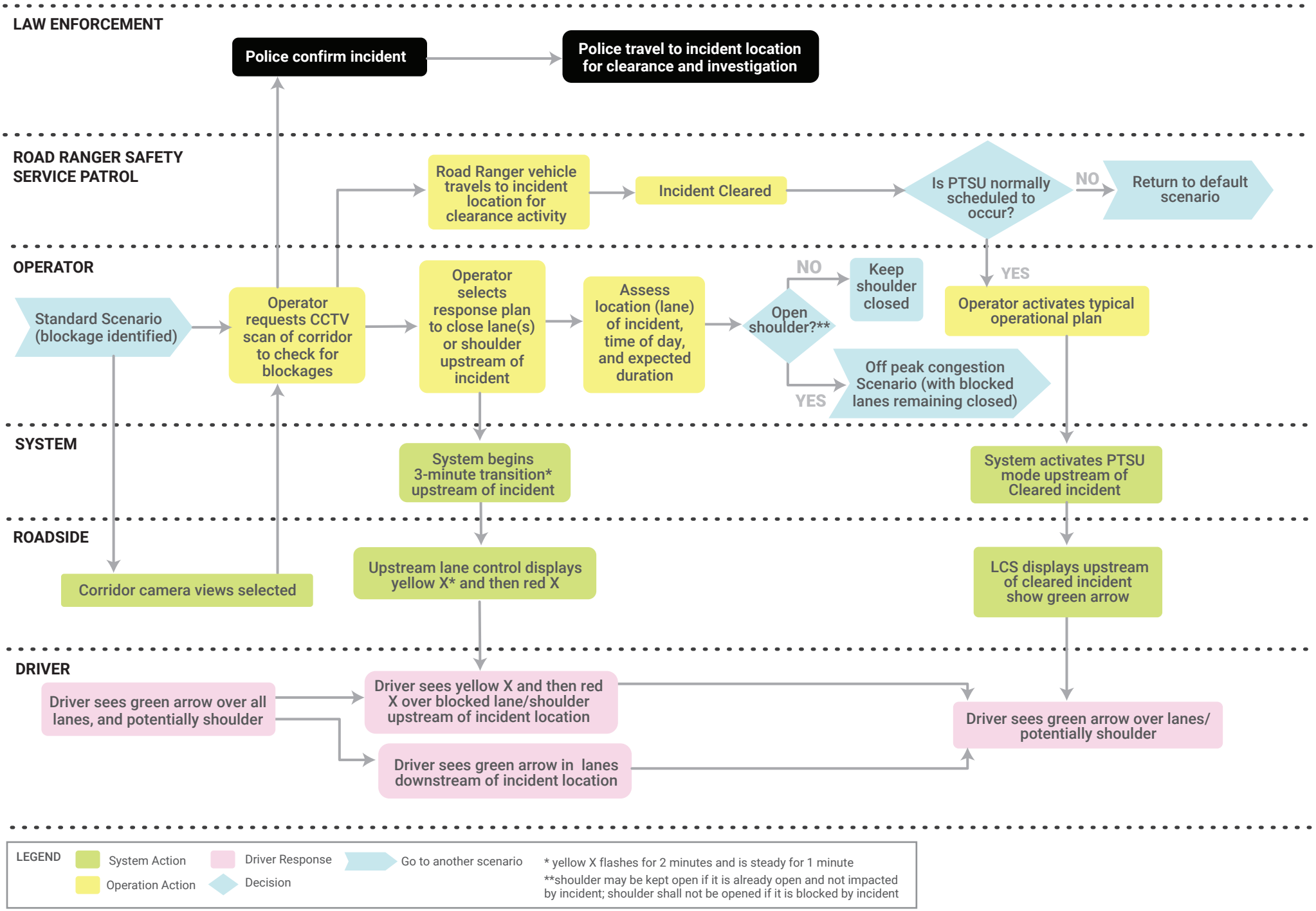
Figure 21

4.4.4 Incident Blocking Lanes

If a general-purpose lane is blocked by an incident, or the left shoulder is blocked at a time when it is open to traffic, rapid closure of the lane and/or shoulder will occur. Operators may become aware of incidents through automated detection, CCTV inspection, or notification from law enforcement or Road Rangers. If notified automatically by TMC software or by stakeholders such as law enforcement or Road Rangers, operators shall confirm an incident's location via CCTV before initiating a lane/shoulder closing, unless weather conditions such as heavy rainfall obscuring visibility make it impossible to do so. Closing a lane or the shoulder can happen much more rapidly than opening the shoulder because a sweep is not necessary. **Figure 22** shows the process for closing lanes when an incident is present.

When an incident blocks the center and/or right lanes, it will sometimes be beneficial to open PTSU to enable an additional lane of traffic to pass through the incident area and minimize congestion. The decision to open the shoulder or not will be based on factors such as the estimated duration of the closure, the number of lanes blocked, and the time at which the incident occurs. Splitting traffic around an incident in a center lane (i.e. keeping lanes and/or shoulders to the right and the left of the incident open to traffic) should generally be avoided. Standard Operating Procedures will be developed during a later stage of the systems engineering process.

If the shoulder is already open and the incident blocks the shoulder, the shoulder will be closed in the vicinity of the incident in the same manner as which a general-purpose lane would be closed. Operators will also need to decide if 1) additional portions of the shoulder should be closed aside from the immediate incident area and 2) the shoulder should be reopened once the incident has been cleared. If the incident is near the start or end of the PTSU section on SR 429, it may be beneficial to close the shoulder from the start of PTSU to the incident location or from the incident location to the end of PTSU, respectively. Likewise, if the incident is cleared towards the end of the typical period of PTSU operation, it may be beneficial to simply leave the shoulder closed rather than reopening for a short period of time. Standard Operating Procedures to address these scenarios will be developed during a later stage of the systems engineering process.



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Scenario 4, 5, 6, or 9 - Incident

Adapted from Hard Shoulder Running (HSR) Interstate 4 - Eastbound from Kirkman Road to World Drive, Westbound for SR 434 to Drive. Concept of Operations. 2016

Figure 22

4.4.5 Minor Message Displays

The PTSU system will display messages to drivers if there is law enforcement activity on the right shoulder, the left shoulder becomes blocked (at a time when it is already closed), or a queue develops. The following processes are associated with these events.

When an emergency vehicle is parked on the roadside and displaying visual signals, Florida law requires drivers to vacate the lane closest to the emergency vehicle[1]. An LCS display can be used to reinforce this message to drivers, as described in Section 5.8. and the upstream DMS can display the message such as "POLICE ACTIVITY ON RIGHT". A RTMC staff monitoring SR 429 with CCTV will initiate display of a "MOVE LEFT" message on the gantry prior to the emergency vehicle if police activity on the right shoulder is observed. Additionally, police officers may notify the RTMC if they are conducting enforcement on the right shoulder; this would enable a TMC operator to actively conduct a CCTV sweep of a smaller portion of SR 429, potentially identify the location of law enforcement activity sooner, and potentially display a "MOVE LEFT" message sooner.

When the left shoulder is closed because it is not needed to serve traffic demand but it becomes blocked by a disabled vehicle, a supplemental "BLOCKED" message will be displayed above the red X on the gantry prior to the blockage. This message will communicate to all users of the road, including users such as emergency responders who sometimes travel on shoulders, that the shoulder is closed and physically blocked. Disabled vehicles on the left shoulder will be identified by RTMC staff monitoring SR 429 with CCTV. Road Rangers or law enforcement may notify the RTMC if they observe and/or begin assisting a disabled vehicle, potentially enabling the RTMC to identify the disabled vehicle and display a supplemental "BLOCKED" message sooner.

The frequency of DMSs will enable the RTMC to warn drivers of slow or stopped traffic ahead, regardless of whether the shoulder is open or closed. Opening the shoulder is one means of dissipating a queue, but time is required to verify the shoulder is clear and it is not an option if the shoulder is already open or if it is blocked. Regardless of the open/closed status of lanes and the shoulder, DMSs on Type 2 gantries will display "STOPPED TRAFFIC X MILES AHEAD" or "SLOW TRAFFIC X MILES AHEAD" up to 3 miles prior to the slow or stopped traffic. RTMC operators will be automatically notified when TMSs or DCSs detect volumes below 40 MPH for one minute or more in all lanes at a given location or five minutes or more at a given location in at least one lane. Upon notification, RTMC operators will verify the presence and extents of the queue and display the appropriate DMS messages.

4.4.6 Work Zones

On CFX facilities, construction inspectors or maintenance personnel are required to contact the RTMC prior to MOT setup and after MOT takedown. When scheduled construction or maintenance activity will close a lane, an RTMC operator will be monitoring the work area and close lanes (with red X LCS displays) as the maintenance of traffic setup occurs in the field and lanes are physically closed. Similar monitoring will occur when work is expected to end so a green

[1]http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0300-0399/0316/Sections/0316.126.html

arrow can be displayed when lanes reopen. If right lanes are being closed, PTSU can be used to offset the loss of roadway capacity caused by lane closures. For short-term work zones, the process described in Section 4.4.2 would be used to verify the shoulder is clear. For a long-term work zone where lanes are closed for multiple days including through peak periods, the shoulder would remain open continuously (unless blocked). The speed limit will be determined on a case-by-case basis based the duration of the work zone and whether the work zone encompasses a section of roadway that does not meet 70 MPH SSD requirements when the shoulder is open. The speed limit will always be low enough to satisfy SSD requirements.

4.4.7 Failure Conditions

The reliability of ITS hardware has continually increased over the years, and the PTSU system will be designed and installed to minimize operational problems. This includes monitoring diagnostics to immediately identify to the RTMC Operator when and where a problem has occurred, and the nature of the problem (e.g., loss of communications, loss of power). The displays on each gantry (LCSs, VSL signs, etc.) will be visible from CCTV, providing an additional means of monitoring from the RTMC. When a failure (e.g., loss of communication, detector failure) is identified prior to or during operation, the RTMC Operator should verify and document the failure. The RTMC Operator will notify CFX staff and CFX maintenance staff or contractors will investigate and resolve the issue. It is expected that CFX will have automated monitoring systems in place to minimize the probability of failures first being observed by RTMC Operators.

CFX currently utilizes What's Up Gold (WUG) for its Network Monitoring Software (NMS). The NMS is critical to the operations of the ITS system as it provides real time monitoring/status of ITS network devices. The software was initially installed in 2012 and currently displays/monitors all ITS devices (Switch, CCTV, TMS, DCS, DMS, WWD, UPS, RPM, etc.) on the system. In the event of a device failure, whether that be communication or power, an SNMP Trap is sent to CFX maintenance staff to document and respond to the event.

Every cabinet will have a battery backup to provide short-term power to LCSs and a second battery backup to provide short-term power to VSL signs. If communication remains intact, operators should not display anything on LCSs over general purpose lanes and they should be blank. This will maximize the time an LCS display can be provided for the left shoulder.

When failures – loss of communication or loss of battery power – do occur, LCSs and speed limit signs should go "blank". As the lane signs speed limit signs are always displaying some sort of symbol even during "normal conditions" (e.g., green arrow, red X), a blank sign will indicate to the driver that there is a problem with the system.

On rare occasions, gantries may be unable to display lane control or the speed limit (i.e. the LCSs and VSL signs will be "dark") due to loss of power, depletion of battery backup, or other reasons. If one gantry is unable to display regulatory signs – LCSs and VSL signs – but gantries upstream and downstream are operational, the shoulder may still be opened to traffic. If two or more gantries in series are unable to display regulatory signs, PTSU will not be used. Additionally, VSL signs that reduce the speed limit in 5 MPH increments prior to horizontal curves that do not have 70 MPH SSD must be operational. In other words, if the speed limit cannot legally be reduced where needed for SSD purposes, then PTSU will not be used. Following completion of the ConOps, CFX

will develop more specific failure-related thresholds for PTSU use, including scenarios involving failure of individual gantry components.

Policies of other US agencies with PTSU related to this issue include the following:

- I-670, Ohio – If one gantry is dark or offline, PTSU is still used. If two consecutive gantries are dark or offline, PTSU is not used. Static signs along the corridor state that the shoulder is closed when gantries are dark
- I-495, Virginia – If one cantilever structure is dark, PTSU is still used. Spacing of structures is close enough that the downstream structure is usually visible. Motorist education outreach has emphasized that standard rules of the road apply when LCSs are blank, meaning that the shoulder is closed in this situation.
- I-35W, Minnesota – If one gantry was dark, PTSU was still used. Static signs on the corridor stated "shoulder use permitted on green arrow", so if the entire system was dark the shoulder was considered closed because a green arrow was not displayed. Under typical conditions, red Xs (not dark displays) were used to indicate the shoulder was closed.
- I-405, Washington – This facility is relatively short and has only four gantries. If two or more gantries at any location are dark, the shoulder is closed.

Operators of the facilities listed above noted that power loss is rare and battery backups are utilized.

4.5 User Involvement and Interaction

The PTSU system will involve the following users:

- Drivers - motorists traveling along SR 429 will be targeted by PTSU messaging.
- RTMC Traffic Incident Managers – staff trained in incident management who provide direction to operators when incidents occur. Existing staff are not dedicated to CFX facilities and also provide coverage of FDOT facilities. In some cases, they may send communications to field devices instead of operators doing so. These staff are currently on duty from 6 AM to 10 PM Monday through Friday but this will change to 24/7 coverage within the next year.
- RTMC Operator - staff who generally send communications to field devices to change their displays.
- PTSU-specific TMC Staff - Based on the current workload, it is anticipated that one or two additional staff persons will be needed to operate CFX's PTSU facilities (SR 417 and SR 429) during busier times, such as 6 AM to 10 PM Monday through Friday. During overnight hours, FDOT staff or consultants handling incident management duties Districtwide would likely have the *capacity* to also handle CFX's PTSU, however FDOT does not have PTSU facilities and FDOT would need to provide permission for their staff to operate PTSU. Discussions with FDOT are ongoing at this time, but since additional staff are needed during some – if not all – hours of the day, CFX may choose to create a new position of PTSU Operator in the RTMC. The PTSU Operator position – or some combination of the RTMC Traffic Incident Managers and RTMC Operator positions if a PTSU Operator position is not created– will have the following responsibilities:
    - Determining and/or verifying problems that may necessitate changes to the sign displays (e.g., incident reported by other sources, including identifying the nature

and severity of the problem/number of lanes to be closed) via communications with law enforcement and Road Rangers and/or CCTV cameras.
  - Determining whether the shoulder is clear to open (via communications with maintenance staff, law enforcement, Road Rangers and/or CCTV cameras).
  - Inputting additional information to the system (e.g., number of and which lanes closed, estimated duration of blockage, need for emergency vehicle access) to facilitate the development of a "recommended" signing plan.
  - Reviewing the system's "recommended plan," and making changes as may be appropriate.
  - Sending the signing plan into the field.
  - Continuously monitoring operations (i.e., traffic flow, incidents, system) and adjusting the sign displays (with system assistance) as conditions change.
- Law Enforcement – FHP and local law enforcement agencies responsible for enforcing the shoulder status (e.g., tickets to drivers traveling on shoulder when shoulder running is not permitted, i.e., RED X displays on lane control signals) and variable speed limits. FHP staffing levels are determined legislatively and unlikely to change when PTSU operation begins. Law enforcement officials can request closure of a lane or the shoulder if they observe it is blocked and provide incident scene management if fire rescue services are not present.
- Emergency Responders – local agencies who will provide emergency medical service to injured road users and extinguish fires. It is essential for emergency responders to be able to reach a crash scene as quickly as possible. If traffic in general purpose lanes is slow, emergency responders may use the right or left shoulder to reach a crash site. If the shoulder is closed when a crash occurs, it should be kept closed until emergency responders have reached the scene so that they are able to use the shoulder to arrive at the scene and assess the appropriate course of action.
- Road Rangers - CFX expressway service patrol vehicles and corresponding drivers that are responsible for assisting motorists who are stranded on the roadway, either in a stall or crash, and help ensure the roadway is clear of debris. Road Ranger operation will be similar with PTSU, with an added emphasis on quickly assisting and facilitating the removal of disabled vehicles on the left shoulder. The patroller is capable of quickly troubleshooting vehicle problems and perform minor repairs such as flat tires, re-clamping hoses, and are trained in First Aid and CPR as they may be the first on the scene of a crash. Currently there are two Road Rangers in operation on SR 429. Based on the length of CFX's portion of SR 429 and the relatively low level of congestion, it is anticipated that additional Road Rangers will not be needed for PTSU operation, unless they are responsible for conducting sweeps (see "Sweep Vehicles" below). Road Rangers can request closure of a lane or the shoulder if they observe it is blocked.
- Towing Companies – CFX has contracts with eight towing companies to remove disabled vehicles from its facilities. CFX will direct these companies to remove disabled vehicles from the left shoulder of SR 429 in an expedited manner so that opening the shoulder remains possible if an incident or congestion occurs. CFX also has RISC contracts with three towing companies to provide Rapid Incident Scene Clearance services for large scale incidents. RISC is activated by either RTMC staff or Law Enforcement on scene. Current towing contracts will expire and be rebid prior to the start of PTSU operation, and new contracts will include PTSU-specific requirements.

- Sweep Vehicles – as described in Section 4.4.2, an authorized vehicle will drive the shoulder before it is opened to verify it is free of debris and disabled vehicles. It has not yet been determined if sweeps will be conducted by Road Rangers, FHP, or CFX maintenance forces.

CFX maintenance contractors will be responsible for hands-on maintenance of traffic control and ITS devices, including equipment shop and various device and communications test equipment. Because of the increased flexibility in use of the PTSU, it is expected that additional maintenance and training will be required in the corridor, although such maintenance could be handled via contract and not with additional CFX staff.

CFX is coordinating with FDOT District 5 in an effort to obtain approval to house the operation of the PTSU project in the RTMC and provide CFX access and use of RTMC system components. It is recommended that a dedicated workstation be provided within the control room to manage PTSU operations for each facility CFX implements PTSU operations on (one for SR 417 and one for SR 429).

CFX will coordinate with FDOT Central Office to assess the feasibility of updating the SunGuide software to enable operation of the PTSU system, including the addition of features such as control of LCSs and VSLs. If SunGuide updates are not feasible, CFX will purchase software to operate the PTSU system from another vendor.

Prior to the start of PTSU operation, several training activities should occur:

- RTMC staff – specifically PTSU Operators if that position is created - should be trained on the modes of operation described in Section 4 and the Operational Scenarios described in Section 5. These staff should understand the principles behind the operational scenarios and understand how to adapt them for unusual situations such multiple concurrent incidents and incidents in the vicinity of unusual geometry.
- RTMC staff – specifically PTSU Operators if that position is created - should be trained on use of new software features for PTSU and the ways in which lanes and the shoulder are opened and closed and variable speed limits are changed.
- Law enforcement officials should be trained on how to enforce variable speed limits.
- Selected CFX maintenance workers, Road Rangers, and/or law enforcement officials should be trained in how to conduct a sweep and when and where to pre-position before planned openings.
- All law enforcement officials, emergency responders, Road Rangers, and maintenance workers should understand the potential for the left shoulder to be opened to traffic and the need to be aware of LCS displays.

CFX should also establish a working group for key PTSU stakeholders, including CFX engineering staff, RTMC staff, Road Rangers, tow companies, law enforcement, and emergency responders. This group should meet on a regular basis leading up to and following the start of PTSU operation to discuss and resolve any issues that arise. Over time, the need for this group will diminish and it can meet less frequently or be disbanded as PTSU operations become institutionalized.

PTSU on SR 417 is expected to begin around the same time, so training and working group meetings could likely be done concurrently for staff involved with the operation of both facilities.

4.6 Assumptions and Constraints

CFX will need to address certain institutional and jurisdictional issues in collaboration with regional transportation agencies and facility stakeholders. These institutional issues need to be resolved by developing common policies and approaches to the challenges that arise. Partnering agreements should be incrementally developed during the design phase to document consensus among the parties on issues related to organization; operational concepts; and specific roles and responsibilities for each partner.

4.7 Risks

Potential risks on the project include the following:

- Project agreements delayed due to disagreement on roles and responsibilities of project stakeholders
- Regulatory challenges implementing variable speed limits

4.8 Support Environment

4.8.1 Public Awareness

CFX should conduct a public outreach campaign in Central Florida prior to the opening of the facility. This campaign should use the media and direct outreach such as letters or emails sent to E-Pass holders to explain the PTSU system and provide rendered drawings so drivers understand what gantry structures and lane control signals will look like.

4.8.2 Facilities

This project includes the deployment of advanced ITS technologies to address specific traffic operations issues, thereby enabling a closer coordination of ITS and traffic engineering activities. The technical skills of staff at the RTMC will need to be expanded to monitor and adjust, when necessary, the PTSU technologies. Changes to the status of lanes and shoulder (open versus closed) will be made by human operations.

