

**ANNUAL  
REPORT**  
FY 2021–2022  
**MOVING  
FORWARD**



FLORIDA DEPARTMENT OF TRANSPORTATION, DISTRICT SIX  
Transportation Systems Management and Operations







## A MESSAGE FROM THE DISTRICT SIX SECRETARY



**Stacy L. Miller, P.E.**  
District Six Secretary  
Florida Department  
of Transportation

Fiscal year (FY) July 2021 through June 2022 provided the opportunity to reflect on the last few years and strengthen our commitment to the task at hand; providing a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity and preserves the quality of our environment and communities. The SunGuide Transportation Management Center (STMC) shifted its emphasis toward getting back to business and providing transportation innovations. This fiscal year the STMC saw a return to normal traffic volumes, resumption of seasonal events, and continuance of managing traffic incidents.

One sign that life and traffic were returning to normal was an increase of special events. The STMC staff helped coordinate an influx of tourism traffic from the college spring break season to several auto racing events. Besides many professional and college football games, Hard Rock Stadium hosted the first Formula 1 Miami Grand Prix. The Grand Prix was an international event generating significant traffic over three days and will be held annually for the next 10 years. STMC had staff onsite providing information on traffic congestion and related event maintenance of traffic. STMC staff regularly joins forces onsite with the Florida Highway Patrol (FHP), Florida's Turnpike Enterprise, Miami-Dade County Department of Transportation and Public Works (DTPW) Traffic Signals & Signs Division, and other local law enforcement agencies to facilitate transfer of information and management of traffic. This also reinforces the partnership of these agencies and benefits the Traffic Incident Management (TIM) teams.

The district moved forward with enhanced safety for wrong way driving; a statewide initiative is spearheading the installation of wrong way detection systems (WWDS) at critical freeway off ramps. The WWDS detects wrong way vehicles at the off ramp, provides visual alerts to encourage the wrong way vehicle to turn around, and sends alerts to the STMC. The goal is to prevent wrong way vehicles from entering the mainline freeway. The first two WWDS were deployed along SR 826 at the southbound off ramps to SW 40th Street and SW 56th Street. Early next fiscal year, two more WWDS will be operational along I-95 at NW 95th Street. Another project will be installing WWDS at 11 more off ramps. Ultimately the district plans to have over 80 WWDS deployed in the next few years.

Arterial operations continued to move forward with its innovative connected vehicle project, Keys Connecting Overseas to Advance Safe Travel (Keys COAST). The design phase is underway and construction began in February 2023 for this design-build project. This will be the first connected and automated vehicle (CAV) project in District Six. TSM&O staff has been working hard on securing important stakeholder involvement and fostering regional coordination. Several local agencies will be participating in this pilot project using onboard units (OBUs) in fleet vehicles. The OBUs provide probe data to the system and traffic information to the user.

Incident management resources resumed providing services such as fuel and water to stranded motorists. Road Rangers and Incident Response Vehicles (IRV) personnel work tirelessly for the motoring public, clearing traffic incidents to minimize disruption to the normal traffic flow. Our roadway incident clearance time this fiscal year averaged 30.2 minutes, representing a 40% reduction over the 2005 baseline of 50 minutes. Road Rangers responded to over 57,700 activations this past fiscal year.

Our TSM&O community outreach staff assisted with our Move Over Law press event. This event provided an opportunity for the news media to hear from District Six staff, FHP, and Road Rangers on how important it is for the public to recognize first responders and move over to keep them safe. The focus of the event was to stress that everyone wants to be safe and return home to their families. This was emphasized during Crash Responders Safety Week from November 8 through 14, 2021 where the community outreach staff created messages for multiple social media outlets.

In the coming year, we are excited for new projects to increase safety and mobility as we continue to provide traffic management and data dissemination for the community. I invite you to learn about the TSM&O office and how the district is keeping transportation in southeast Florida moving forward.

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# INTRODUCTION



FDOT District Six TSM&O

The theme for this year's annual report is Moving Forward. The District Six TSM&O office and its STMC has been ready to move past the pandemic and focus on providing its traffic services to the motoring public and the community.

FY 2021–2022 covers July 2021 through June 2022. The many programs and services provided by the TSM&O office and the STMC are designed to be flexible to adapt to various traffic conditions whether it is a pandemic, a hurricane, or major sporting events. The STMC continues to serve as a data hub and traffic management resource for first responders. This fiscal year focused on moving forward with innovative ideas and projects to better serve the motoring public.

The STMC is constantly looking to move forward in an everchanging traffic landscape. Improvements in technology, new ways to aggregate and use data, and impacts from social media keep the STMC busy and focused on how to harness these tools. Some of the challenges faced in FY 2021–2022 included public protests along critical freeways, many significant sporting events, an active tourism season from New Year's Day to Memorial Day, and coordination with many neighboring agencies.

Advancements in the Operations Task Manager (OTM) software were made available to other Florida Department of Transportation (FDOT) districts as OTM has been shared with other regional Transportation Management Centers (TMCs). District Six continues to move forward with enhancements to OTM's useful modules. Our software engineers incorporate options to be user friendly and adaptable to the other TMCs.



# FLORIDA DEPARTMENT OF TRANSPORTATION TSM&O



## **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.

Managing traffic generated by various social and special events is something that the STMC has in common with local agencies. It is important to maintain good communication and coordination with our partners for situational awareness and incident management assistance. The STMC continued to coordinate with one of its regional partners, the City of Miami Beach, during the college spring break season and Memorial Day weekend. Other events like the Formula 1 Miami Grand Prix, college and professional football games, and racing events in Homestead are excellent opportunities to partner with local agencies.

Several other significant initiatives were accomplished:

- Migrated the traffic control devices in the Monroe County Traffic Signal System from cellular to wireless communication.
- Developed software to assist with TMC functions.
- Continued progress on the Keys COAST CAV project.
- Moved forward with upgrading the traffic controllers for ramp signals.
- Implemented WWDS.
- Began southbound capacity improvement project for SR 826 and Palmetto Express.

This FDOT District Six TSM&O Annual Report 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 manages planning, design, and procurement

of ITS equipment, including cameras, dynamic message signs (DMS), vehicle detectors, arterial systems, and communications.

**STMC Operations.** The STMC provides the central location and clearinghouse for data collection and dissemination. It is the command center for managing traffic incidents and provides proactive operations through express lanes, ramp signaling, arterial operations, and other active traffic management strategies.

**Incident Management.** The STMC dispatches Road Rangers and other incident management resources to safely and quickly clear lane-blocking events and assist 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.** IT/ITS staff maintains the indoor STMC IT system and outdoor ITS devices, and provides software support to ensure system availability and stability.

**Traveler Information.** This essential system provides real-time traveler information through various sources such as internet, smartphone applications, and social media to keep the motoring public informed.

This is the 17<sup>th</sup> edition of District Six's TSM&O Annual Report. The report contains informative details about the TSM&O program. We welcome you to read on and learn how District Six is moving forward with new traffic management systems and how they help the southeast Florida multimodal transportation infrastructure.

# ITS DEPLOYMENTS

The TSM&O office continues to move forward with installing and integrating new ITS devices along its system. A healthy device replacement program keeps the overall system up to date. A summary of FDOT District Six TSM&O projects in progress or completed during FY 2021–2022 follows.

**I-395/SR 836/I-95 Design-Build Project.** The I-395/SR 836/I-95 design-build project continued moving forward during FY 2021–2022. This project began in January 2019 and is expected to be completed in summer 2026. This project completely reconstructs the existing interchange and much of SR 836 to the west and I-395 to the east. There are ITS and incident management improvements with this complex project. Many of the existing ITS devices need to be relocated for the roadway construction. New ITS devices will be added as the elevated infrastructure takes shape. For more information, visit the [project website](#).

**Districtwide ITS Replacement Project (Miami-Dade and Monroe Counties).** The TSM&O office advanced its ITS replacement project initiatives this year. A project that started in July 2021 is replacing 26 DMS throughout the district with new color LED full-matrix signs. Completion is expected in July 2023.