The ITS devices will be controlled from the RTMC. It is expected the PTSU functionality will be contained within updated SunGuide software and that no additional equipment will be needed beyond a dedicated workstation for the SR 429 PTSU operator. If SunGuide is not able to be updated, CFX will purchase software with PTSU functionality from another vendor.

Each gantry structure will have a cabinet to house controllers and other equipment and a UPS to provide short-term emergency power.

4.8.3 Operating Procedures

The PTSU system will require specific operating procedures described in Section 5.4 and 5.5. There are procedures for various stakeholders to follow for congestion-related openings of the shoulder and emergency closures of lanes or the shoulder due to incidents. CFX will work with FDOT District 5 to develop Standard Operating Procedures (SOP) using new software functionality for the devices and processes that will be implemented under this project.

4.8.4 Enforcement

Law enforcement activities unique to the PTSU system will consist of enforcing the "closed" status of the shoulder and enforcing variable speed limits. Other states with relatively new PTSU facilities such as Washington, Michigan, and Ohio have indicated benefits of having additional law enforcement resources to enforce the "closed" status of the shoulder immediately following the opening of a new PTSU facility, but after several weeks a typical level of enforcement is adequate.

Enforcing variable speed limits will require that a police officer in the field to know what the (variable) posted speed limit was at the time a violation was observed, and have a means of documenting this or accessing the documentation maintained by others (such as the RTMC). The RTMC will maintain a log of the speed limit displayed on each VSL sign on SR 429 by the minute. Generally, the police officer will know the speed limit by conducting enforcement at a location where the speed limit sign is visible. Additional coordination with FHP and local law enforcement is needed to determine specific enforcement procedures.

Variable regulatory speed limits or variable advisory speeds are relatively rare on US PTSU facilities. The following facilities have or had variable speeds:

- I-670 Ohio – the speed reduction that occurs when the shoulder is open is regulatory. The facility has been open less than a year, and police have de-emphasized speed enforcement in the interest of prioritizing shoulder open/closed enforcement. ODOT maintains logs of speed limits, but the police stage speed enforcement so a sign can be seen from where a driver was pulled over so the logs are generally not needed for enforcement purposes.
- US 23 Michigan – the speed reduction that occurs when the shoulder is opened is advisory because Michigan law does not permit VSL. The advisory speed is used due to a SSD limitation similar to SR 429 and a lateral offset to obstruction (barrier) that is less than the minimum value in the AASHTO Green Book in some locations.
- I-35W Minnesota – prior to the removal of PTSU in 2018, speed advisories were used for speed harmonization purposes to improve traffic flow.
- I-66 Virginia –Speed limits were reduced for speed harmonization purposes to improve traffic flow. It would have been difficult for a drive to speed when the speed limits were reduced because congestion was present or imminent, so enforcement was never conducted.

SR 429 will be one of the first US PTSU facilities with regulatory VSL.

4.8.5 Maintenance

It is anticipated that CFX will utilize existing maintenance staff or their current maintenance contract to perform all maintenance activities for permanent devices with support from the vendor for factory/warranty maintenance. To support maintenance activities, all ITS field equipment should be deployed in a manner that allows maintenance staff to safely park and perform maintenance activities. Field equipment should be positioned in a manner that allows staff to perform maintenance with minimum impact on the traveling lanes. Operations and maintenance of elements that are relevant to PTSU operation are shown in **Table 5**.

Table 5: Operation and Maintenance of ITS Elements

Component	Typical Maintenance Responsibility	Typical Maintenance Actions [1]	National ITS O&M Cost / Yr per unit	Notes
Road Ranger Emergency Service Patrols	FDOT D5 and / or contracted support	Vehicle and Equipment Maintenance	150,000	Per vehicle based on 12-hour workday
TMS/DCS	CFX with factory repair	RM and MR	450	Microwave detection
CCTV Video Camera	CFX with factory repair	PM and MR	1,500 to 3,600	Requires bucket truck and spares; ship modules to manufacturer for repair
Lane Control Signals	CFX with factory repair	PM and MR	250-500	Incremental addition to DMS maintenance costs – see DMS below
DMS/LCD Signs	CFX with factory repair	PM, RM and MR	2,400 to 6,000	Requires maintaining spare modules and consumable lamps; ship modules to manufacturer for repair

[1]Note: PM – Preventative Maintenance, RM – Remedial Maintenance, and MR – Modular Replacement
Source: USDOT ITS-JPO

5. Operational Scenarios

Changes in the open/close status of the shoulder – such as opening the shoulder or closing a general purpose lane for an incident – will be implemented by changing LCS displays and, in many cases, displaying supplemental messages on the larger Incident Management DMSs found on Type 2 gantries. Section 4.4 described the process that will occur before a lane or the shoulder is opened or closed. Operational scenarios addressed and what indications will be displayed on LCSs section include the following:

- Normal conditions
- Crashes / Incidents
- Congestion / queuing due to a bottleneck during peak and off-peak periods
- Work Zone
- Road Closure

Representative operational scenarios for the proposed LCS system are presented in this section. The examples are not meant to be all-inclusive in the sense that incidents could occur at any point on the roadway, but they do provide an understanding of LCS displays given likely events. General principles – such as the number of red Xs being displayed prior to a blocked lane – are described in the text. The figures depict individual LCS displays and DMS text messages for a northbound portion of SR 429 between the southern limit of CFX's ownership and West Road. In these figures, incidents are generally shown to occur between the CR 535 on-ramp and the Florida's Turnpike off-ramp. This location was chosen because the weaving and additional lanes make it relatively complex in terms of LCS displays. The operational scenario diagrams are generally applicable corridor-wide.

The LCSs above each lane and the left shoulder will be small, full-color DMSs capable of displaying indications other than the green arrows, red Xs and yellow Xs that a traditional blank-out LCS displays. Use of full-color DMSs gives CFX the capability to add additional displays in the future. The following displays will be used on SR 429:

- Green arrow – indicates the shoulder or a lane is open.
- Red X – indicates the shoulder or a lane is closed. Emergency vehicles may still drive on a shoulder/in a lane where a Red X is displayed if they are responding to an incident.
- Yellow X with "MERGE" text – indicates a lane or the shoulder is closing and drivers should move out of the lane. This indication will always be displayed in a flashing mode for the first two minutes it is displayed, followed by a steady mode for the duration of the deployment. It will be the only indication on the LCSs with a flashing mode. This is consistent with the mode of operation for yellow LCS indications that was proposed for I-4 in 2016.
- Black "EXIT ONLY" text on yellow background – in the vicinity of a lane closure, indicates a lane is only for exiting traffic.
- Red X with "CLOSED" text – indicates the entire road is closed. Used for all LCSs on a given gantry when the entire road is closed.
- Black "MOVE LEFT" text on white background – used prior to police activity on the right shoulder and instructs drivers in the right lane to move to the left, consistent with Florida's "Move Over" law that requires drivers to leave one lane of separation between themselves and police on expressway shoulders.

- Red X with "BLOCKED" text – indicates the shoulder is closed and there is a vehicle physically blocking it. The "blocked" message provides an added measure of safety to occupants of the vehicle on the shoulder, such as law enforcement officials, occupants of disabled vehicles, or tow truck drivers.
- Black "ROAD WORK AHEAD" text on orange background – indicates there is road work ahead.

Each of these displays is used in operational scenarios described in the following sections and corresponding figures.

When the shoulder is closed, the speed limit on SR 429 will be 70 MPH. When the shoulder is open, the speed limit will be lowered as described in Section 4.

5.1 Scenario 1: Normal Conditions – Off Peak

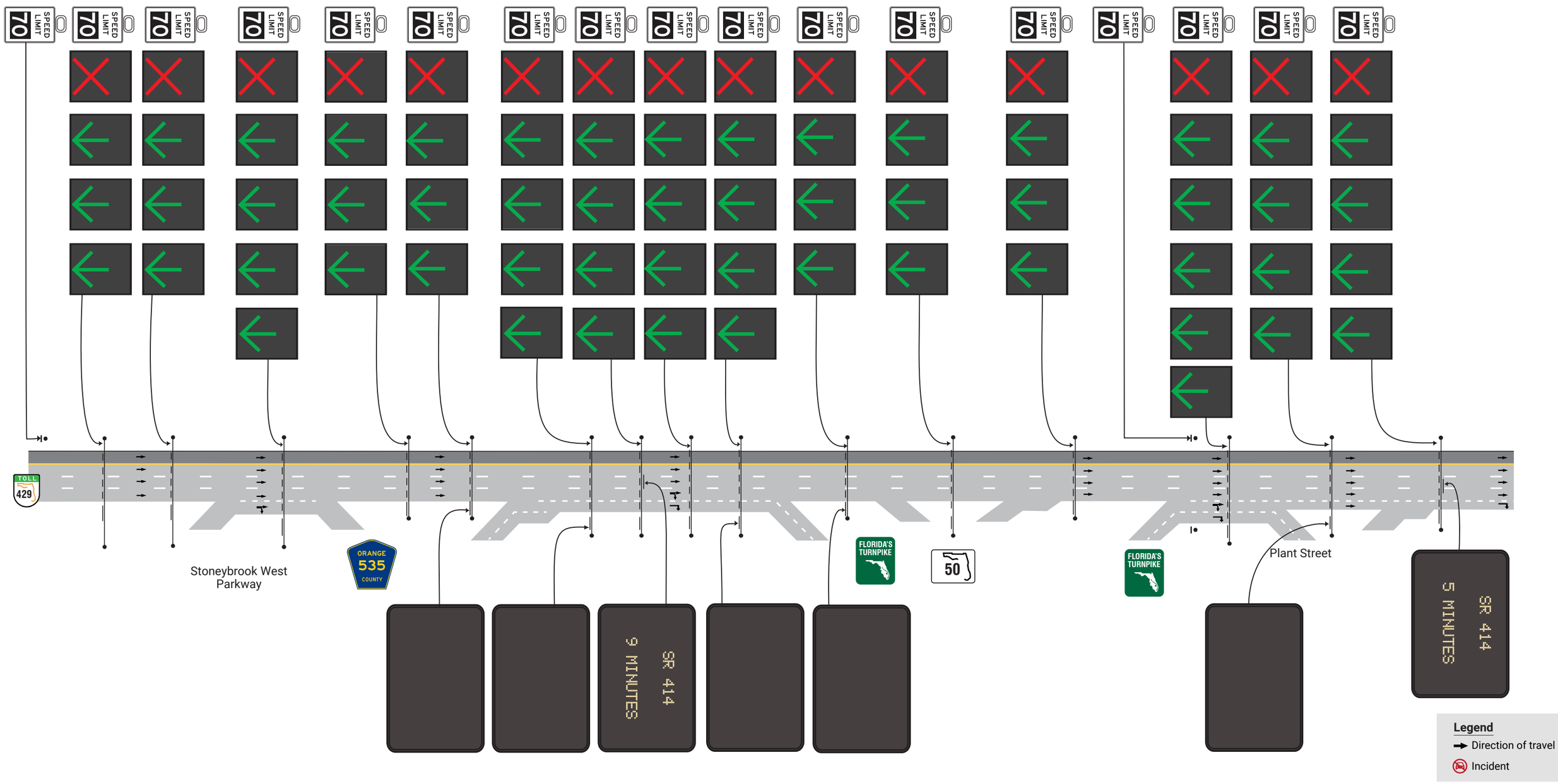
Under normal conditions (i.e., no congestion or incidents), the shoulder is closed. LCSs display GREEN ARROWS over lanes and RED Xs over the shoulder. The speed limit is 70 MPH. This scenario represents the default condition for SR 429.

This scenario is shown in **Figure 23**.

5.2 Scenario 2: Normal Conditions – Peak Period Congestion with PTSU

In future years when volume has grown on SR 429 and peak period congestion is a recurring event, the default conditions during the peak periods will be to open the shoulder to traffic. The speed limit will be lowered to the appropriate value based on the location on the corridor. Once the opening process described in section 4.4.2 is completed, green arrow indications will be displayed over the shoulder and all lanes.

When volumes fall to a low enough level that congestion is not anticipated with the shoulder being closed, the LCSs over the shoulder will display a flashing yellow X (with "MERGE" text) indication for two minutes and a steady yellow indication (with "MERGE" text) for one minute before displaying a Red X indication, marking a return to Scenario 1 conditions. This scenario will not be used in the opening year because the additional general-purpose lane is expected to sufficiently dissipate recurring peak period congestion. This scenario is shown in **Figure 24**.

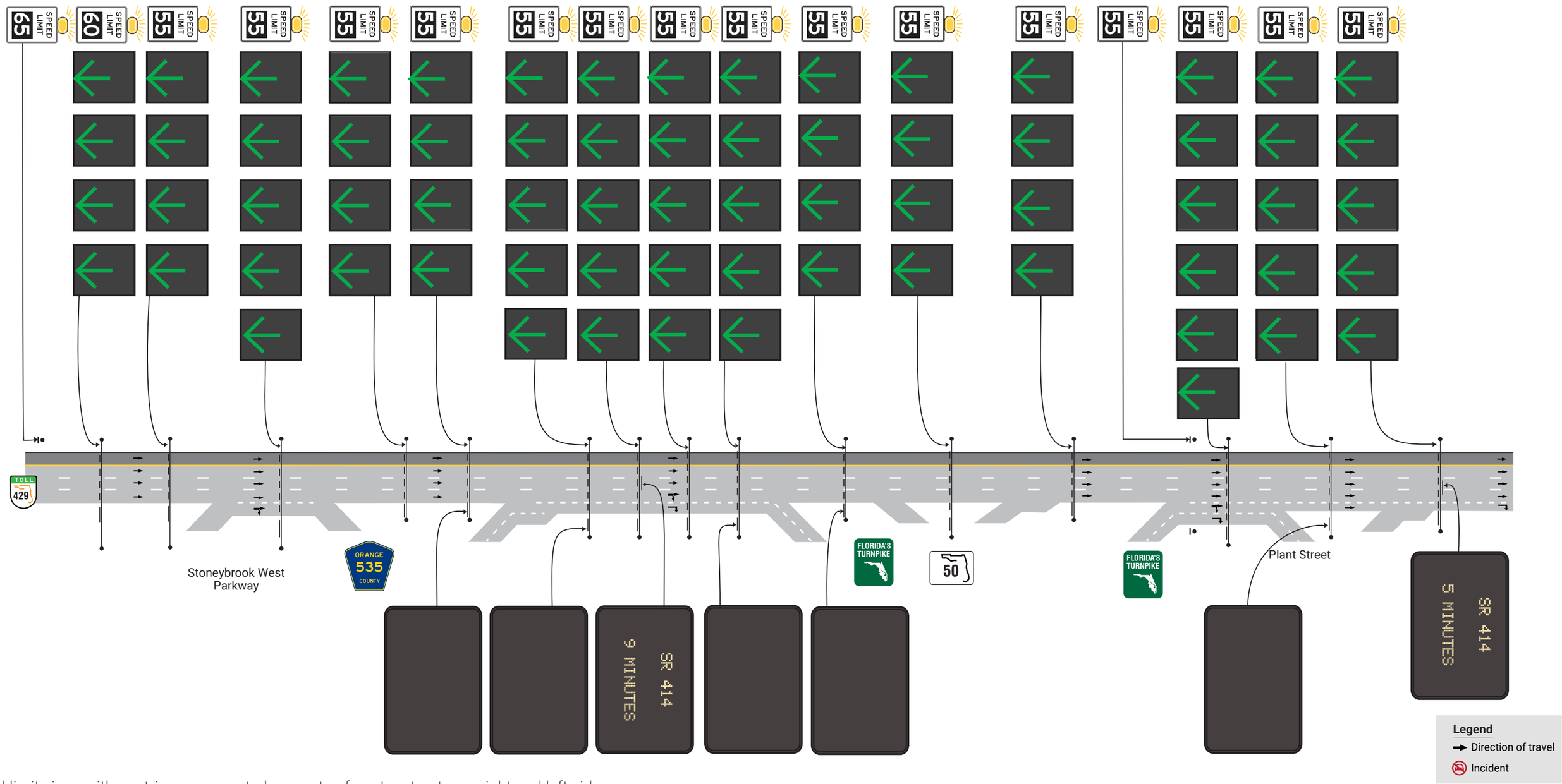


CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Operational Scenario - Normal Condition - Off Peak

Figure 23



Speed limit signs with gantries are mounted on posts of gantry structures, right and left sides

Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Operational Scenario - Normal Conditions- Peak Period Congestion with PTSU

Figure 24

5.3 Scenario 3: Bottleneck/Congestion – Off Peak Period

An added benefit of Dynamic PTSU – versus static – is the flexibility it provides in immediately responding to traffic conditions. Bottlenecks and congestion are not limited to just peak periods. For example, special events and seasonal variations can result in weekend traffic becoming quite heavy during certain hours. Under these circumstances, CFX can open the shoulder:

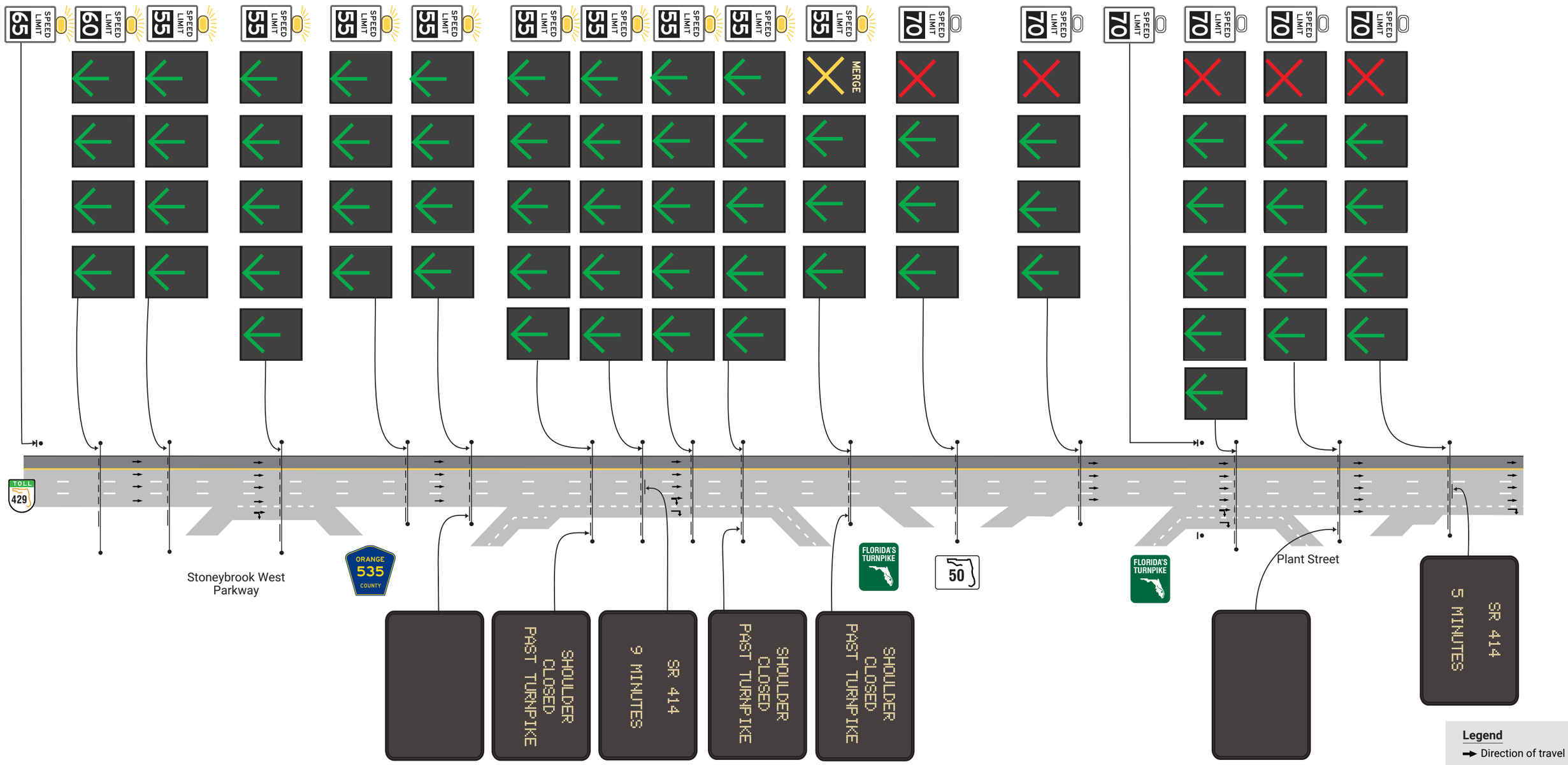
- *proactively* if speed and volume levels, coupled with historical knowledge of the facility (typical day-of-week volume profile, seasonal variation, etc.) suggest that congestion is likely; or
- *reactively* if the congestion is unexpected. PTSU provides enough additional capacity that it will likely dissipate the congestion.