**SR 826 Southbound Capacity Project.** This project began in April 2022 and is modifying southbound SR 826 between NW 103<sup>rd</sup> Street and I-75. Key elements of the project are increasing capacity for the general purpose lanes, reducing Palmetto Express to one lane in the area, relocating the southbound ingress south of NW 122<sup>nd</sup> Street, and widening SR 826 between NW 103<sup>rd</sup> Street and NW 122<sup>nd</sup> Street. The project will also enhance the ITS devices in the area to accommodate the new roadway configuration. This project is expected to be



*Installing segment for Signature Bridge Arch*

complete in summer 2024. For more information on this project, please visit the [project website](#).

**Wrong Way Detection System (WWDS) Projects.** This fiscal year saw the completion of the first WWDS in the district. These were deployed at the SR 826 southbound off ramps to SW 40<sup>th</sup> Street and SW 56<sup>th</sup> Street. The WWDS consists of video detection, infrared detection, and flashing wrong way signs. The second project is underway installing WWDS at the I-95 northbound and southbound off ramps to NW 95<sup>th</sup> Street. This project is expected to be completed at the beginning of FY 2022–2023.





*WWDS along southbound I-95 off ramp to NW 95<sup>th</sup> Street*

**Wireless System Along US 1.** The TSM&O office implemented an in-house project to migrate the cellular communication for the Monroe County Traffic Signal System (MCTSS) to wireless communication. The TSM&O office was able to take advantage of the recently installed high-bandwidth microwave backbone traversing most of US 1/Overseas Highway in Monroe County. The result is a cost-efficient and reliable communication system covering all ITS and traffic signals from the City of Key West to Key Largo.

**Golden Glades Multimodal Transportation Facility.**

This design-build project was completed this fiscal year. This project converted the existing Park-and-Ride lot in the Golden Glades Interchange, transforming it and the surrounding area into a multimodal transportation facility. This project took advantage of the diverse modes of transportation available in this area (Tri-Rail, Miami-Dade Transit, Broward County Transit, Greyhound, freight, and direct connection to 95 Express) and provides a transit hub with retail accommodations. ITS devices were added, as there is an ingress to southbound 95 Express from the facility. A new incident management area was constructed for Road Rangers to take vehicles for recovery.

**Increase in deployed ITS devices from 2005 to 2022**

ITS DEVICE	2005	2022
CCTV cameras	69	424
DMS	22	202
Detectors	205	520
Ramp signals	0	41*
Traffic signals & control devices	0	49
WWDS	0	2
ASCT cameras	0	106
ASCT intersections	0	31

ASCT = Adaptive Signal Control Technology  
 \* 19 ramp signals along SR 826 are not yet operational



*Incident management area at the Golden Glades Multimodal Facility*

# STMC OPERATIONS

Moving forward for STMC Operations includes taking advantage of newly available technologies and procedures. Operators use standard operating guidelines to handle many different scenarios. As the collector and distributor of information, the STMC needs to have well-defined processes outlining how to receive the data, what to do with the data, and where to send the data.

## ARTERIAL OPERATIONS

**Monroe County Traffic Signal System.** The MCTSS continued to expand and deliver reliable service for its users by migrating the cellular communication system to a wireless system. All traffic signals and ITS devices from the City of Key West to Key Largo are now on the wireless system.

The MCTSS was also expanded by adding a new signalized intersection at Burton Drive, and another project is updating seven emergency signals along the US 1/Overseas Highway corridor.

Additionally, Arterial Operations completed a project to add an automated system for the school zone flashing beacons. The system allows remote scheduling to adjust for each school calendar year. The system also provides automatic alerts by text and email for problems such as power outages, malfunctions, and knock downs. Arterial Operations also completed a project to integrate six High-Intensity Activated Crosswalk (HAWK) pedestrian beacons along the corridor into the MCTSS.

The results of the effort and coordination for the MCTSS can be demonstrated in the continued reliability of the system. During FY 2021–2022, the traffic signals in the MCTSS were available 99.8% of the time, traffic signal controllers were available 99.7% of the time, and traffic detection was available 99.9% of the time.