If the congestion is expected to occur or occurring over the entire length of the PTSU portion (in one or both directions), LCS displays and speed limits will be the same as Scenario 2. If the congestion is limited to only a portion of SR 429, the shoulder can be opened for just that portion. Given the length of the PTSU on SR 429 and the presence of interchanges with major roadways such as Florida's Turnpike, congestion limited to portions of SR 429 is a possibility.

Green arrow indications will be displayed over all general-purpose lanes. Where the shoulder is open, green arrow indications will be displayed over it. If the shoulder is closed (due to lower volume conditions) prior to the limit of the PTSU facility, one gantry will display a yellow X (with "MERGE" text) over the shoulder; this gantry will be located between one displaying green arrow over the shoulder and one displaying a red X over the shoulder.

When volumes fall to a low enough level that congestion is not anticipated with the shoulder being closed, the LCSs over the shoulder will display a flashing yellow X (with "MERGE" text) indication for two minutes and a steady yellow X (with "MERGE" text) for one minute before displaying a Red X indication, marking a return to Scenario 1 conditions.

An off-peak bottleneck/congestion scenario where congestion would be limited to a portion of the corridor is shown in **Figure 25**. In the situation depicted in **Figure 25**, PTSU is used to prevent congestion south of Florida's Turnpike. North of the Turnpike, volumes are lower and PTSU is not needed. A scenario with congestion on the entire corridor would be the same as **Figure 24**.



Speed limit signs with gantries are mounted on posts of gantry structures, right and left sides

Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 PTSU Evaluation

Operational Scenario - Off Peak Congestion

Figure 25

5.4 Scenario 4: Incident Blocking a Single Lane

The sequence of LCSs displays for an incident blocking the right or left lane will be as follows in the blocked lane:

- Yellow X with “MERGE” text
- Yellow X with “MERGE” text
- Red X
- Green arrow (followed by green arrows at subsequent gantries)

The speed limit will be lowered to the appropriate value based on the location on the corridor. LCSs over the other two lanes will continue to display green arrow indications. If the incident is in the left lane, the shoulder will remain closed (or be closed if it is currently open) to avoid traffic being “split” around the incident. If the incident is in the right lane, TMC operators will have discretion to open the shoulder – once it is verified to be clear and emergency responders have verified they do not need it to reach the incident scene – depending on current traffic volumes and expected traffic volumes over the expected duration of the incident.

When the incident is cleared, LCS over all general-purpose lanes will return to green arrow indications and the shoulder will be closed in the same manner described in Scenario 2.

Figure 26 depicts a right lane incident at a time the operator chooses not to open the shoulder. If the shoulder were open, LCSs over the shoulder would display green arrows instead of red Xs.

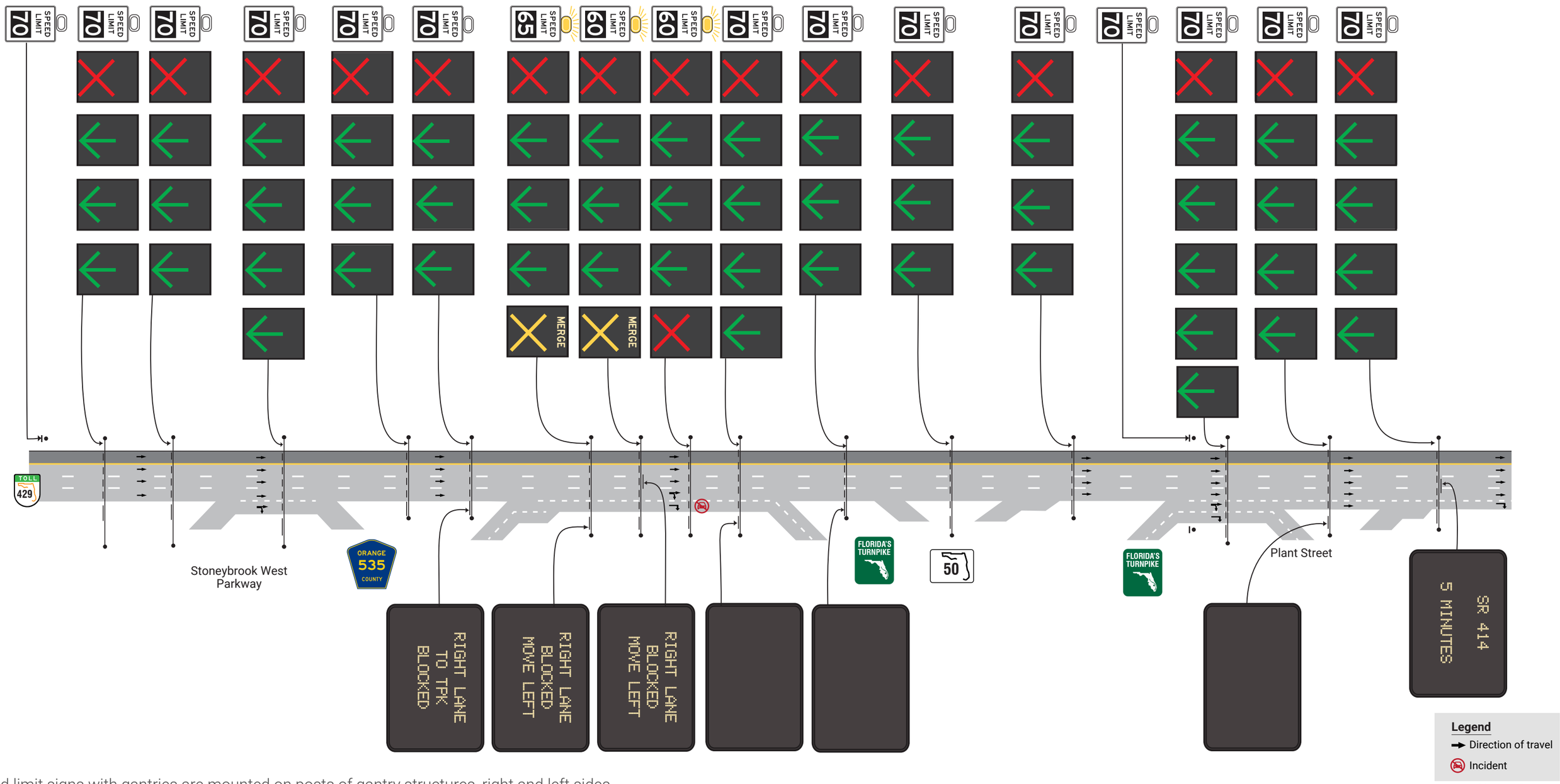
Figure 27 displays an incident in the left lane. Because the shoulder is not opened, the speed limit is only decreased to 60 MPH. If the shoulder were opened at the time the incident occurred, it would also be closed so that traffic would not be “split” around the incident and the speed limit would be 55 MPH.

5.5 Scenario 5: Incident Blocking Center or Right Two Lanes

The sequence of LCSs displays for an incident blocking the center or right two lanes will be as follows:

- Yellow X with “MERGE” text in right lane, green arrow on other lanes and shoulder
- Yellow X with “MERGE” text in right and center lanes, green arrow on other lanes and shoulder
- Yellow X with “MERGE” text in right and center lanes, green arrow on other lanes and shoulder
- Red X in right and center lanes, green arrow on other lanes and shoulder
- Green arrow on all lanes and shoulder
- Yellow X with “MERGE” text in shoulder, green arrow on all lanes
- Red X on shoulder, green arrow on all lanes (repeated on subsequent gantries)

The last two gantries in the sequence above would have a green arrow on the shoulder if it were opened for congestion-related reasons at the time of the incident.



Speed limit signs with gantries are mounted on posts of gantry structures, right and left sides

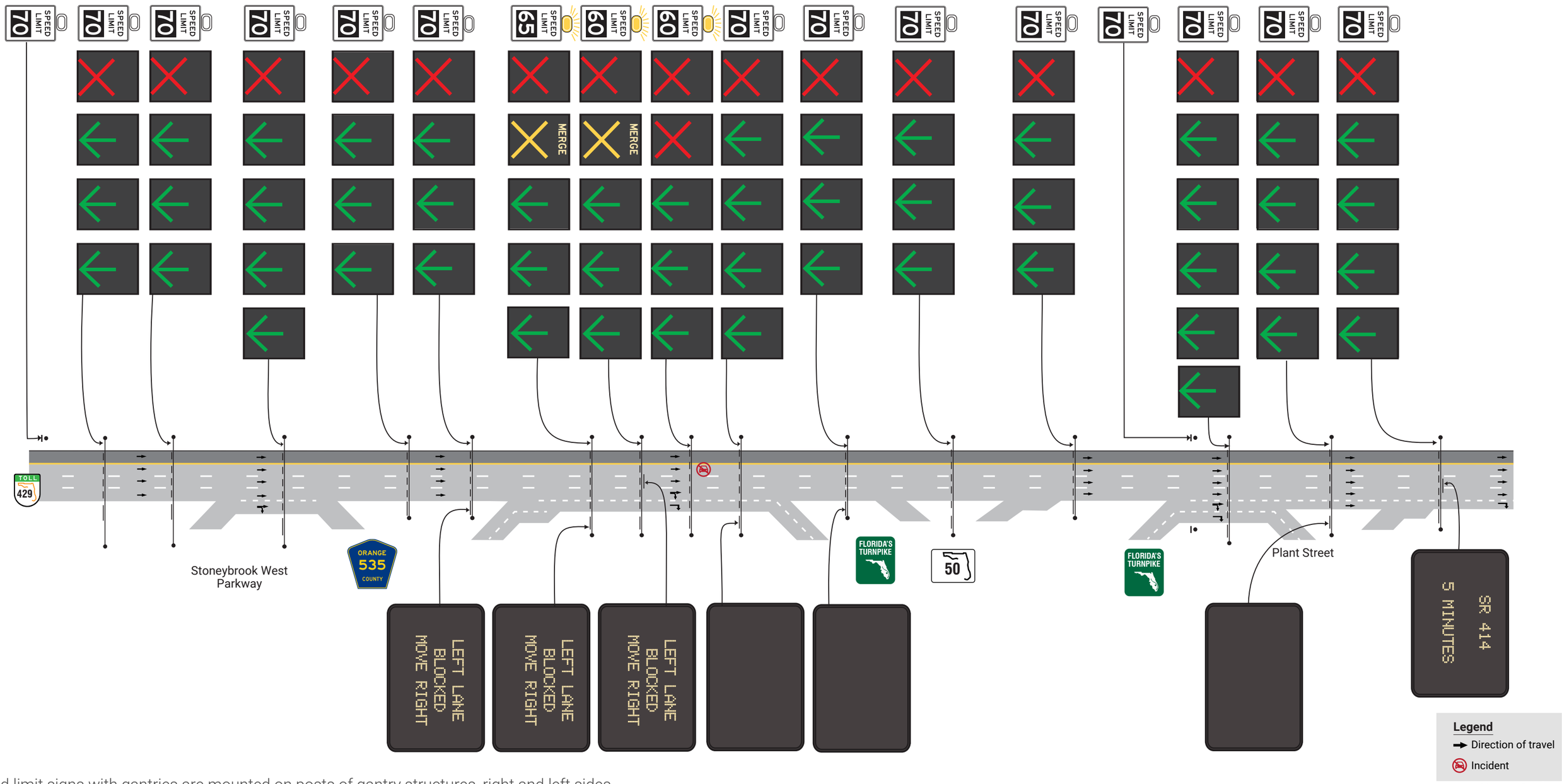
Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Operational Scenario -Incident in Right Lane

Figure 26



Speed limit signs with gantries are mounted on posts of gantry structures, right and left sides

Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Operational Scenario -Incident in Left Lane

Figure 27

The speed limit will be lowered to the appropriate value based on the location on the corridor. When the incident is cleared, LCS over all general-purpose lanes will return to green arrow indications.

This scenario is shown in **Figure 28**. **Figure 28** places the incident in a weaving section and a right-side auxiliary lane is kept open to improve the mobility of drivers exiting to Florida's Turnpike. On a typical section with fewer lanes, traffic would not be split around the incident. In **Figure 28**, the speed limit is decreased to 50 MPH rather than 60 MPH because the shoulder is opened on a portion of SR 429 with 55 MPH SSD. If the shoulder were open at the time the incident occurred, it would remain open.

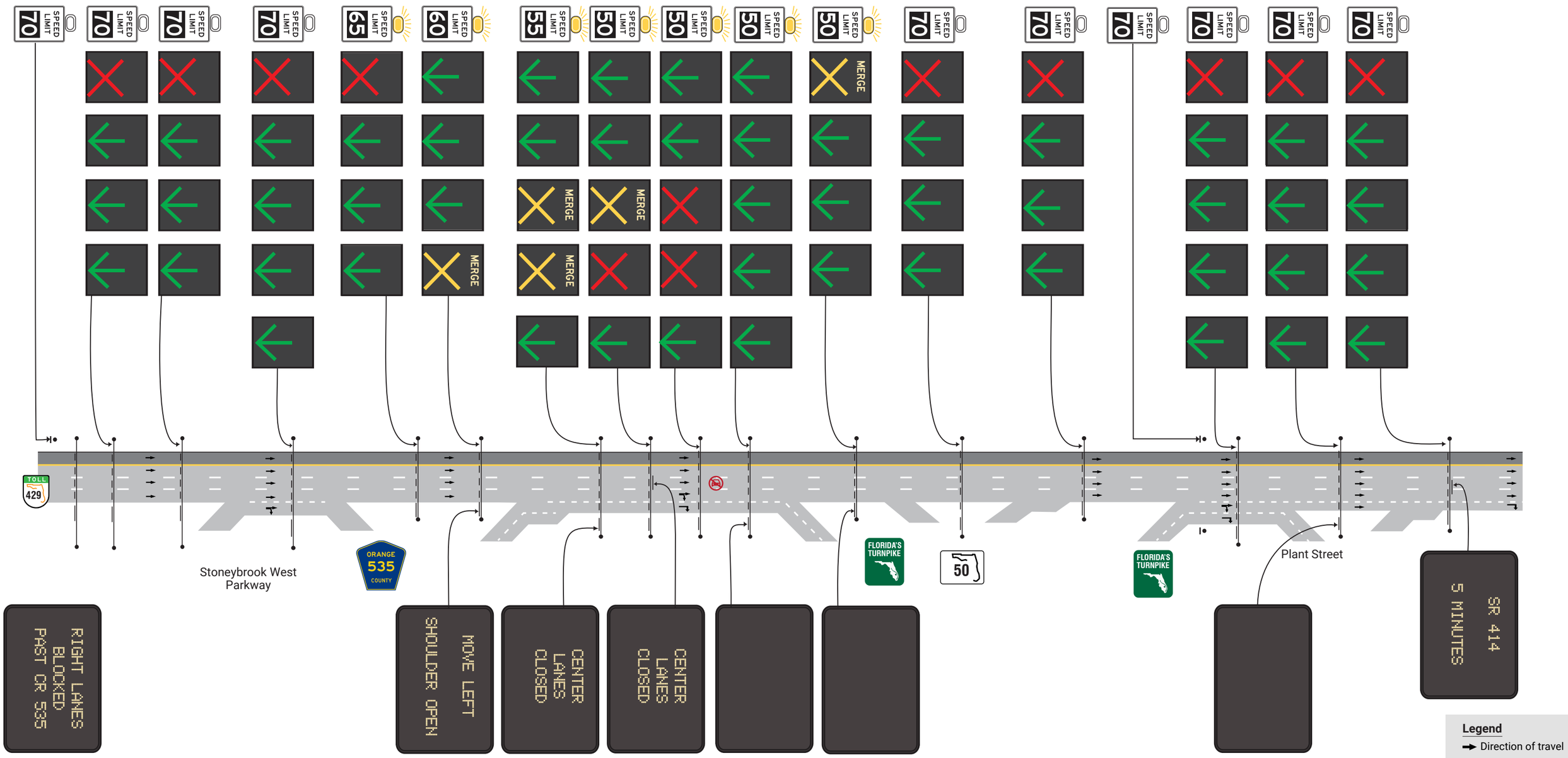
5.6 Scenario 6: Incident Blocking Left Two Lanes

If the center and left general purpose lanes are blocked, the shoulder will remain closed, or be closed if it was open at the time of the incident, to avoid splitting traffic around the incident. The sequence of LCS displays for an incident blocking the left two lanes will be as follows:

- Yellow X with "MERGE" text in left lane, green arrow on other lanes
- Yellow X with "MERGE" text in left and center lanes, green arrow on other lane(s)
- Red X in left lane, Yellow X with "MERGE" text in center lanes, green arrow on other lane(s)
- Red X in left and center lanes, green arrow on other lane(s)
- Green arrow on all lanes (repeated on subsequent gantries)
- Yellow X with "MERGE" text in shoulder, green arrow on all lanes
- Green arrow on all lanes (repeated on subsequent gantries)

The shoulder will have a red X at all of the gantries noted above except the last one. At this location, the shoulder will have a red X if the shoulder is closed and a green arrow if it is open for congested-related reasons. **Figure 29** displays this scenario.

If the shoulder were open at the time the incident occurred, it would also be closed so that traffic would not be "split" around the incident.



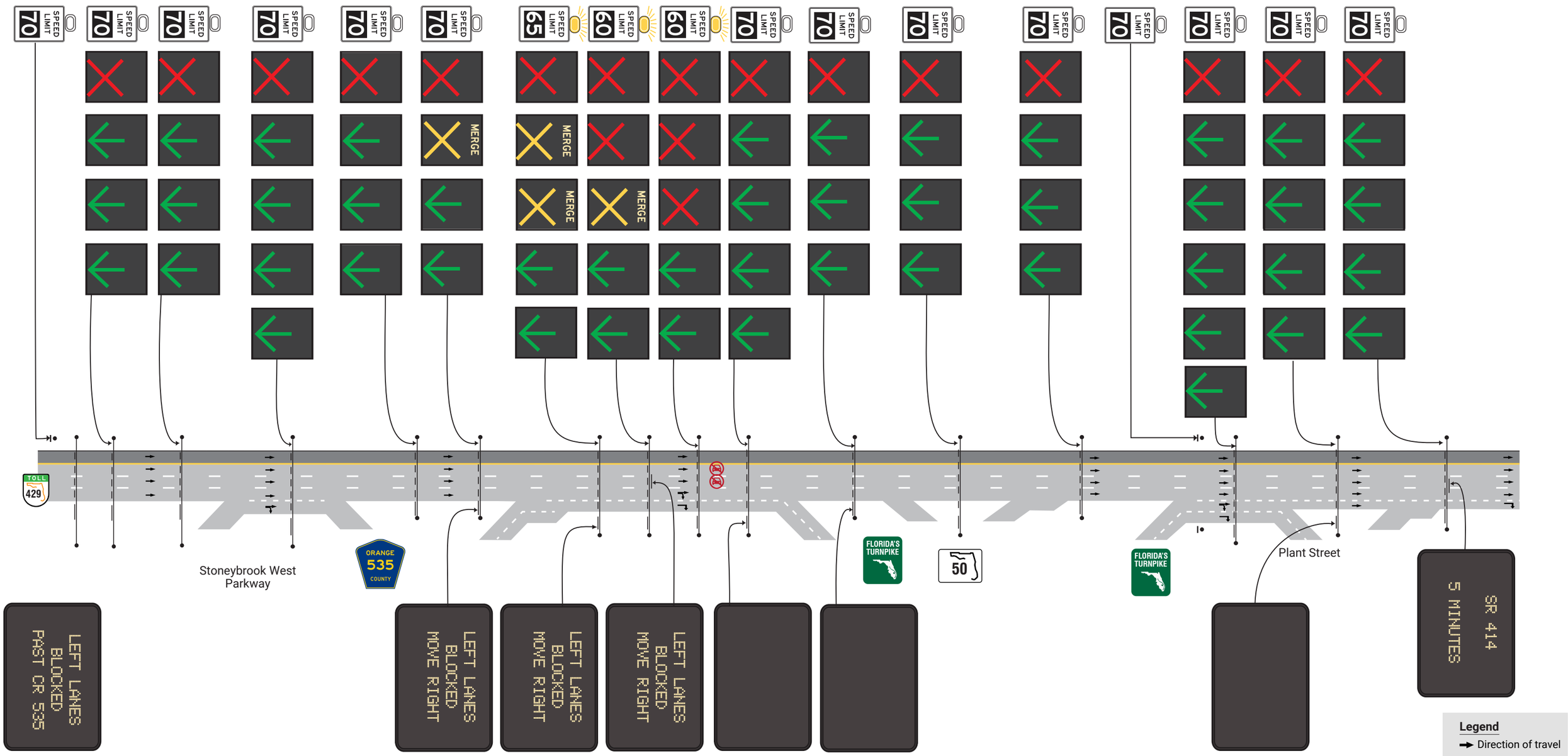
Speed limit signs with gantries are mounted on posts of gantry structures, right and left sides

Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Operational Scenario -Incident in Center Lane

Figure 28



Speed limit signs with gantries are mounted on posts of gantry structures, right and left sides

Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Operational Scenario -Incident in Left Two Lanes

Figure 29

5.7 Scenario 7: Road Closure (All Lanes)

In the event of a major crash or other event necessitating a complete closure of SR 429, a series of indications will be provided to move drivers to the right and direct them to the exit upstream of the closure. Lanes will have two yellow X with "Merge" text indications followed by a red X indication. An "Exit only" indication is shown in the right lane prior to the exit. Red X indications with "Closed" text are used on LCSs on gantries at which the road is fully closed.