## SW 8<sup>th</sup> Street Adaptive Signal Control

**Technology.** The ASCT pilot project forged ahead, completing its fifth year of operation along SW 8<sup>th</sup> Street, covering 30 intersections from SW 142<sup>nd</sup> Avenue to SW 67<sup>th</sup> Avenue. The ASCT corridor continued to show improvement when compared to the baseline year of 2016. The end of the fiscal year showed that peak period travel times improved in the range of 8% to 14%, and peak period total delay was reduced in the range of 15% to 27%. The ASCT system optimizes the signal timing patterns of individual signalized intersections, based on real-time data, while improving the traffic flow throughout the corridor.

STMC arterial operators monitor the ASCT system, record motorist comments, track equipment availability, open failure tickets to deploy maintenance resources, and coordinate signal timing changes with Miami-Dade County. Arterial Operations staff coordinates directly with Florida International University (FIU) for traffic signal timing concerns during special events at the university.

**Traffic Signal Retiming.** The District Six TSM&O office has an active traffic signal retiming program. The program covers Miami-Dade and Monroe Counties. It identifies and prioritizes candidate arterial segments, performs traffic data collection, and develops new signal timing plans. The goal of the program is to make sure that the arterial signal timing plans are updated for the ever-changing regional traffic patterns. During FY 2021–2022, the TSM&O office completed the retiming for 373 traffic signals. The district retimed an annual average of 367 traffic signals over the last five fiscal years.

**Traffic Signal Maintenance and Compensation Agreement.** There are approximately 2,800 traffic signals in Miami-Dade County. Of those, approximately 1,300 are on state roads. FDOT



District Six is responsible for the traffic signals on its state roads but works with the county through the Traffic Signal Maintenance and Compensation Agreement (TSMCA). The TSMCA is a mutual agreement between FDOT and Miami-Dade County to compensate the county for operating and maintaining the traffic signals on state roads. These traffic signals are operated by the county's traffic signal system and maintained with the county's resources. The TSM&O office has made significant strides in streamlining the process and ensuring that the state's traffic signals are well maintained.



**Arterial Diversion Routes.** The Miami-Dade TIM team established incident management diversion route plans for major incidents along the region's freeways. Most of the diversion routes move traffic to another freeway. A handful of diversion routes have no other alternative than to detour traffic onto the arterial system. This influx of traffic degrades the signal system's ability to manage traffic. The Arterial Operations team took those diversion routes to develop specialized signal timing plans. This is a joint effort between Miami-Dade County and District Six. Phase 1 includes the diversion route for northbound I-95 at the Golden Glades Interchange. Data collection is complete, and signal timing plans are being developed. Phase 2 covers the following routes:

- I-95 northbound before SW 8<sup>th</sup> Street
- SR 826 northbound before SW 88<sup>th</sup> Street
- I-195 westbound at Alton Road
- I-395 westbound at Alton Road

### MANAGED LANES OPERATIONS

The STMC continued to operate and maintain three managed lane corridors.

**95 Express.** The STMC operates 21 miles of 95 Express from SR 112 to I-595 and is completing its 13<sup>th</sup> year in operation. The challenge for 95 Express has been ongoing construction projects at the north

and south termini. The I-395/SR 836/I-95 design-build project caused a reduction of the corridor length at the south end. This should be restored in the first quarter of 2023. Phase 3 construction of 95 Express at the north end continues from the Miami-Dade/Broward County line. The adjacent portion of that project, Phase 3C, is expected to be completed in 2025.

**Palmetto Express and 75 Express.** The SR 826 southbound capacity project began construction in April 2022. This project will modify SR 826 and Palmetto Express between NW 103<sup>rd</sup> Street and I-75. This project does have an operational impact on how Palmetto Express is managed. This will continue until the project is complete, which is expected mid-2024.

### RAMP SIGNALING OPERATIONS

Ramp signals along I-95 moved into its 12<sup>th</sup> year of operation and continues to be a critical tool for managing traffic along this corridor. There are 22 ramp signals along both directions of I-95 from NW 62<sup>nd</sup> 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.

SR 826 has 19 ramp signals at on ramps from NW 25<sup>th</sup> Street to NW 154<sup>th</sup> Street that were installed as part of the Palmetto Express project. These ramp signals are not yet operational. They will be activated after the SR 826/Palmetto Expressway Capacity Project is completed in 2024.



## SOFTWARE ENHANCEMENTS

STMC Operations software development moved forward with a focus on improving efficiencies within the STMC. A new module, the Purchase Tracker Module (PTM), was added to OTM. PTM simplifies the purchasing process for the TSM&O office by managing quotes, tracking payments, and summarizing reports based on the various funding sources.

The software development team continues to be active with the Statewide Express Lanes Software (SELS) and its change management team. The FDOT Central Office will be developing the next generation SELS application, and has chosen a development team for the task. District Six software engineers have been asked to provide advice and input in the development of "Next Gen 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 2021–2022, STMC Operations staff continued to exceed those targets, thanks to quality control procedures and dedicated staff who provide continual guidance and training to operators with assistance from OTM. Overall events increased by 0.4%, but lane blockage events decreased by 8%. The lower number of lane blockage events could be attributed to lower traffic volumes during the first half of the fiscal year.

Figure 1 shows the number of events during FY 2021–2022 compared to previous fiscal years. STMC operators managed 52,300 total events and 20,700 lane-blocking events during FY 2021–2022. Figure 2 summarizes performance measures for FY 2021–2022.

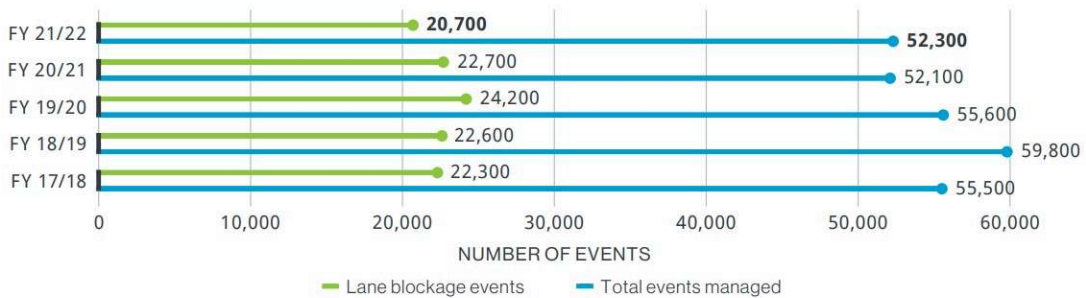
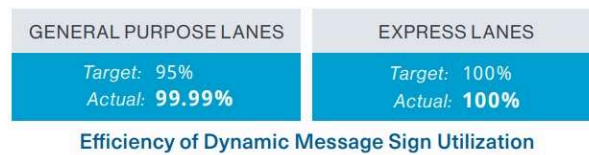


FIGURE 1. FDOT District Six events managed



FIGURE 2. Performance measures



# INCIDENT MANAGEMENT

The District Six TSM&O Incident Management program made strides getting Road Ranger and Incident Response Vehicle (IRV) services back to normal. The Incident Management team prides itself on helping stranded motorists and assisting at crash scenes, but safety is always a priority. Training has focused on the impact of electric vehicles on incident management strategies. Electric vehicles pose a unique challenge when moving them from the road or handling a fire. It is important that moving forward with new technology does not put safety by the wayside.

The IRV and Road Ranger trucks automatically send information using a vehicle-to-infrastructure notification system that transmits a notification to navigation apps such as Waze. The pop-up notification on the navigation apps are a good way to remind motorists to move over when approaching a first responder or crash site.

The Road Rangers, IRV, and the TIM teams work together to help motorists in need and keep traffic moving. District Six hosts two TIM teams: the Miami-Dade TIM and the Monroe TIM. The TIM teams allow partner agencies to collaborate and share information and lessons learned for improved response and recovery scenarios. The primary goal, other than being focused on safety, is to support the Open Roads Policy by clearing travel lanes of incidents as quickly and safely as possible. This is shown in our average roadway clearance time of 30.2 minutes (Figure 3) which is a 40% reduction since the benchmark of 50 minutes in 2005.