Figure 30 displays this scenario. In the case of **Figure 30**, the shoulder was closed prior to the incident occurring.

5.8 Scenario 8: Law Enforcement Activity on Right Shoulder

To reinforce Florida's "move over" law described in Section 4.4.5, black "MOVE LEFT" text on white background will be displayed on the right lane on the gantry prior to the law enforcement activity. A similar display for law enforcement activity on the left shoulder is not planned because the left shoulder is 19' wide and is less frequently used by law enforcement than the right shoulder.

Figure 31 displays this scenario. In the case of **Figure 31**, the incident is just downstream of an exit gore at which a lane drops, and black "EXIT ONLY" text on yellow background is displayed over the auxiliary lane to reinforce the fact it is for exiting traffic only.

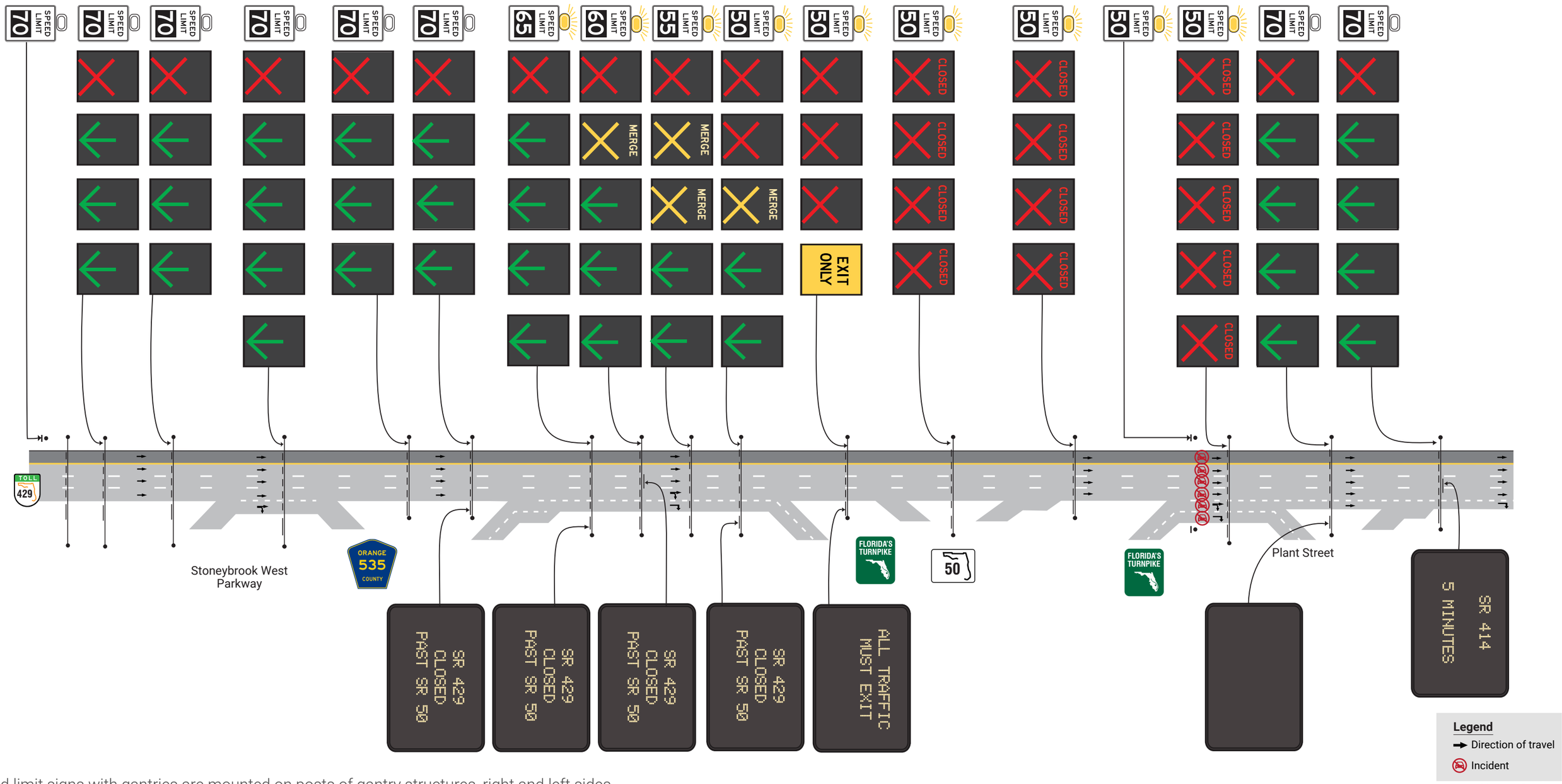
5.9 Scenario 9: Incident on Left Shoulder

If the left shoulder becomes blocked during PTSU operation, it will be closed in a manner similar to a general purpose lane with an incident and reopened downstream of the incident. If the blockage occurs when the shoulder is closed, a supplemental "BLOCKED" message will be displayed above the red X on the gantry prior to the blockage. This scenario is shown in **Figure 32**.

5.10 Scenario 10: Work Zone

When a lane is closed for construction or maintenance activity, LCSs should reinforce, not contradict, traditional maintenance of traffic signing. Additionally, if the work involves the closure of a right lane, the shoulder can be opened to offset lost capacity.

Figure 33 displays a work zone scenario. Black "ROAD WORK AHEAD" text on orange background is used on all LCSs at the gantry prior to the start of yellow X sequence preceding the lane closure. Due to the location of the right lane closure in **Figure 33**, black "EXIT ONLY" text on yellow background is displayed over the auxiliary lane to reinforce the fact it is for exiting traffic only.



Speed limit signs with gantries are mounted on posts of gantry structures, right and left sides

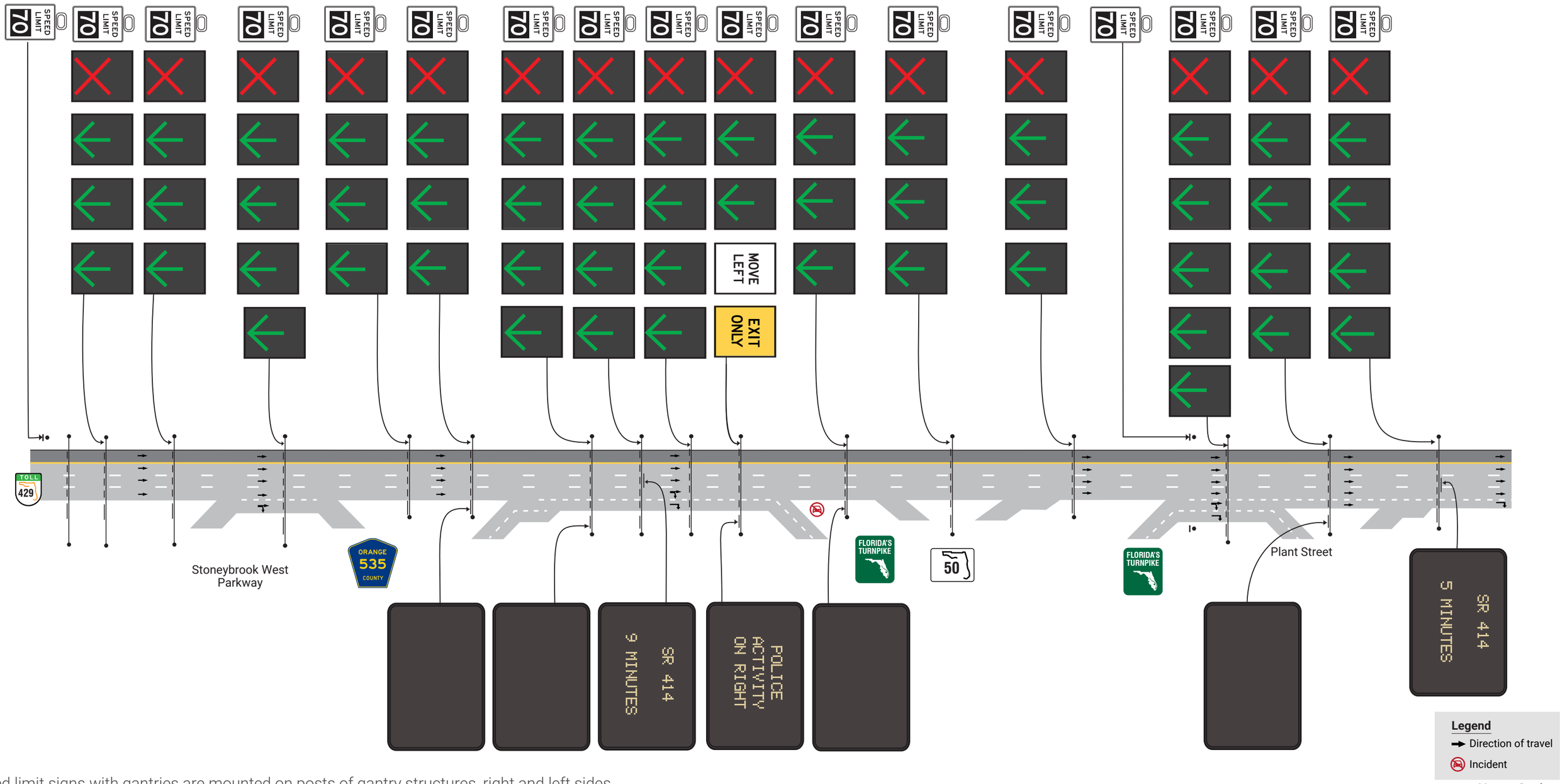
Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Operational Scenario -Incident Blocking All Lanes

Figure 30



Speed limit signs with gantries are mounted on posts of gantry structures, right and left sides

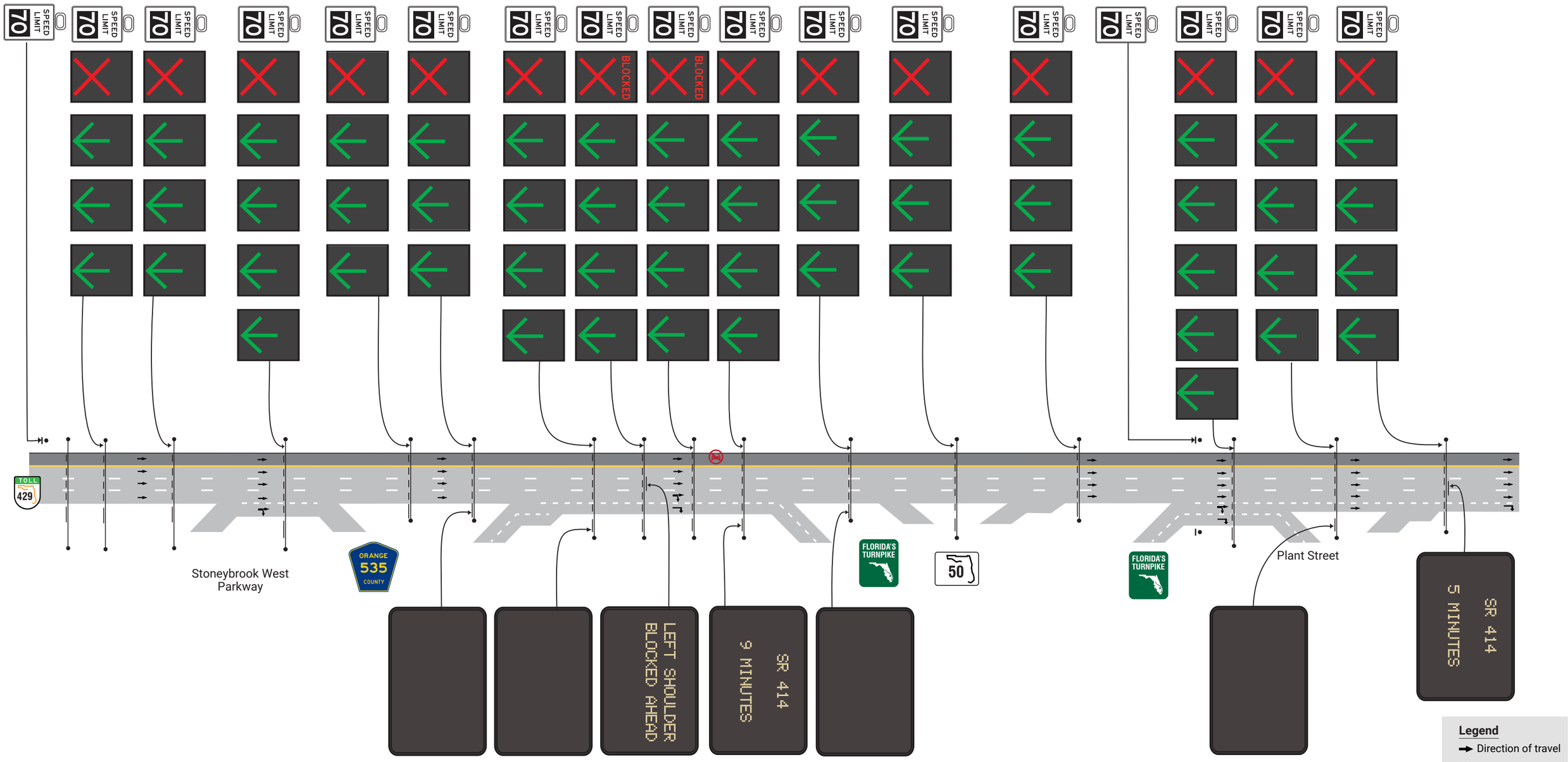
Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Operational Scenario -Law Enforcement Activity on Shoulder

Figure 31



Speed limit signs with gantries are mounted on posts of gantry structures, right and left sides

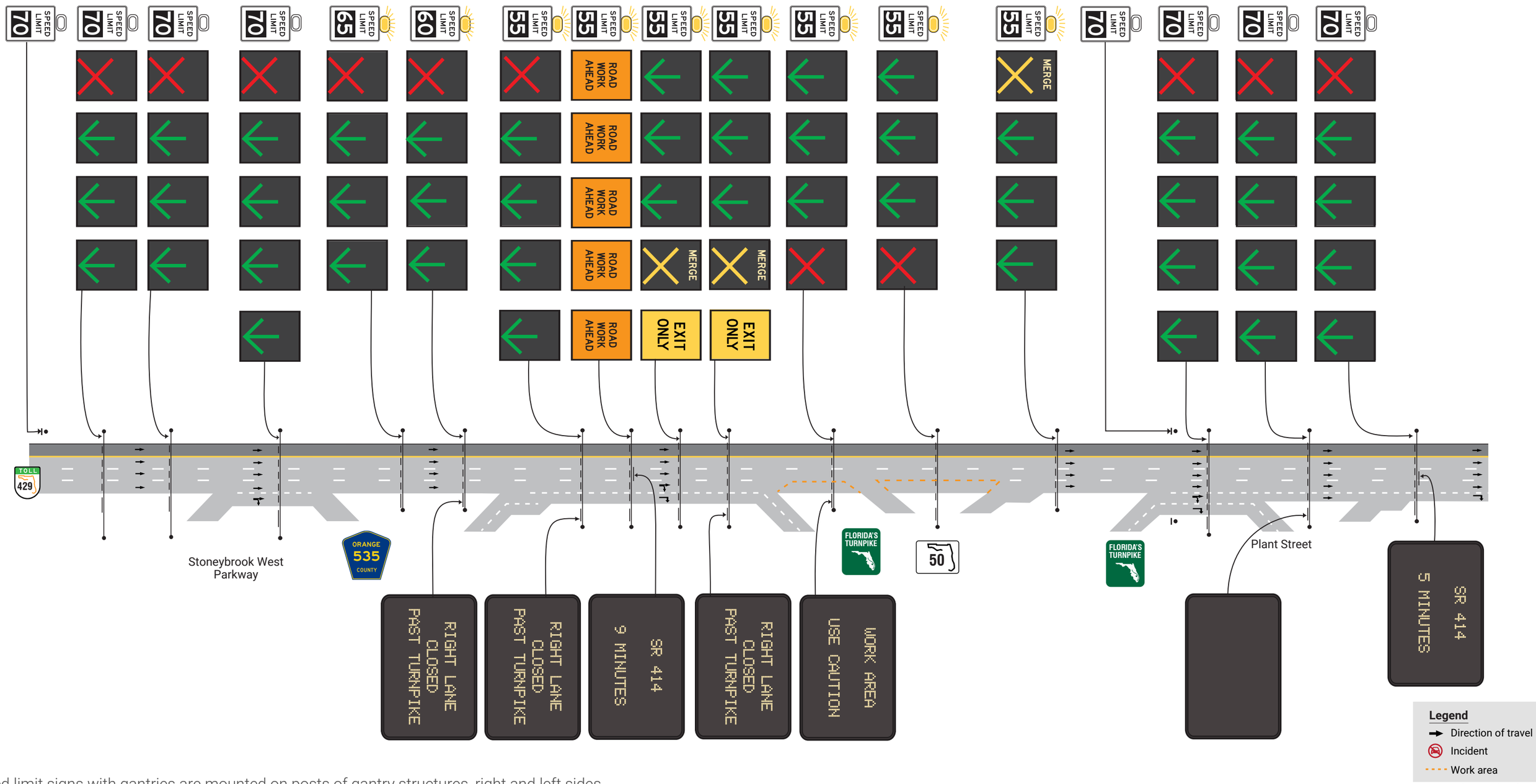
Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Operational Scenario -Incident on Part Time Shoulder Use Lane

Figure 32



Speed limit signs with gantries are mounted on posts of gantry structures, right and left sides

Not to Scale

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SR 429 Part-Time Shoulder Use

Operational Scenario -Maintenance of Traffic

Figure 33

6. Summary of Impacts

PTSU will make the appearance of SR 429 different than a typical expressway. Drivers will see lane control signals over all lanes and the left shoulder indicating if they are open or closed. Travel time reliability should improve due to the ability to provide additional capacity on the shoulder when incidents occur on the right side of the roadway, and additional information being provided to drivers may reduce the occurrence of secondary crashes. Longer term, PTSU will provide additional peak period capacity nearly equivalent to an additional lane, decreasing peak period travel times. The PTSU infrastructure will largely be constructed at the same time as the widening project, so construction impacts of PTSU will be negligible. Impacts to those who operate the facility include the following:

- The FDOT District 5 RTMC will need one additional staff person during each daytime shift to operate the SR 429 PTSU system. This person may also operate the SR 417 PTSU system at the same time, or a second person may be added to operate that facility. During lower-volume periods, FDOT staff/consultants have the *capacity* to operate the SR 429 and SR 417 PTSU systems but they currently do not have the authorization to operate PTSU and the RTMC may need to add a CFX staff person or consultant to do so. Staff operating PTSU will need to be trained on the software that operates the PTSU system.
- Law enforcement officials will enforce the "closed" status of the shoulder when it is closed and speed limits that vary, in addition to enforcement activities occurring today on SR 429.
- Law enforcement and emergency responders will request the RTMC close general-purpose lanes when needed for incidents and incident response.
- Road Rangers, CFX Maintenance staff, or FHP will verify the shoulder is clear of debris and disabled vehicles before each opening. There will also be increased effort in keeping the left shoulder clear at all times so the shoulder can be opened rapidly when an incident occurs.
- CFX and all of the stakeholders noted above will need to develop operating procedures for PTSU.
- CFX will have increased ITS maintenance responsibilities due to the additional ITS equipment being deployed.

7. Analysis of the Proposed System

This section provides a summary of traffic operations in future years with and without PTSU and discusses when it is forecast the shoulder will need to be opened on a regular basis to prevent recurring congestion. Information on the costs and schedule of the proposed system are presented as well.