**TIM.** The second half of the fiscal year focused on returning to in-person meetings. Even though attendance significantly increased with virtual meetings, having group discussions and one-on-one interactions really help to showcase the team



*Incident management along I-95*



**FIGURE 3. Average annual roadway clearance duration** mentality and camaraderie. The District Six TSM&O office maintained its schedule of established meetings: two joint regional meetings, two meetings in Monroe County, a 95 Corridor meeting, and a Palmetto Corridor meeting. The intent of the 95 and Palmetto Corridor meetings is to create a smaller forum style meeting that will focus on the unique traffic concerns along these corridors and parts of Miami-Dade County.



**Road Rangers.** Despite being ready to become more involved with helping motorists, Road Rangers still face many challenges. There has been a significant effort to reinforce and increase awareness of the state's Move Over Law. This law requires vehicles to either move over one lane or slow down to 20 mph below the posted speed limit for stopped law enforcement, emergency, sanitation, utility service vehicles, and tow trucks.

Road Rangers provide incident response and motorist assistance along I-95, I-75, SR 826, I-195, I-395, the MacArthur Causeway, and all express corridors. In 2013, the TSM&O office added a heavy-duty wrecker to the Road Ranger program to help with relocating disabled heavy vehicles such as buses, transit vehicles, and box trucks.

More than 90% of Road Ranger assists are for maintenance of traffic (MOT), repair, or clearance services (includes tows, car pushes, and motorist transports).

**Incident Response Vehicles.** District Six's IRV program continued operation with seven active IRV trucks covering 95 Express, Palmetto Express, and 75 Express. IRV operators responded to 616 events and provided 3,218 assists during FY 2021–2022. IRV operators, along with the Florida Highway Patrol (FHP), Road Rangers, and other responders, contributed to keeping 95 Express open and available for use 97.0% of the time and Palmetto Express/75 Express open for use 98.8% of the time during the fiscal year. The average travel lane blockage duration for 95 Express was 28.6 minutes in the northbound direction and 31.9 minutes in the southbound direction. The average travel lane blockage duration for Palmetto Express and 75 Express was 22.1 minutes in the northbound



*RISC event involving a concrete truck along I-75*

direction (southbound was not included due to ongoing construction).

**Rapid Incident Scene Clearance (RISC) Updates.**

RISC is an incentive-based program for the rapid removal of the more complex incidents that occur along District Six roadways. These incidents would normally require additional time for clearance. RISC supports 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. The coverage also includes US 1/Overseas Highway from Stock Island in Monroe County to Florida City in Miami-Dade County. During FY 2021–2022, the average RISC response time was 56 minutes, while the average RISC travel lane clearance time was 50 minutes. RISC was used 19 times during the fiscal year. The following table summarizes historical RISC response times by fiscal year.

*Historical RISC response times by fiscal year*

RISC PERFORMANCE	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	TARGET
Activation Time	17 m	19 m	27 m	20 m	28 m	--
Response Time	49 m	49 m	57 m	59 m	56 m	60 m
Travel Lane Clearance Time	61 m	60 m	55 m	71 m	50 m	90 m
Total Incident Clearance Time	148 m	141 m	158 m	162 m	151 m	--
Total RISC Events	17	20	28	41	19	--

# IT/ITS MAINTENANCE



*ITS maintenance technician repairing a DMS*

The IT/ITS Maintenance program continued to protect the STMC from cyberattacks and improve its network redundancy and resiliency.

The District Six TSM&O office received high praise from the FDOT Office of Inspector General/Chief Inspector General by passing all aspects of an information security continuous monitoring (ISCM) audit. This demonstrates the importance the TSM&O office places on cybersecurity and securing the network. The IT/ITS Maintenance program has the responsibility of making sure the inside and outdoor network and all connected devices are working. Without this team's diligent stewardship, the STMC would not be able to carry out its traffic management and data dissemination tasks.

IT staff completed the first phase of the improvements to the Layer 3 communications

network by migrating to new switches. This effort required significant coordination between IT staff and the ITS Maintenance contractor.

The ITS Maintenance contractor has a critical role in making sure the field equipment is working correctly. The ITS Maintenance contractor responds, troubleshoots, and repairs ITS field devices to keep TMC Operations going. During FY 2021–2022, the ITS Maintenance team managed more than 2,000 critical trouble tickets and more than 3,400 tickets overall, which includes field equipment maintenance by contractors on active construction projects.