7.1 Alternatives

Several alternate features were considered for the SR 429 PTSU system but ultimately not selected:

- Older-style blank-out lane control signals – these signals would only be capable of displaying green arrows, yellow Xs, and red Xs. These LCSs have been used on older PTSU projects but they are unable to display other messages. They also do not give CFX the flexibility to use different displays in the future.

- Large, full-color DMSs – these signs would display both lane control indications (arrows and Xs) and text messages. Sign density on SR 429 without PTSU is relatively high, and some gantries with LCSs will also have permanent guide signs because there is insufficient space for separate structures. Large DMSs are not feasible for SR 429 due to the current sign density.
- Curve warning signs – dynamic curve warning signs (i.e. dynamic W1-2 signs) were considered in lieu of variable speed limits to reduce speeds on curves where 70 MPH stopping sight distance is unavailable when the shoulder is open. These signs are typically used when a curve's radius and superelevation do not support the posted speeds, as opposed to a stopping sight distance restriction. Additionally, if the advisory speed of the curve is more than 10 MPH lower than the posted speed limit (which would be the case on 55 MPH curves), chevon warning signs are needed on the outside of the roadway per Table 2C-5 of the MUTCD. Curve warning signs and chevrons would need to be located prior to and at curves, not necessarily where gantry structures will be located. Due to the complexities of curve warning signs, variable speed limits were chosen to reduce speeds to stopping sight distance values.

7.2 Traffic Operations Analysis

A traffic operations analysis was conducted for the future conditions and was submitted under separate cover. The following sections summarize the results of the future conditions analysis for the No-Build, Build (Widening), and Build (Widening and PTSU) scenarios for the design year (2045).

7.2.1 Future No-Build Operational Results

As volumes continue to grow, the SR 429 facility is expected to experience worsening recurring congestion during the weekday AM and PM peak hours. The following summarizes the specific locations of congestion by direction and by time period.

7.2.1.1 Northbound Facility Operations

Figure 34 and **Figure 35** illustrate the speed contours along the northbound facility for the 2045 AM and PM peak hours, respectively. During both the 2045 AM and PM peak hours, severe congestion (speeds less than 15 MPH) is expected to the south of the facility limits (CR 535) and between West Colonial Drive and SR 438/Plant Street.

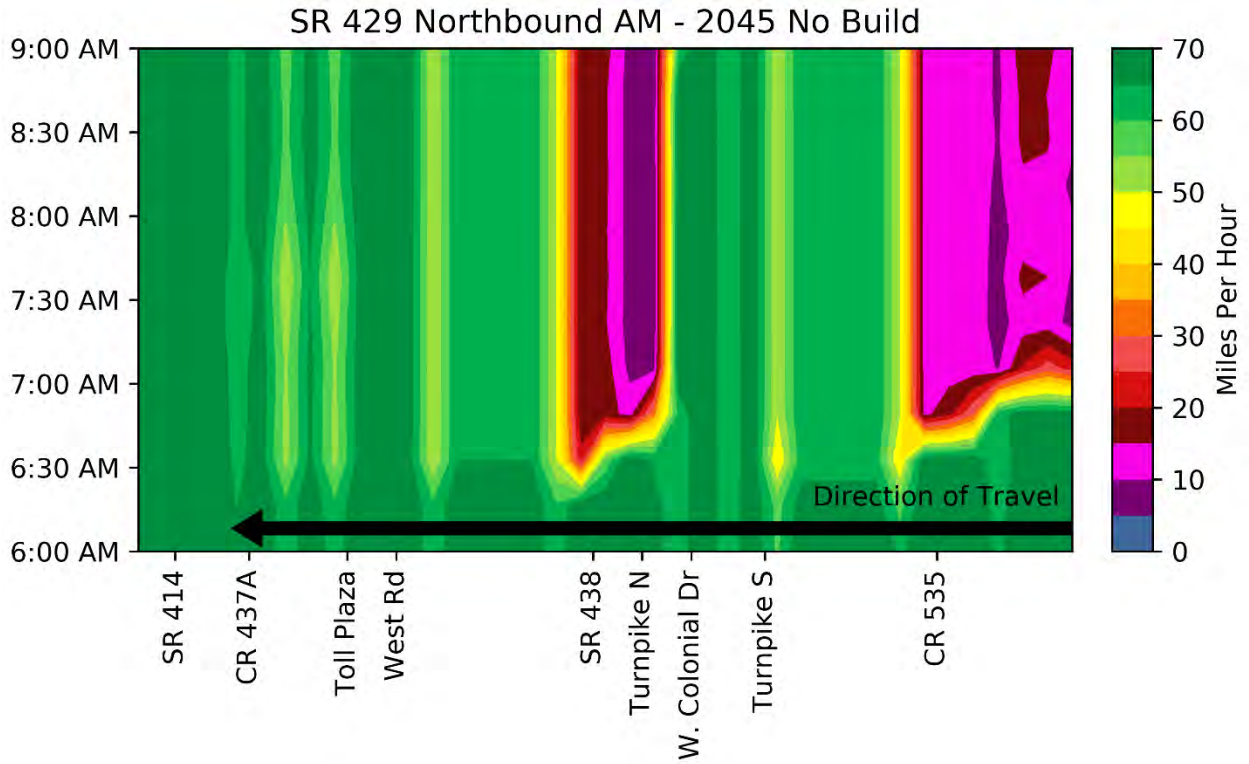


Figure 34: Northbound No-Build 2045 AM Speed Contours

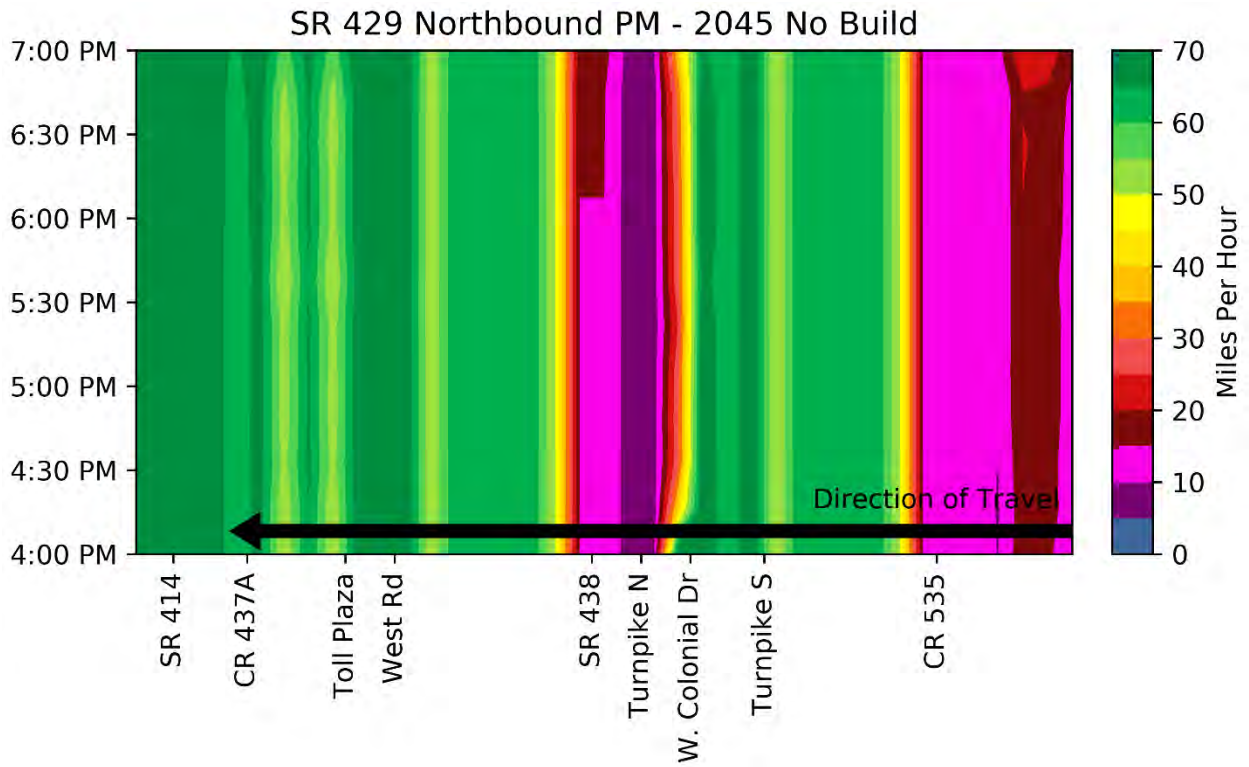


Figure 35: Northbound No-Build 2045 PM Speed Contours

The key performance metrics for the northbound facility in 2045 are summarized in **Table 6**. The average travel time along the facility is expected to be more than double the free-flow travel time throughout the day in 2045. The demand is also expected to exceed capacity by nearly double (D/C ratio greater than 2.0). Average speeds of approximately 28-30 MPH are expected along the facility during the 2045 peak hours.

Table 6: Northbound No-Build 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Length (mi)	13.9		
FFS Travel Time (min)	11.9		
Average Travel Time (min)	22.9	29.3	28.5
Space Mean Speed (mi/h)	40.6	28.2	29.6
Average Density (pc/mi/ln)	33.9	47.2	47.6
Max D/C	2.06	1.96	2.02
Max V/C	1.00	1.00	1.00
Vehicle Hours Delay (hrs)	1,046,805	12,571	8,4615
Vehicle Miles Traveled (veh-miles / interval)	750,099	39,252	42,610

7.2.1.2 Southbound Facility Operations

Figure 36 and **Figure 37** illustrate the speed contours along the southbound facility for the 2045 AM and PM peak hours, respectively. During both the 2045 AM and PM peak hours, severe congestion (speeds as low as 5 MPH) is expected to the north of the facility limits due to bottlenecks between SR 414 and Plant Street. During the PM peak hour, a bottleneck is expected within the weaving segment between Turnpike and CR 535 with speeds around 25 MPH. Average speeds of approximately 14.5 MPH are expected along the facility during the 2045 peak hours.

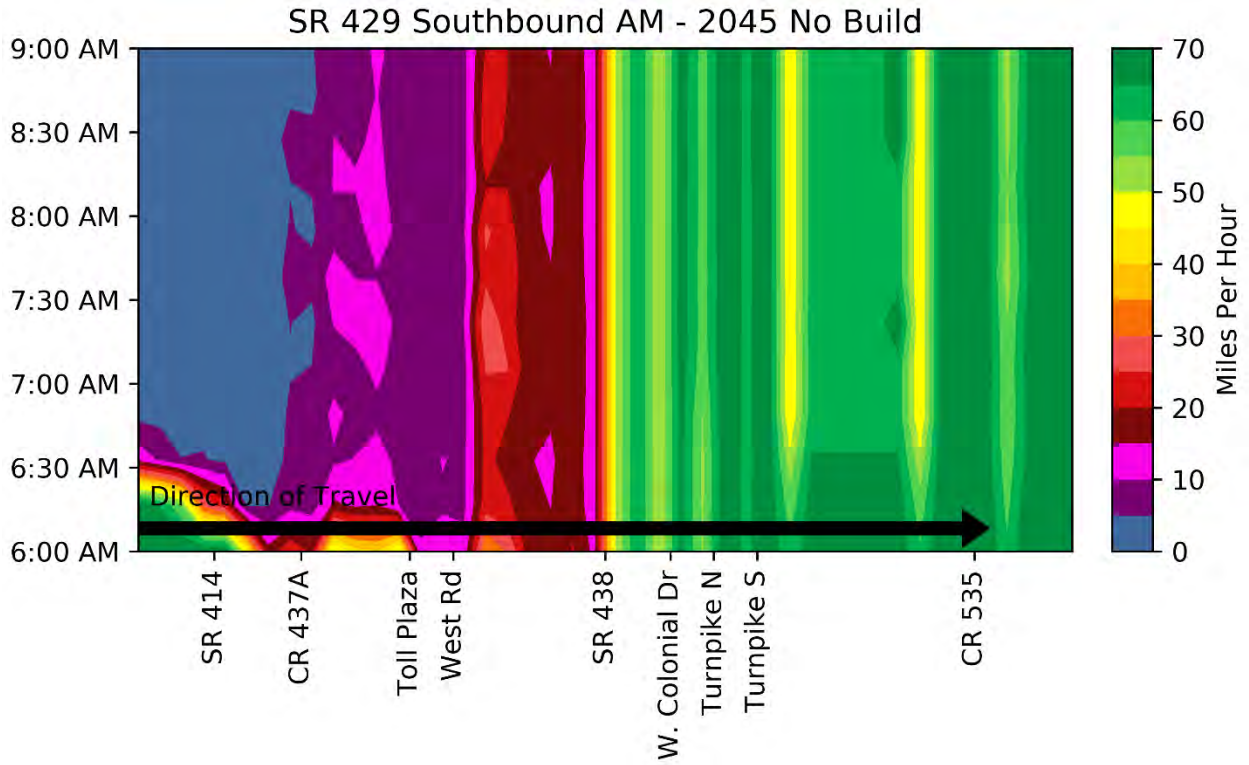


Figure 36: Southbound No-Build 2045 AM Speed Contours

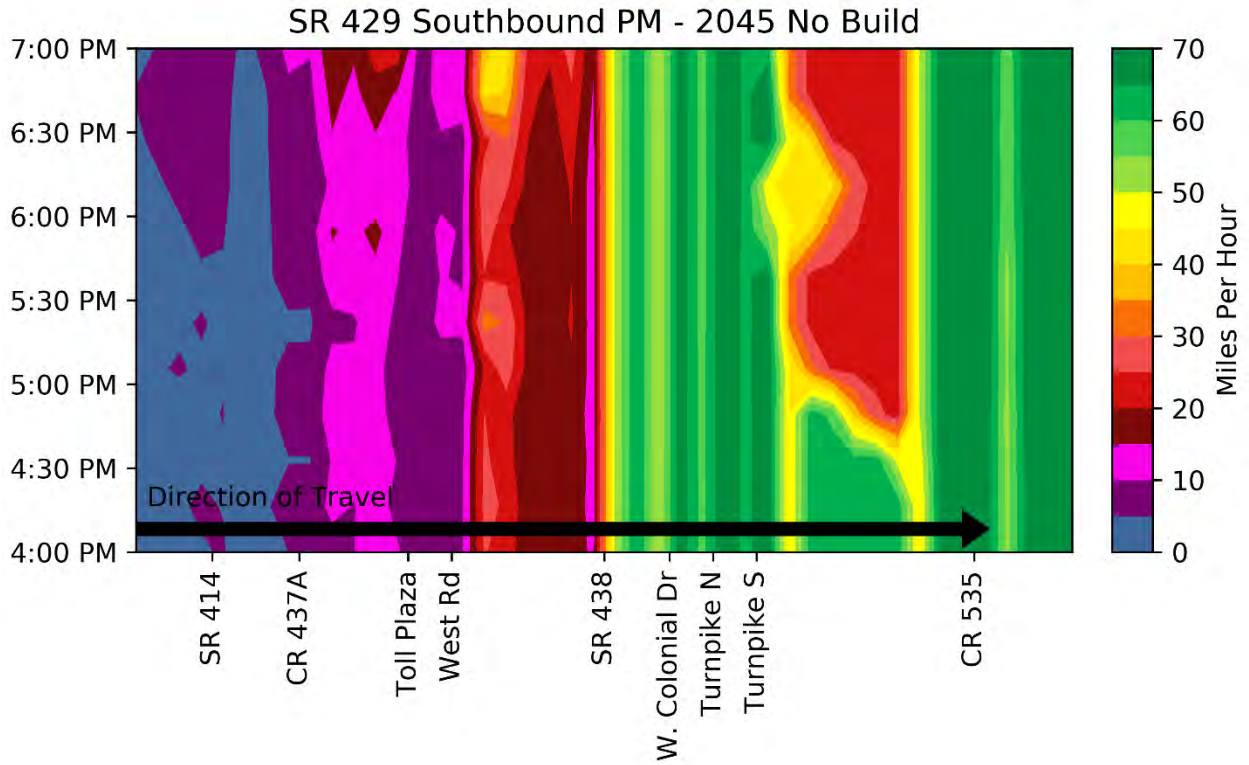


Figure 37: Southbound No-Build 2045 PM Speed Contours

The key performance metrics for the northbound facility in 2045 are summarized in **Table 7**. The average travel time along the facility is expected to be up to more than six times the free-flow travel time in the 2045 AM peak hour. The maximum D/C ratio is expected to be over 2.0 during 2045. Average speeds of approximately 14.5 minutes are expected along the facility during the 2045 peak hours.

Table 7: Southbound No-Build 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Length (mi)	13.8		
FFS Travel Time (min)	11.8		
Average Travel Time (min)	48.0	78.5	74.3
Space Mean Speed (mi/h)	30.5	14.5	14.3
Average Density (pc/mi/ln)	57.0	85.4	84.8
Max D/C	2.12	2.12	1.81
Max V/C	1.00	1.00	1.00
Vehicle Hours Delay (hrs)	829,091	20,438	66,586
Vehicle Miles Traveled (veh-miles / interval)	708,455	35,317	35,617

7.2.2 Future No-Build Operational Summary

The operational analysis shows severe congestion with speeds as low as 5 MPH expected during the 2045 peak hours. Travel times are expected to be more than double in the northbound direction and more than six times the free-flow travel times during 2045. The analysis conducted shows the need for additional capacity along the facility in both directions. The following sections will summarize the operational analysis results of the programmed widening and proposed PTSU improvements.

7.2.3 Future Build Operational Results (Widening Alternative)

The previously summarized No-Build analysis showed the need for widening of the SR 429 facility. The following summarizes the specific locations of congestion by direction and by time period for the programmed widening of SR 429 from the existing four lanes to six lanes. This scenario also assumed that widening of the SR 429 facility to the south of the study limits occurred so that the true impact of the PTSU could be estimated. Otherwise, the section to the south created bottlenecks, queue spillback, and delay that would mask the impacts of the PTSU. This is discussed in greater detailed in the Future Conditions Operational Analysis Report submitted under separate cover.

7.2.3.1 Northbound Facility Operations

Figure 38 illustrates the speed contours along the northbound facility for the 2045 AM peak hour. Even with the widening of the facility to six lanes, congestion (speeds as low as 20 MPH) is still expected between West Road and the toll plaza during the 2045 AM peak hour. The remainder of the facility is expected to operate at speeds of 50 MPH or higher.

The speed contours for the 2045 PM peak hour are illustrated in **Figure 39**. The speed contours show the facility operating with speed of 50 mph or higher during the 2045 PM peak hour. The areas of 50 mph are expected to be between CR 437A and the toll plaza and between Turnpike and West Colonial Drive.

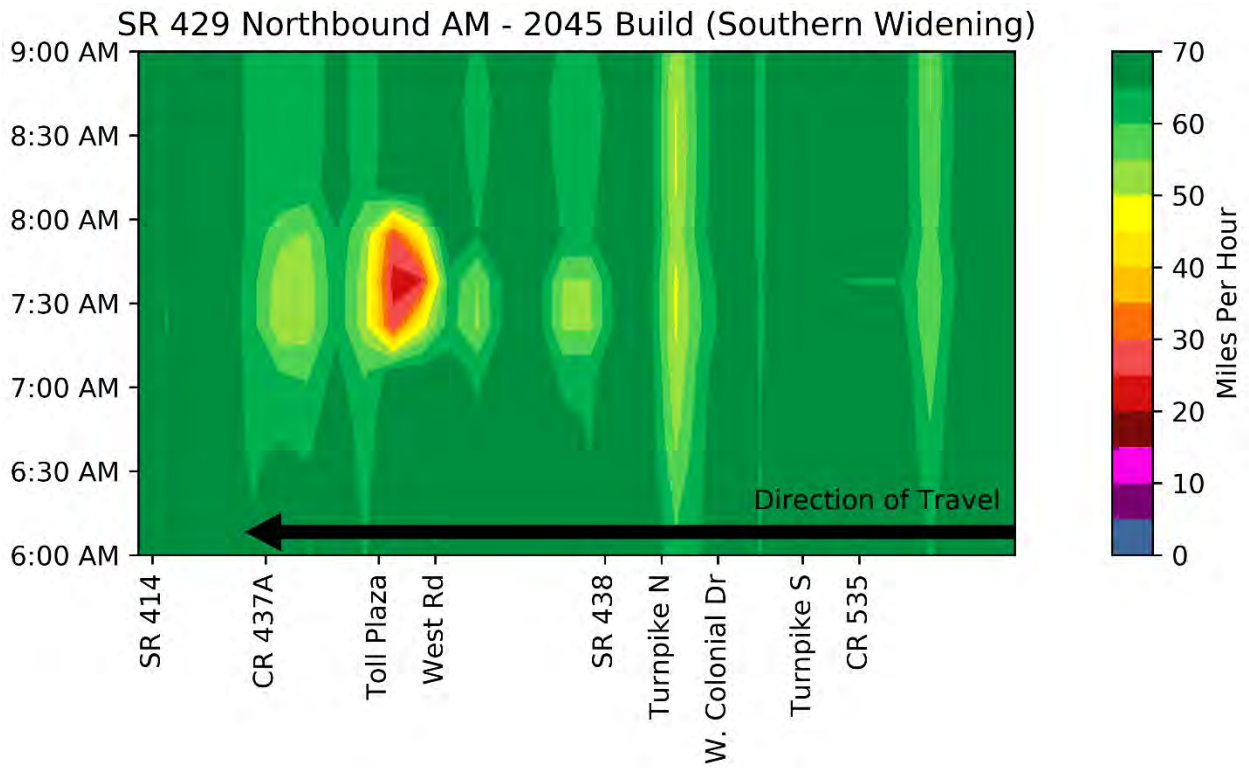


Figure 38: Northbound Build 2045 AM Speed Contours

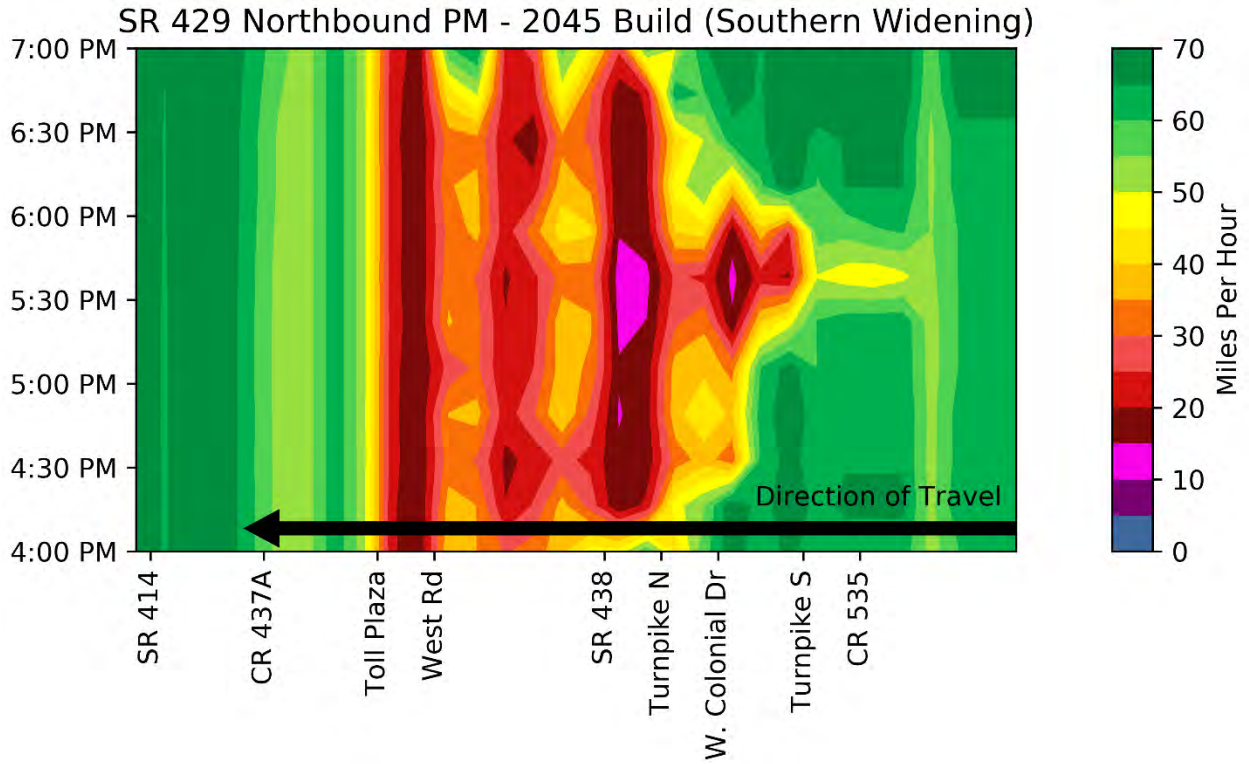


Figure 39: Northbound Build 2045 PM Speed Contours

The key performance metrics for the northbound Build facility in 2045 are summarized in **Table 8**. The average travel time along the facility is expected to improve over the No-Build. The free-flow travel time is approximately 12 minutes and during the AM and PM peak hours and it is expected to be approximately 14 minutes and 24 minutes, respectively. The maximum D/C ratio drops to 1.14 showing there is still additional capacity needs. Average speeds of approximately 61 MPH and 36 MPH are expected along the facility during the 2045 AM and PM peak hours, respectively.

Table 8: Northbound Build 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Length (mi)	13.9		
FFS Travel Time (min)	11.9		
Average Travel Time (min)	13.6	13.7	23.5
Space Mean Speed (mi/h)	63.1	60.8	35.9
Average Density (pc/mi/ln)	15.2	23.9	45.3
Max D/C	1.14	0.99	1.14
Max V/C	1.00	1.00	1.00
Vehicle Hours Delay (hrs)	10,223	158	2,507
Vehicle Miles Traveled (veh-miles / interval)	947,260	66,779	77,546

7.2.3.2 Southbound Facility Operations

Figure 40 illustrates the speed contours along the southbound facility for the 2045 AM peak hour. Even with the widening of the facility to six lanes, congestion (speeds as low as 10 MPH) is still expected between SR 414 and CR 437A during the 2045 AM peak hour. The remainder of the facility is expected to operate at speeds of 50 MPH or higher.

The speed contours for the 2045 PM peak hour are illustrated in **Figure 41**. The speed contours show the facility operating with speed of 50 MPH or higher during the 2045 PM peak hour. The weaving segment between Turnpike and CR 535 is where the 50 MPH speeds are expected.

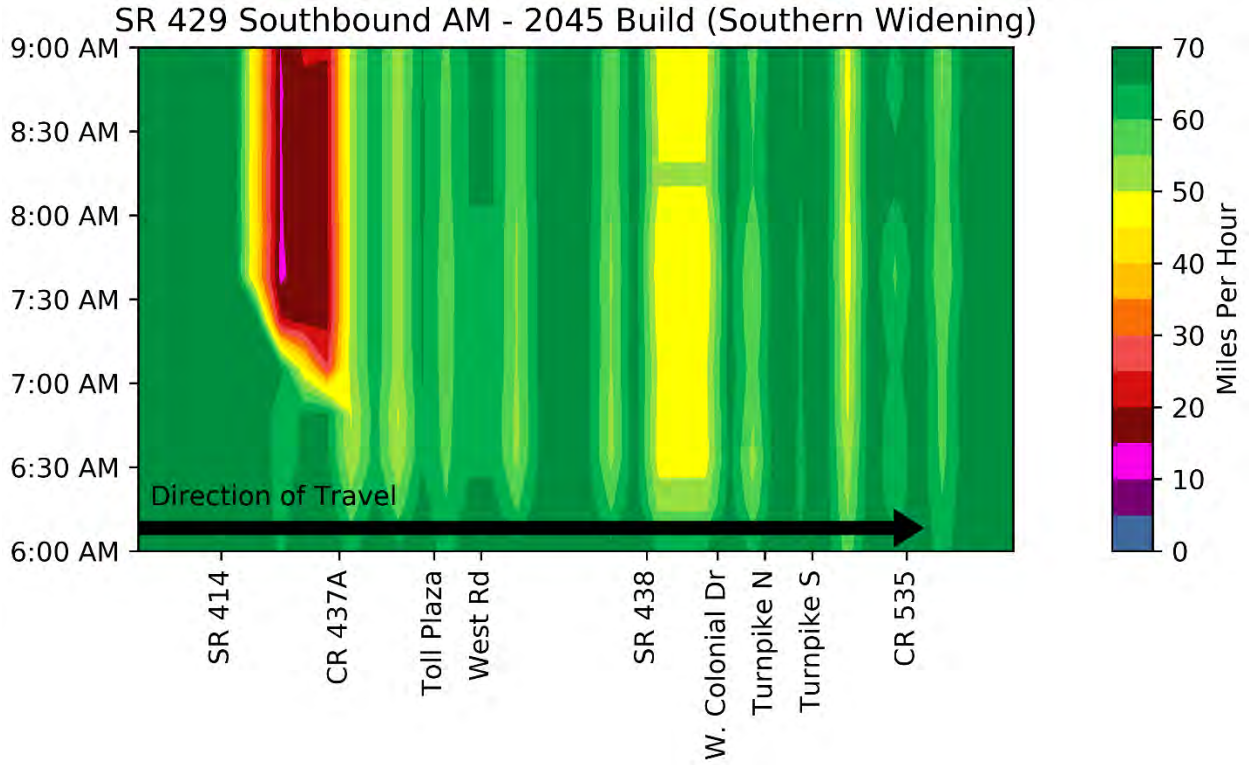


Figure 40: Southbound Build 2045 AM Speed Contours

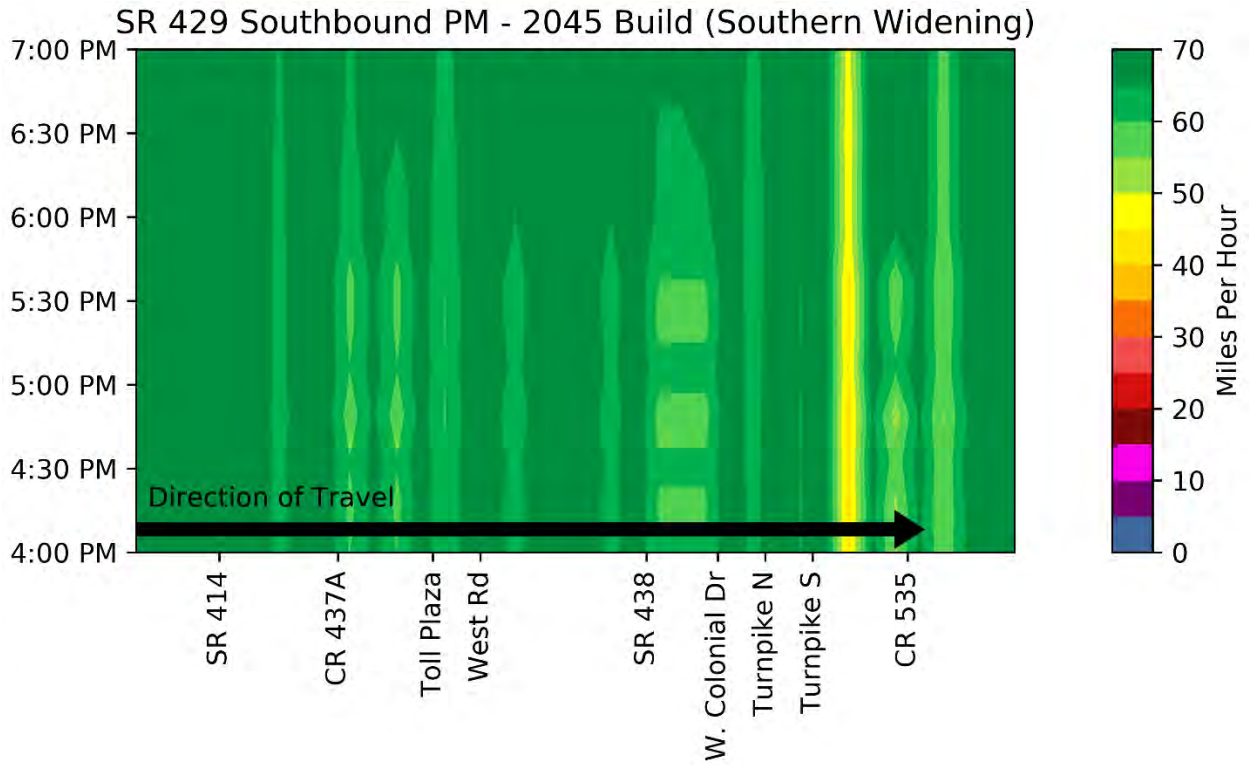


Figure 41: Southbound Build 2045 PM Speed Contours

Table 9 summarizes the key performance metrics for the southbound Build facility in 2045. The average travel time along the facility is expected to improve over the No-Build. The free-flow travel time is approximately 12 minutes and during the AM and PM peak hours and it is expected to be approximately 17 minutes and 14 minutes, respectively. The maximum D/C ratio drops to 1.06 showing there is still additional capacity needs. Average speeds of approximately 48 MPH and 58 MPH are expected along the facility during the 2045 AM and PM peak hours, respectively.

Table 9: Southbound Build 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Length (mi)	13.8		
FFS Travel Time (min)	11.8		
Average Travel Time (min)	13.1	17.0	13.7
Space Mean Speed (mi/h)	63.0	48.3	58.3
Average Density (pc/mi/ln)	13.7	31.8	24.5
Max D/C	1.06	1.06	0.91
Max V/C	1.00	1.00	0.91
Vehicle Hours Delay (hrs)	2,592	635	191
Vehicle Miles Traveled (veh-miles / interval)	896,975	70,551	66,793

7.2.4 Future Build (Widening Alternative) Operational Summary

The widening of SR 429 from four to six lanes is expected to provide significant improvement over the No-Build configuration. Average travel times, average speeds, and vehicle hours of delay are all expected to improve throughout the day for both the northbound and southbound facilities. The operational analysis does show that there are still capacity needs despite the six-lane widening. The following section will summarize the operational analysis results of the widening alternative combined with the proposed PTSU improvements.

7.2.5 Future Build Operational Results (Widening and PTSU)

The previously summarized Build (Widening) analysis showed improvement over the No-Build condition; however, additional capacity is expected to be needed to alleviate recurring congestion. The following summarizes the specific locations of congestion by direction and by time period for the programmed widening of SR 429 from the existing four lanes to six lanes with the PTSU improvements. Like the previously summarized Build alternative, this scenario also assumed that widening of the SR 429 facility to the south of the study limits occurred so that the true impact of the PTSU could be estimated. This is discussed in greater detailed in the Future Conditions Operational Analysis Report submitted under separate cover.

The following figures (**Figure 42 - Figure 45**) shows the hourly volume and rate of change of volume throughout the day for the southbound and northbound facilities in 2045. The rate of

change of volume is shown as the difference in hourly volume in a 15-minute time period compared to the previous 15-minute time period. The time periods for implementation of PTSU for recurring congestion relief is shown with blue shading on the graph and summarized by direction in **Table 10**. To account for day-to-day variations in volume and potential delays in the opening process (the sweep vehicle arrives late to start the sweep, the sweep vehicle stops to clear debris from the shoulder, etc.), it is desirable to target the completion of a sweep approximately 30 minutes before these time periods begin, and open the shoulder up to 30 minutes before the start of congestion.

Before the AM PTSU, the volume rises rapidly before reaching over 6,000 vehicles per hour during the time PTSU is needed. In the PM, volume rise is less prominent because mid-afternoon volumes preceding the PM peak are higher than overnight volumes preceding the AM peak. The total volume reaches a lower volume in the PM for southbound and a higher volume for northbound. Volume rate of change and hourly volume can be monitored in the future to determine when the PTSU needs to be opened (trigger for opening PTSU).

Table 10: Time Periods Requiring PTSU to Serve Traffic Demand

Direction	AM	PM
Northbound	7:00 – 8:15	3:15 – 6:45
Southbound	6:00 – 9:30	3:45 – 7:15

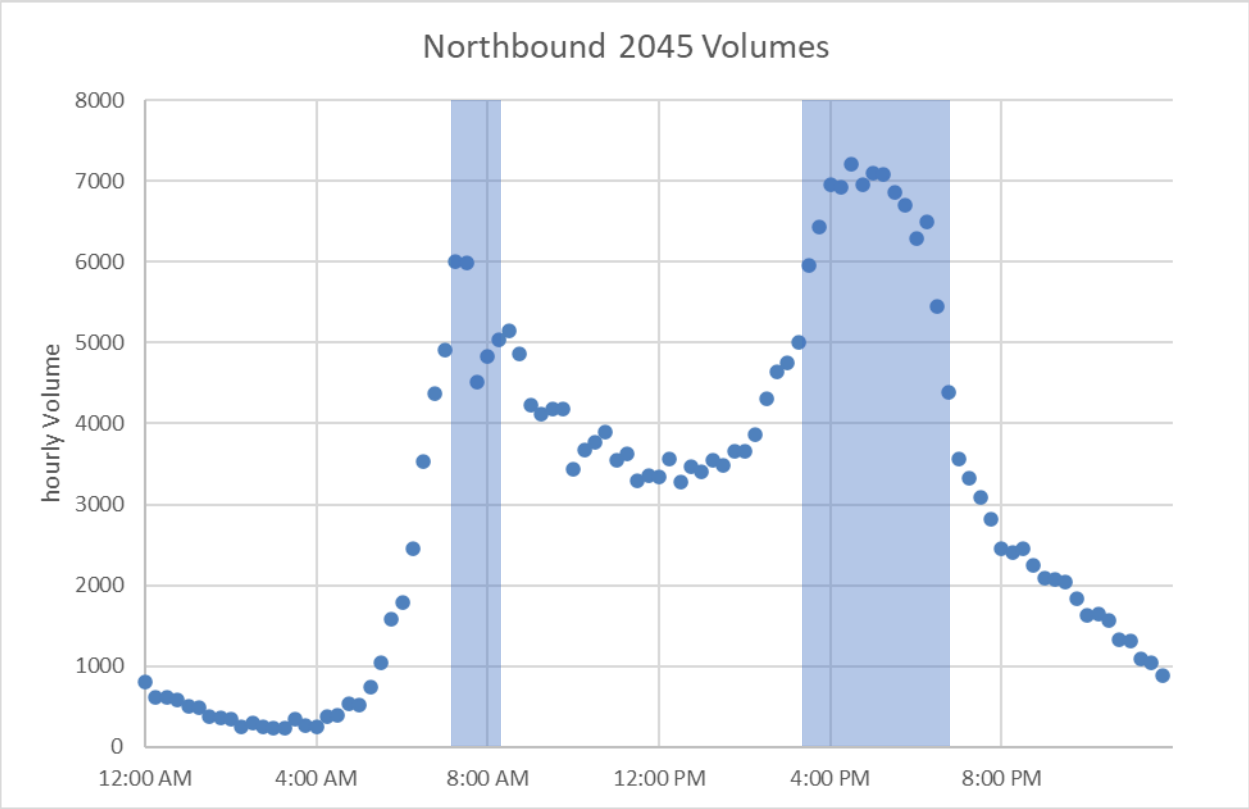


Figure 42: Northbound 2045 Volumes

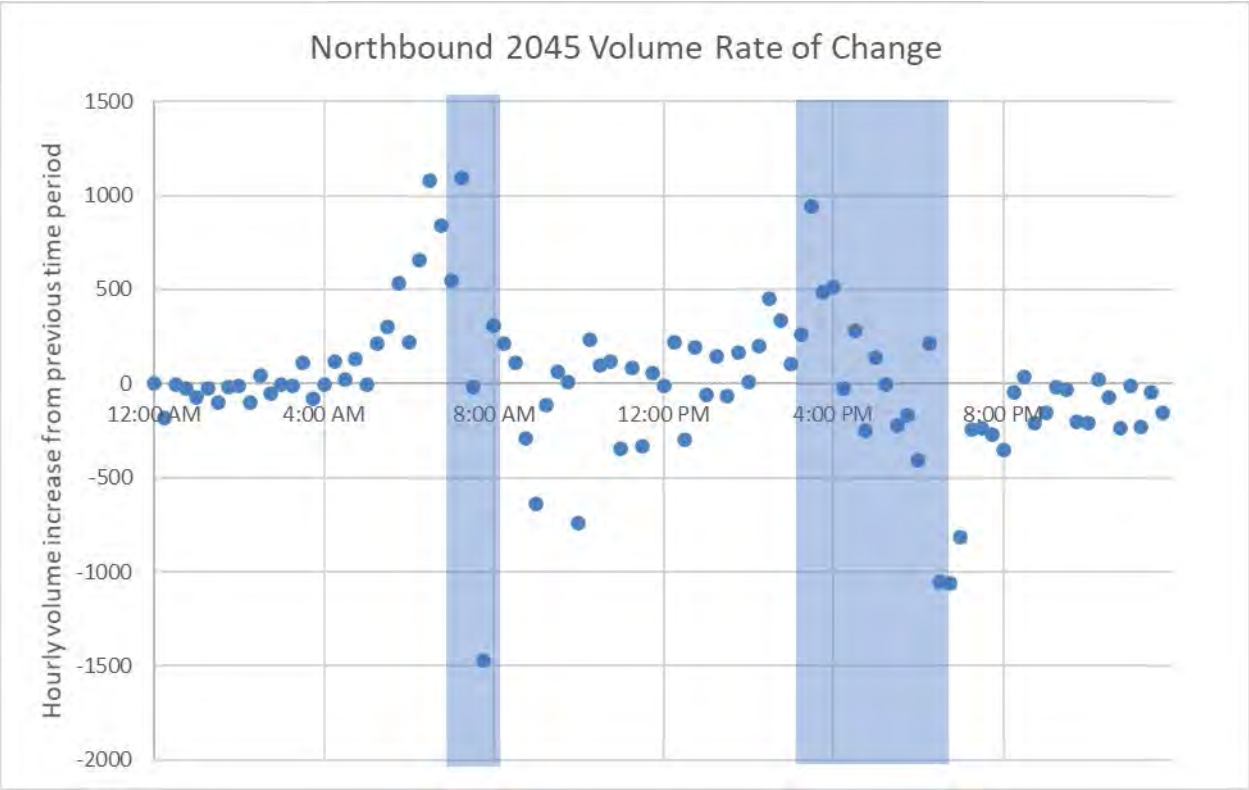


Figure 43: Northbound Volume Rate of Change

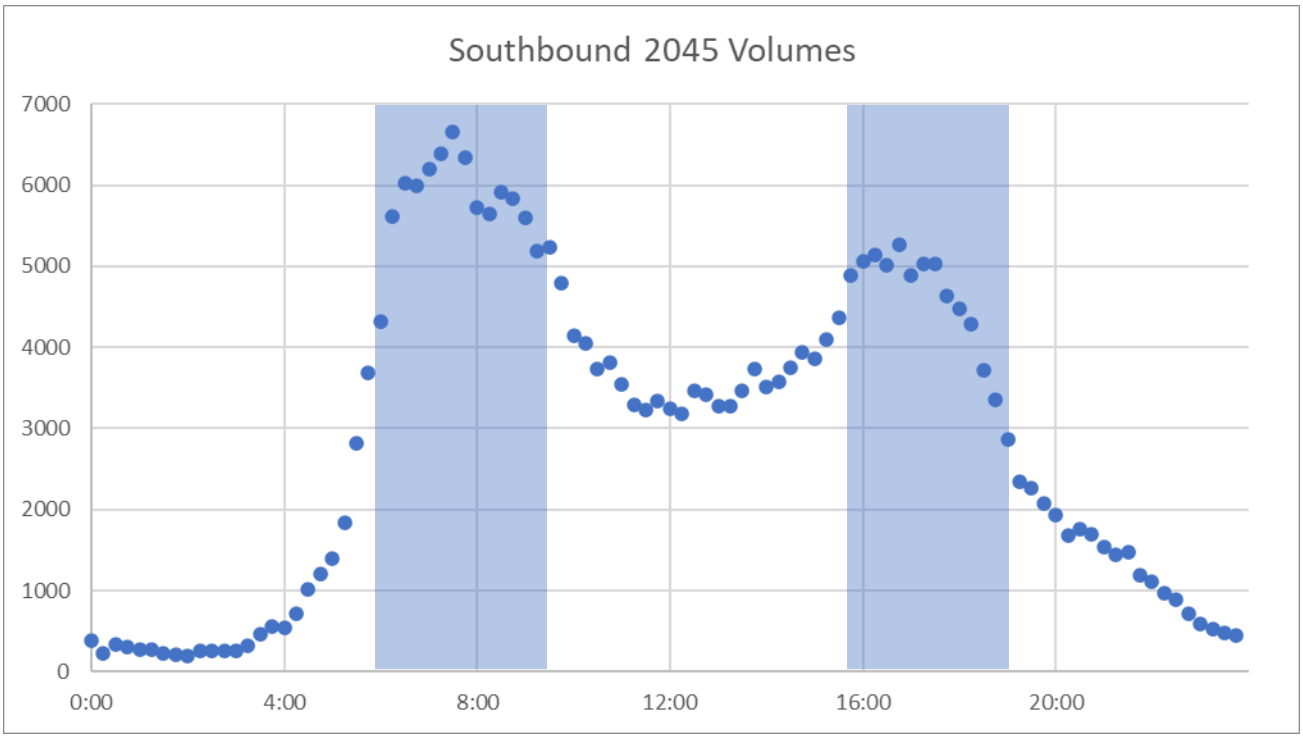


Figure 44: Southbound 2045 Volumes

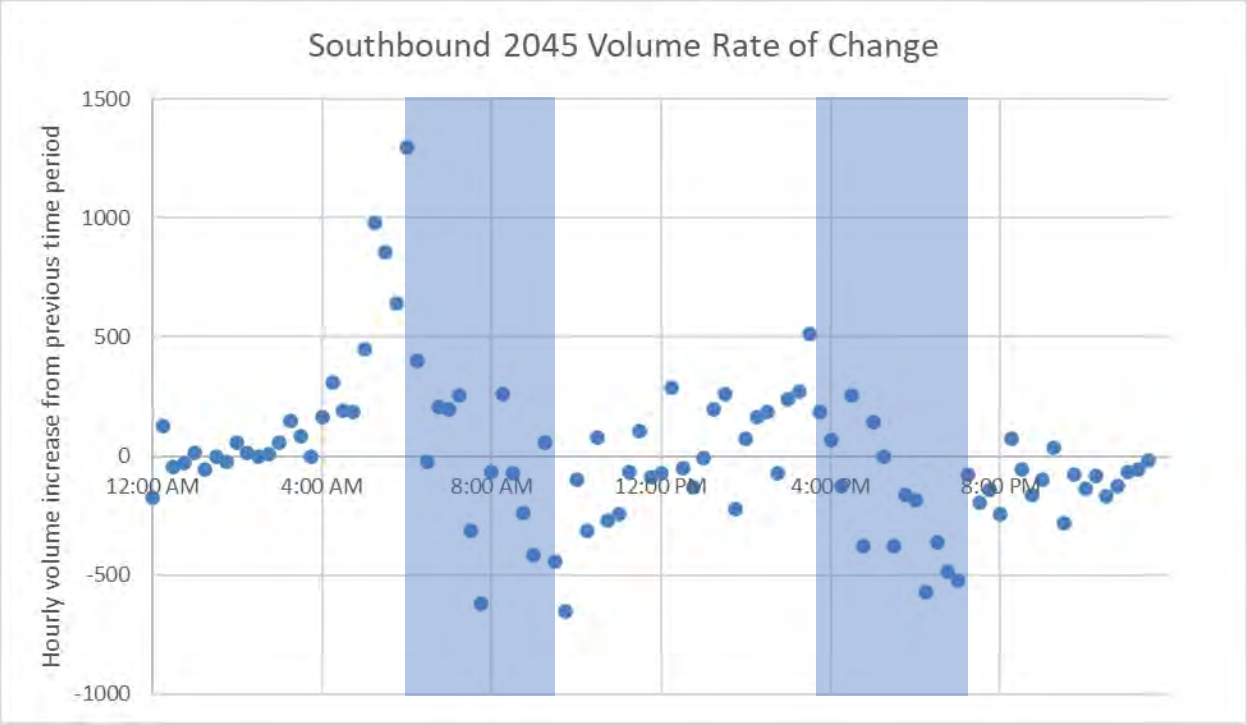


Figure 45: Southbound 2045 Volume Rate of Change

7.2.5.1 Northbound Facility Operations

Figure 46 illustrates the speed contours along the northbound facility for the 2045 AM peak hour. The PTSU is expected to alleviate the congestion that was still expected under the widening alternative. The facility is expected to operate at speeds of 50 MPH or higher during the 2045 AM peak hour.

The speed contours for the 2045 PM peak hour are illustrated in **Figure 47**. The PTSU is expected to improve speeds that were still expected under the widening alternative between CR 437A and the toll plaza. The analysis shows some slowdowns (speed of approximately 40 MPH) within the weaving segment between Turnpike and SR 438. When the PTSU is active, the speeds are reduced in this area due to the stopping sight distance restrictions discussed in Section 4.3.1. The reduction in speed will result in a reduction in capacity versus the Build scenario. This location should be monitored as volumes grow along the facility.

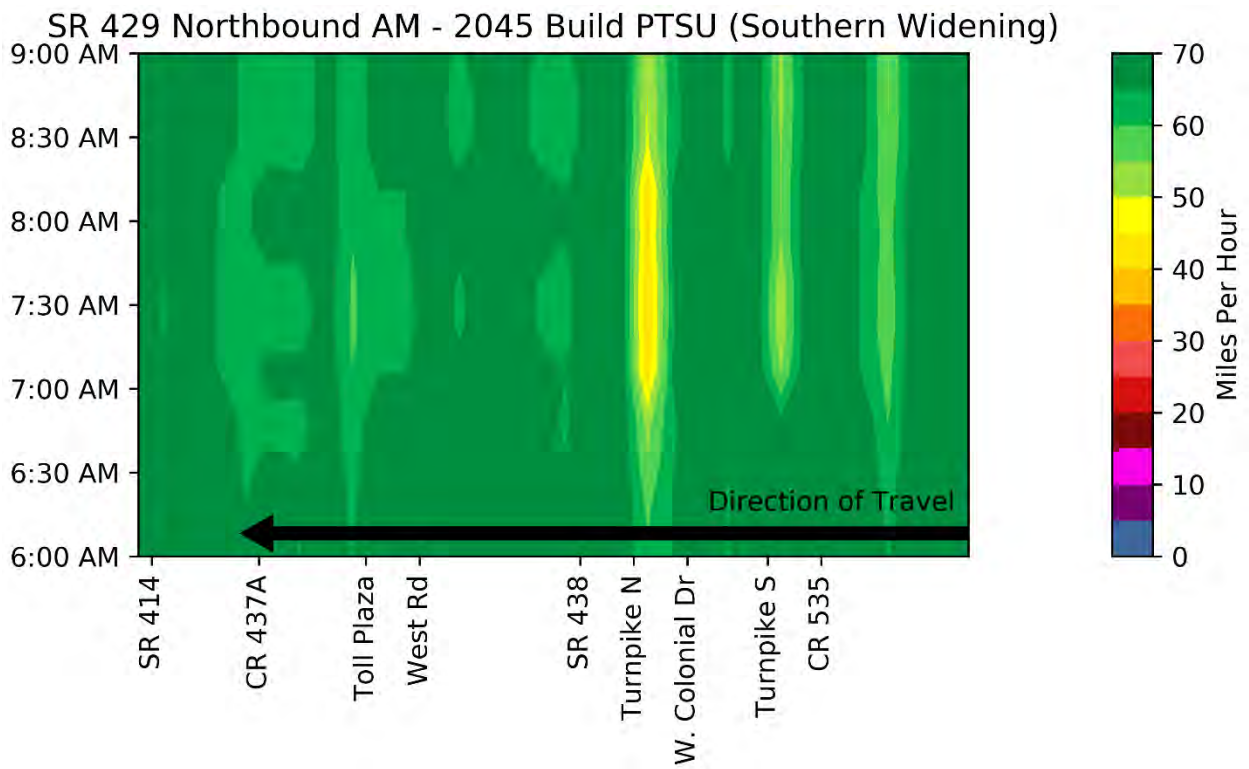


Figure 46: Northbound Build (with PTSU) 2045 AM Speed Contours

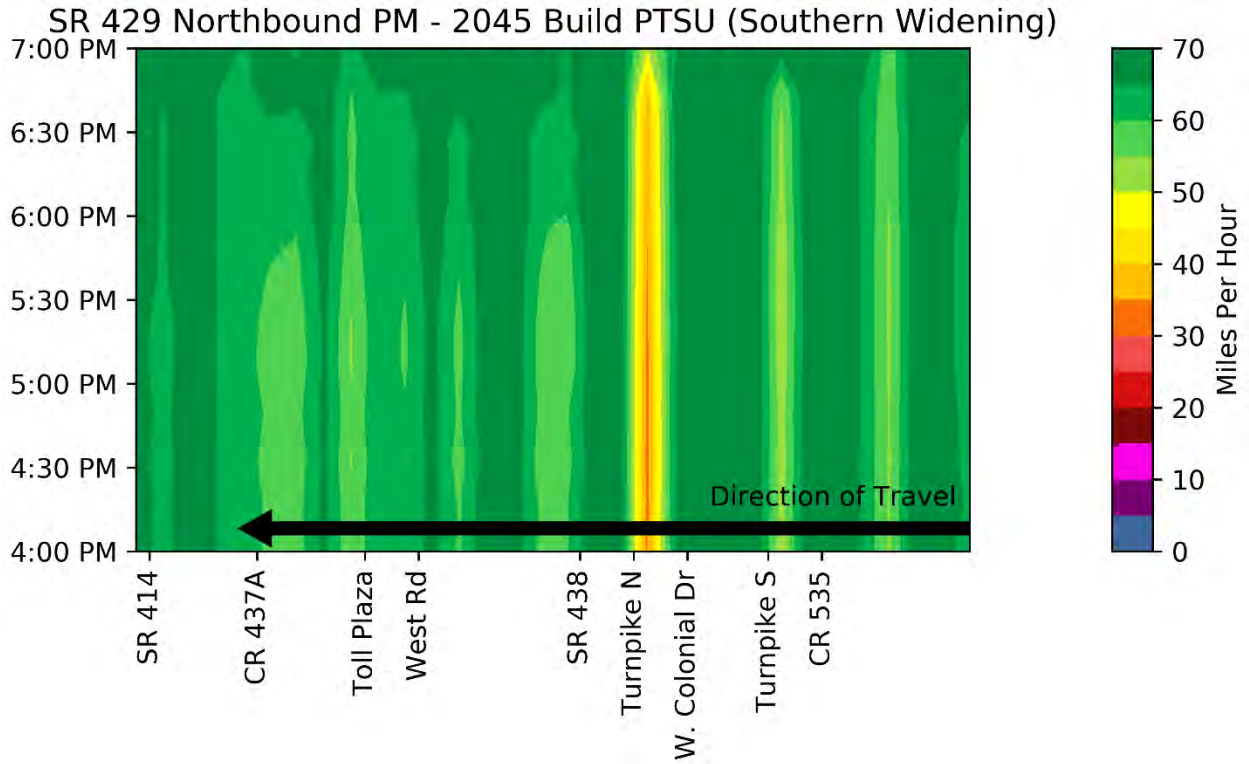


Figure 47: Northbound Build (with PTSU) 2045 PM Speed Contours

The key performance metrics for the northbound Build (with PTSU) facility in 2045 are summarized in **Table 11**. The average travel time along the facility is expected to improve over the Build (widening alternative). The free-flow travel time is approximately 12 minutes and during the AM and PM peak hours and it is expected to be approximately 13 minutes and 14 minutes, respectively. Average speeds of approximately 61 MPH and 57 MPH are expected along the facility during the 2045 AM and PM peak hours, respectively.

Table 11: Northbound Build (with PTSU) 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Length (mi)	13.9		
FFS Travel Time (min)	11.9		
Average Travel Time (min)	12.7	13.4	14.3
Space Mean Speed (mi/h)	65.4	60.6	56.7
Average Density (pc/mi/ln)	12.4	19.9	26.0
Max D/C	0.90	0.88	0.88
Max V/C	0.90	0.88	0.88
Vehicle Hours Delay (hrs)	1,205	93	208
Vehicle Miles Traveled (veh-miles / interval)	949,727	66,351	88,516

7.2.5.2 Southbound Facility Operations

Figure 48 illustrates the speed contours along the southbound facility for the 2045 AM peak hour. The PTSU is expected to alleviate the congestion that was still expected under the widening alternative. The facility is expected to operate at speeds of 50 MPH or higher during the 2045 AM peak hour.

The speed contours for the 2045 PM peak hour are illustrated in **Figure 49**. The speed contours show the facility operating with speed of 50 MPH or higher during the 2045 PM peak hour. The weaving segment between Turnpike and CR 535 is where the 50 MPH speeds are expected. This segment is also within a location where the stopping sight distance is reduced.

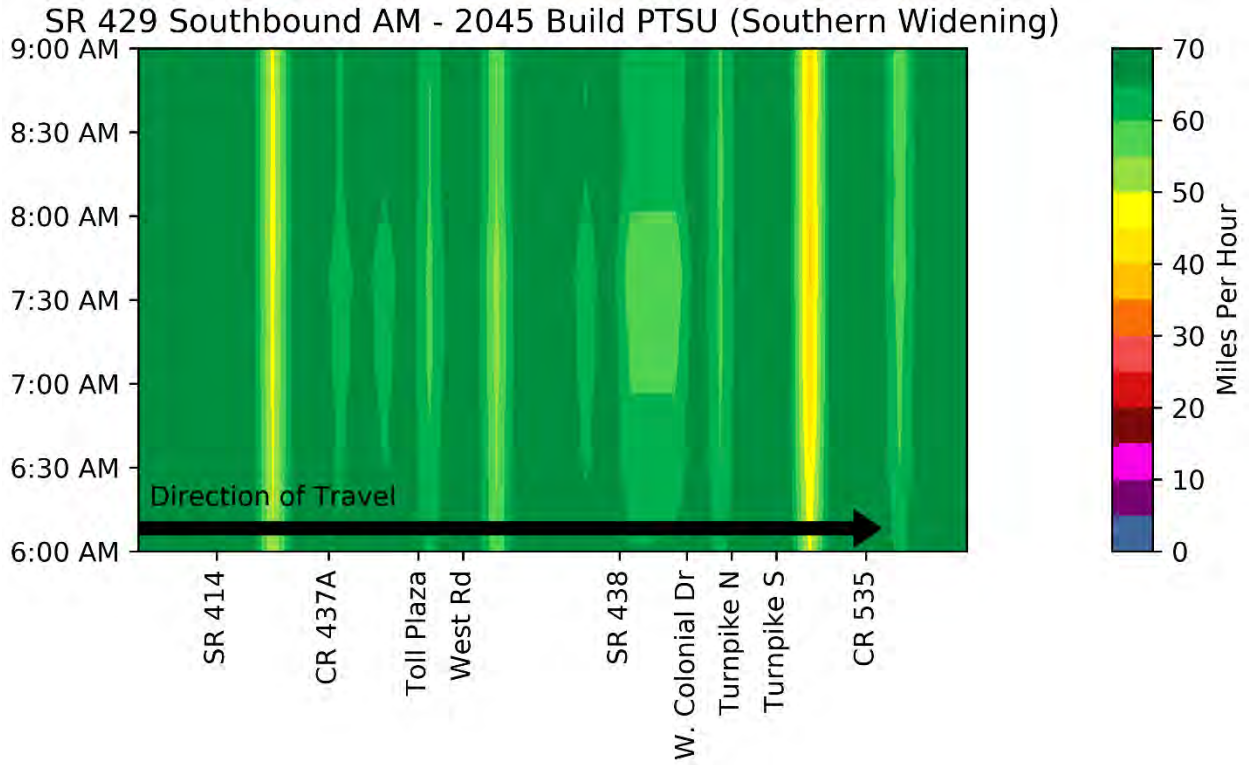


Figure 48: Southbound Build (with PTSU) 2045 AM Speed Contours

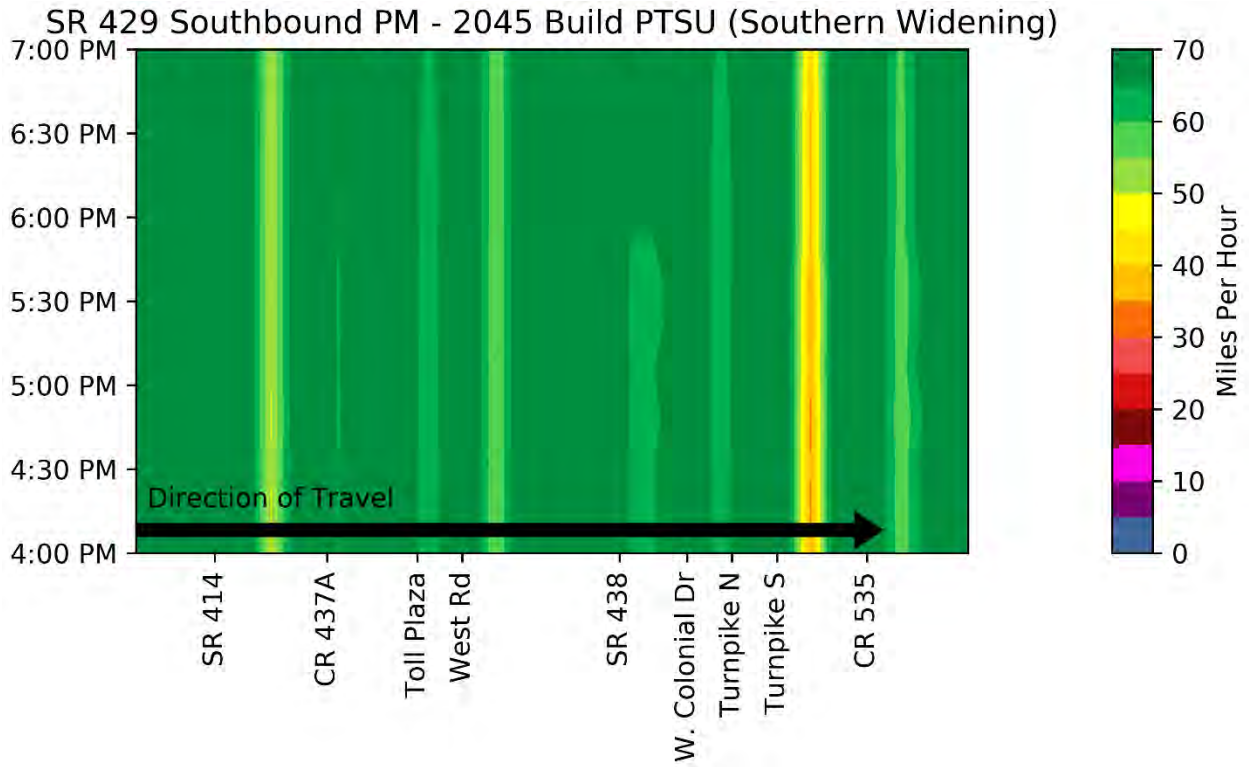


Figure 49: Southbound Build (with PTSU) 2045 PM Speed Contours

Table 12 summarizes the key performance metrics for the southbound Build (with PTSU) facility in 2045. The average travel time along the facility is expected to improve over the Build during the 2045 AM peak hour. The free-flow travel time is approximately 12 minutes and during the AM and PM peak hours and it is expected to be approximately14 minutes during both peak hours. The maximum D/C ratio drops to 0.85 (below capacity). Average speeds of approximately 58 MPH and 55 MPH are expected along the facility during the 2045 AM and PM peak hours, respectively.

Table 12: Southbound Build (with PTSU) 2045 Results Summary

Performance Metric	2045		
	All Day	AM	PM
Length (mi)	13.8		
FFS Travel Time (min)	11.8		
Average Travel Time (min)	12.9	14.0	14.3
Space Mean Speed (mi/h)	63.4	58.3	55.2
Average Density (pc/mi/ln)	11.8	21.2	20.5
Max D/C	0.85	0.85	0.78
Max V/C	0.85	0.85	0.78
Vehicle Hours Delay (hrs)	1,645	160	207
Vehicle Miles Traveled (veh-miles / interval)	896,848	72,094	66,793

7.2.5.3 Future Build (Widening and PTSU) Operational Summary

The combination of the widening of SR 429 from four to six lanes and the PTSU improvements is expected to provide improvements to the SR 429 facility. The PTSU is expected to address the major congestion areas identified in the Build (widening alternative) analysis. The analysis does show some friction in a couple of weaves where posted speeds are reduced due to stopping sight distance restrictions; however, these areas are not expected to cause operational concerns along the facility.

7.2.6 Build Alternatives Comparison

The following figures show a comparison of the widening-only and widening with PTSU alternatives in 2045. In the northbound direction, benefits are found primarily in the PM peak period. The PTSU mitigates congestion predicted between the Turnpike interchange and the toll plaza during both peak hours. **Figure 50** shows the speed contours for the Build and PTSU scenarios for the northbound direction in the AM and PM peak hours.

Table 13 summarizes a side-by-side comparison of key performance metrics. The PTSU scenario results show improvements over the build in key performance metric areas such as average facility travel times, average speed, maximum D/C ratio, vehicle hours of delay, and vehicle miles traveled. These benefits shown with the PTSU are expected in both peak hours.

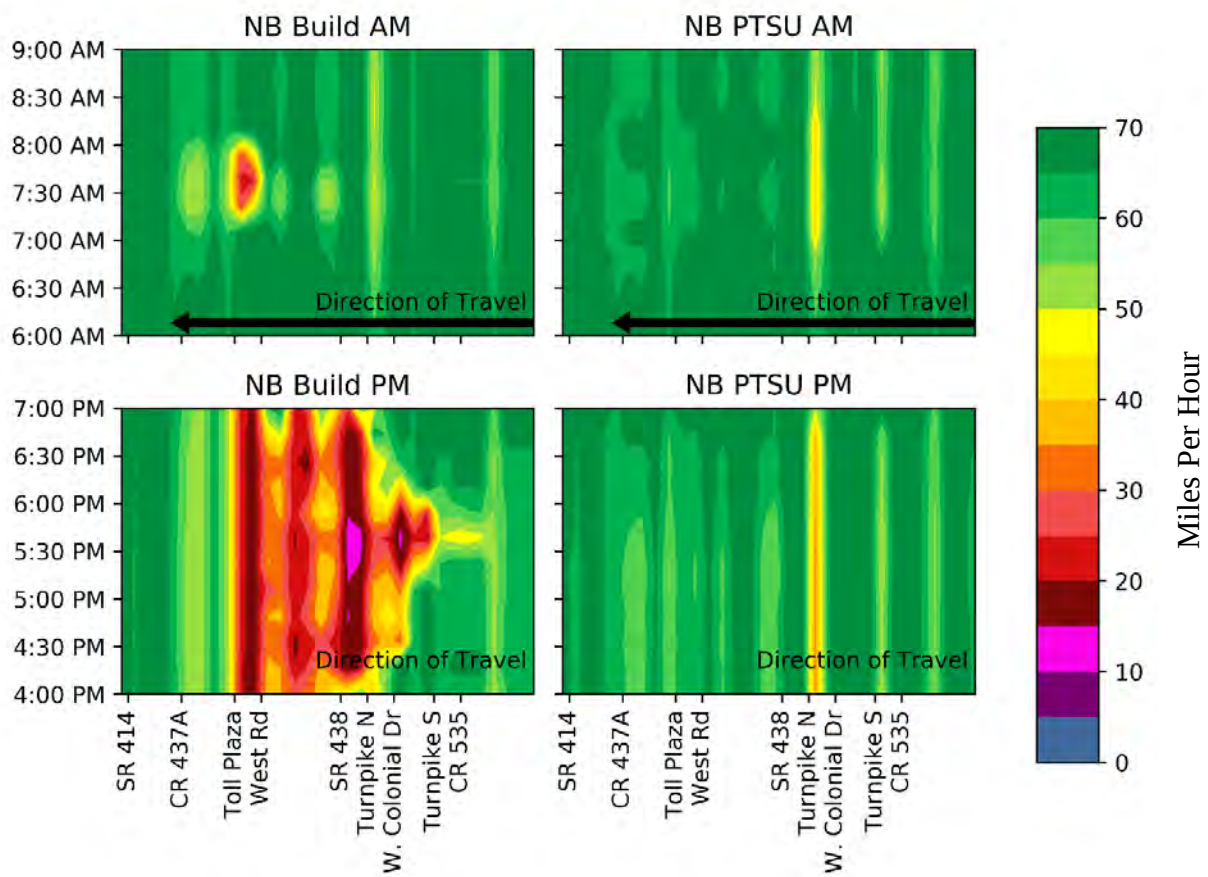


Figure 50: Comparison of 2045 Results – Northbound

Table 13: Comparison of 2045 Results – Northbound

Performance Metric	Build - Widening			Build – Widening + PTSU		
	All Day	AM	PM	All Day	AM	PM
Length (mi)	13.9					
FFS Travel Time (min)	11.9					
Average Travel Time (min)	13.6	13.7	23.5	12.7	13.4	14.3
Space Mean Speed (mi/h)	63.1	60.8	35.9	65.4	60.6	56.7
Average Density (pc/mi/ln)	15.2	23.9	45.3	12.4	19.9	26.0
Max D/C	1.14	0.99	1.14	0.90	0.88	0.88
Max V/C	1.00	1.00	1.00	0.90	0.88	0.88
Vehicle Hours Delay (hrs)	10,223	158	2,507	1,205	93	208
Vehicle Miles Traveled (veh-miles / interval)	947,260	66,779	77,546	949,727	66,351	88,516

Figure 51 illustrates the speed contours for the Build and PTSU scenarios during the AM and PM peak hours for the southbound direction. **Table 14** summarizes the key performance metrics for both the Build and PTSU scenarios. The PTSU provides substantial benefit for the southbound direction in the AM, between SR 414 and CR 437A. PTSU in the AM peak hour provides improvements to the average travel time, average speed, vehicle hours of delay, vehicle miles traveled.

It is important to note that the southbound PTSU scenario shows similar and, in some cases, slightly worse operations than the Build scenario for the PM peak hour. The southbound PM PTSU scenario shows an improvement versus the Build scenario in terms of density and maximum D/C ratio. However, it is noted that the average facility travel time and the facility vehicle hours of delay are slightly higher than the Build scenario during the PM peak hour. This is due to the stopping sight distance reductions in speed on two key weaving segments along the southbound facility under the PTSU scenario.

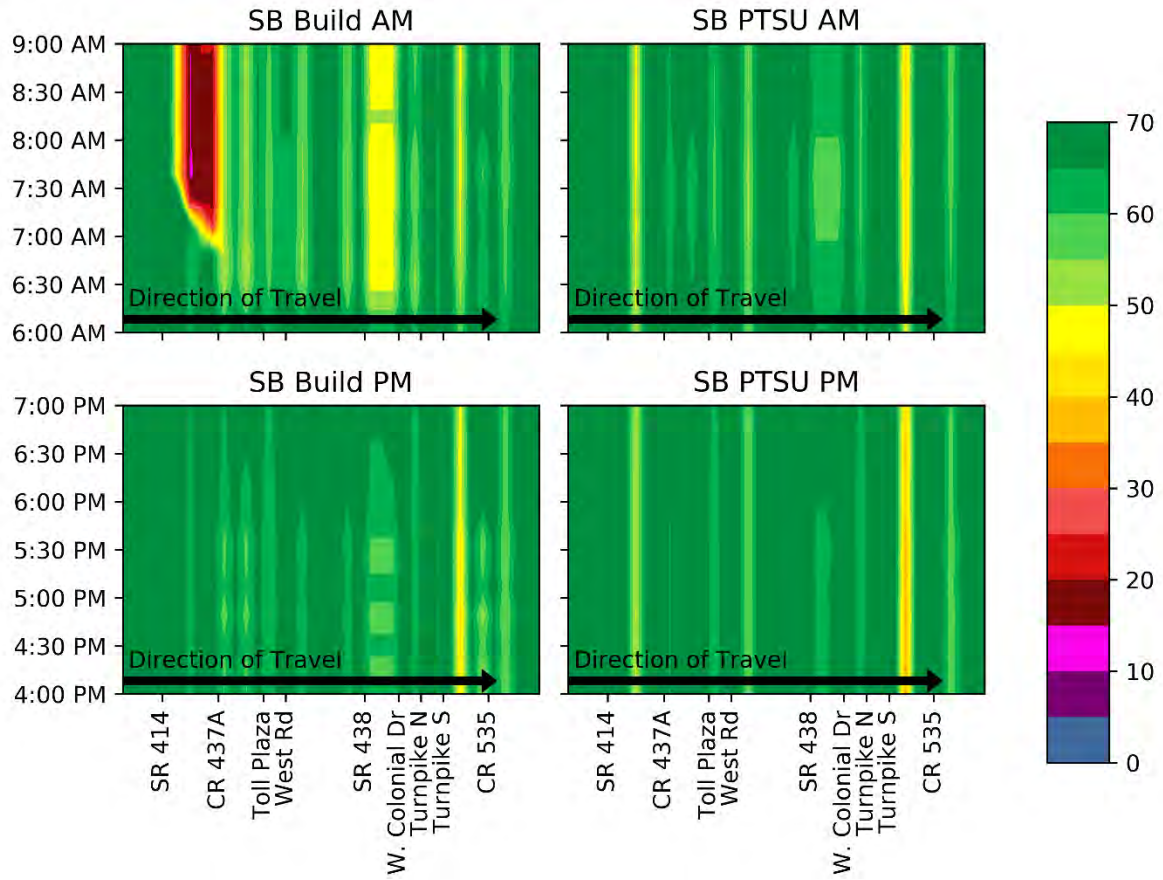


Figure 51: Comparison of 2045 Results – Southbound

Table 14: Comparison of 2045 Results – Southbound

Performance Metric	Build - Widening			Build – Widening + PTSU		
	All Day	AM	PM	All Day	AM	PM*
Length (mi)	13.8					
FFS Travel Time (min)	11.8					
Average Travel Time (min)	13.1	17.0	13.7	12.9	14.0	14.3
Space Mean Speed (mi/h)	63.0	48.3	58.3	63.4	58.3	55.2
Average Density (pc/mi/ln)	13.7	31.8	24.5	11.8	21.2	20.5
Max D/C	1.06	1.06	0.91	0.85	0.85	0.78
Max V/C	1.00	1.00	0.91	0.85	0.85	0.78
Vehicle Hours Delay (hrs)	2,592	635	191	1,645	160	207
Vehicle Miles Traveled (veh-miles / interval)	896,975	70,551	66,793	896,848	72,094	66,793

*Note: The Southbound PM PTSU scenario shows an improvement versus the Build scenario in terms of density and maximum D/C ratio. However, it is noted that the average facility travel time and the facility vehicle hours of delay are slightly higher than the Build scenario during the PM peak hour. This is due to the stopping sight distance reductions in speed on two key weaving segments along the southbound facility under the PTSU scenario.

7.2.7 Future Operational Analysis Summary

The following are the key points identified from the Future Conditions Operational Analysis.

- The No-Build scenario shows severe congestion as early as 2025, showing the need for at least the single-lane widening in the opening year (2025).
- Widening of SR 429 by others south of the southern limits of the study area (from 4-lanes to 6-lanes) will be needed by 2030. Without this widening, southbound queues will extend into the study area and northbound volumes will be metered due to this bottleneck.
- Based on the provided future demand volumes, the analysis indicates that the PTSU is going to show operational benefits if implemented in 2035 and carried through the design year (2045).
- Based on the provided future demand volumes, the analysis shows that PTSU should be activated in the following time periods. These time periods could be used as a starting point when PTSU is used for recurring congestion relief in the future; however, monitoring of the actual volumes for PTSU opening triggers should be done after the widening is implemented.
    - Northbound
        - 7:00 – 8:15 AM
        - 3:15 – 6:15 PM
    - Southbound
        - 6:00 – 9:30 AM
        - 3:45 – 7:15 PM

- During normal recurring congestion operation, the PTSU provides the most benefits in the AM for the southbound direction and in the PM for the northbound direction as these are the peak directions in both peak hours.

7.3 Cost, Schedule, and Procurement Options

The SR 429 PTSU project is unique in that it is being implemented in conjunction with a major roadway widening project estimated to cost $350 million[2]. Some costs typically incurred on PTSU projects – such as patching older pavement on the shoulder – will not be incurred due to the magnitude of roadway work taking place. Other costs may be reduced due to the magnitude of other design and construction activities taking place on the corridor. The FHWA Decision Support Framework and Parameters for D-PTSU report provides estimated cost ranges for key components of D-PTSU projects. **Table 15** uses these costs to estimate the approximate costs of ITS components for SR 429.

Table 15: SR 429 ITS Component Cost

Component	Cost Range[1]	Quantity	Low Cost	High Cost
Gantry structure	$400,000[2]	44	$17,600,000	$17,600,000
Traffic sensors	$5,000 - $20,000	5[4]	$25,000	$100,000
Camera	$10,000-$20,000	88[5]	$880,000	$1,760,000
Incident management DMSs	$160,000-$220,000	19	$3,040,000	$4,180,000
LCS	$130,000-$230,000[3]	44	$5,720,000	$10,120,000
VSL System	$50,000-$250,000	1	$50,000	$250,000
Cantilever structure[6]	$200,000	7	$1,400,000	$1,400,000
ITS Component Total			$28,715,000	$35,410,000

[1]Per FHWA
[2]FHWA provides range for cantilever and gantry structure spanning all lanes. High end of range used to reflect gantry
[3]Cost of a 4-panel system (i.e. LCSs for one gantry). FHWA gives a cost of $100,000 - $170,000 for a 3-panel system
[4]Per section 4.2
[5]Assume 2 per gantry, Actual quantity of cameras will be determined by SR 429 design teams
[6]For static warning signs upstream and downstream of PTSU. Cost estimated as half of a gantry structure.

In addition to the ITS components noted in **Table 15**, other costs associated with PTSU will include the following:

- Systems Engineering activities
- SunGuide software modifications or licenses for commercial PTSU software
- Training of Road Rangers, FDOT and CFX staff, and law enforcement on operating procedures
- Public outreach
- One additional TMC operator per shift
- One additional Road Ranger (person) per shift
- One additional Road Ranger vehicle
- Additional law enforcement

[2] https://www.cfxway.com/wp-content/uploads/2019/07/2020-03-12-Agenda-w_attachments-3.pdf

- Ongoing operation and maintenance of PTSU ITS equipment (costs presented in Section 5.6.4)

As noted in Section 1.1, construction of the three SR 429 widening projects is expected to completed by the end of the 2023 construction season. At this time, a contract to procure and install ITS equipment to operate PTSU is not in place, but the intent is for the system to be operational around the time roadway work is complete.

7.4 System Engineering Plan

Following acceptance of this Concept of Operations Report, CFX will develop a Systems Engineering Plan. This plan will detail software engineering requirements, discuss security needs, present a threat analysis and vulnerability assessment, and discuss training and testing processes. Preparation of the Systems Engineering Plan will require extensive coordination with FDOT District 5 because much of the content will involve processes, hardware, and software in or operated from the RTMC. It may be beneficial to develop a combined Systems Engineering Plan for SR 429 and SR 417 PTSU since RTMC processes and activities for these two projects will essentially be the same.

7.5 Performance Measurement for System Validation

Performance measures provide accountability to the public and enhance communication between the operators and users of the facility. They can aid in setting policy, allocating resources and reporting on results. Outcome measures relate to how well the agencies are meeting their mission and stated goals. These measures enable the agencies to report on the benefits of the facility programs from the perspective of the ultimate customer – the traveling public. Output measures relate to how well the agencies are achieving the specific action items of each goal.

Table 16 provides a performance measurement plan to assess the benefits of the project. This plan will require before and after studies to measure the benefits on an annual basis.

Table 16: Potential Performance Measures for System Validation

Benefits	Performance Measures
Improve Corridor Mobility	Reduce Average Travel Times (in Minutes)
	Reduce Average Vehicle Delays (in Vehicle Hours)
Increase Corridor Safety	Reduce Incident Clearance Times on Corridor (in Minutes Reduce Secondary Crashes (in crashes per year)
Increase Corridor Capacity	Increase Peak Hour Traffic Volumes (in vehicles per hour)

8. Notes

There are no notes at this time.

9. Appendices

There are no appendices at this time

10. Glossary

The following terms are used in this document and have the meanings indicated here:
DCS = Data Collection Sensor. An Automatic Vehicle Identification system used to read encrypted E-Pass tags in vehicles that pass by data collection sites. This information is used to calculate travel times throughout the system.
D-PTSU – Dynamic part-time shoulder use. A type of part-time shoulder use in which the shoulder is opened to vehicles in response to real-time traffic conditions
LCS = Lane Control Signal. Dynamic (electronic) signs placed above each lane that indicate if the lane is open, closed, or closing. Traditional LCSs are blank-out signs that only can display certain indications such as a green arrow, red X, or yellow X. SR 429 will use small dynamic message signs (DMSs) will full color displays, but they will generally display green arrows, red Xs, or yellow Xs.
PTSU – Part-time Shoulder Use. A transportation systems management and operations strategy that allows use of the left or right shoulder as a travel lane during some, but not all, hours of the day.
RTMC – the FDOT District 5 Regional Traffic Management Center. CFX does not have their own TMC and operates their facilities from the RTMC through a longstanding agreement with FDOT
SSD – Stopping Sight Distance. The distance required for a driver, travelling at certain speed, to perceive the need to stop, apply brakes, and come to a complete stop.
TMS = Traffic Monitoring Sensor. A side fire Microwave Vehicle Detection Sensor which is used to determine speed, volume and capacity of vehicles on the lane by lane basis throughout the system.

DOCUMENT REVISION HISTORY			
Version Number	**Approved Date**	**Description of Change(s)**	**Created/ Modified By**

Appendix AC

CFX

PTSU Draft Schedule

This appendix is under development