The ITS Maintenance team working in close coordination with TMC Operations completed the migration of the communication system for the MCTSS and ITS devices in the Florida Keys from cellular to wireless communication. TMC



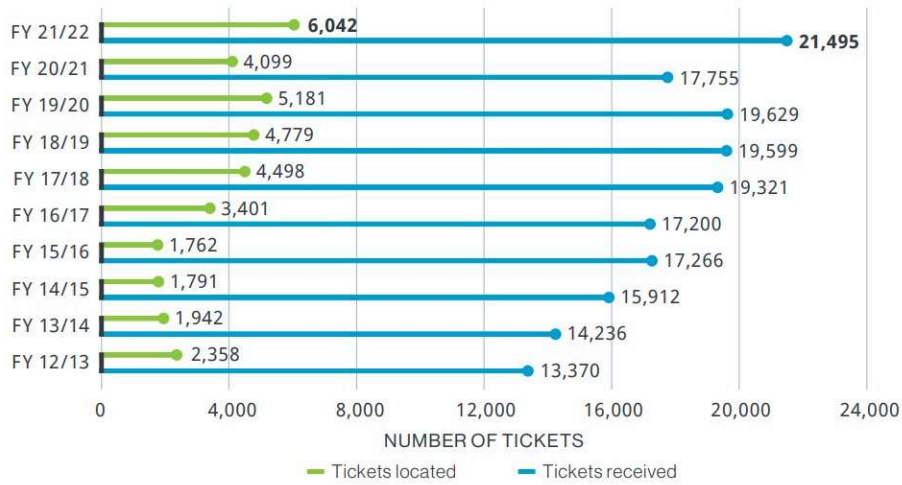
Operations developed concept plans for a wireless system utilizing the Florida ITS Operations Network (FION) microwave backbone. The ITS Maintenance team then used the plans to procure and install the equipment. It was important to complete the work before the Keys COAST project started field construction, and the team met this critical deadline.

The MCTSS geographic coverage area of 105 miles does provide a challenge for our maintenance services. Our ITS Maintenance contractor has staff that reside in the Florida Keys, which cuts down on response time. Arterial Operations staff work closely with the ITS Maintenance contractor to minimize troubleshooting and repair time.

**Utility Infrastructure Location Services.** The utility locate team plays an important role keeping the system network available. Locating and marking the underground ITS infrastructure of fiber optic cable and electric conductors before digging or construction begins aids in preventing damage by third parties. This was the busiest fiscal year for the utility locate team. 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, 21,495 Sunshine 811 tickets were received, and of those, 6,042 tickets were located. Figure 4 shows the number of locates over the past ten fiscal years.

*Availability of key IT/ITS system components during FY 2021-2022 compared to previous fiscal years*

SUBSYSTEM	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
CCTV	86.7%	93.5%	83.7%	96.2%	97.2%
DMS	87.0%	96.36%	96.8%	97.8%	97.9%
Vehicle Detectors	77.7%	89.9%	84.5%	95.6%	97.2%
Video Wall	98.9%	99.7%	99.9%	99.8%	100%
SunGuide	95.2%	98.5%	98.4%	100%	100%
OTM	99.6%	99.9%	97.5%	99.8%	99.9%



**FIGURE 4. Locate Ticket Summary**

# TRAVELER INFORMATION

This fiscal year, traveler information moved away from pandemic-related information and focused on providing traffic information to the motoring public. The STMC began using color DMS to display graphics (roadway shields and descriptive icons) to enhance the posted message.

DMS are generally used to inform motorists of downstream traffic conditions such as crashes and lane closures. DMS are also used to post messages of regional importance. At the end of the fiscal year, FDOT added “Purple Alerts” to its messaging system. Purple Alerts are for locating a missing person with an intellectual or developmental disability, brain injury, or other physical, mental, or emotional disability.

Other important alerts that the TMC supports include:

- **Missing Child Alert:** for a missing child
- **AMBER Alert:** for a child abduction
- **Blue Alert:** for an injured or deceased law enforcement officer
- **Silver Alert:** for a missing elderly person suffering from irreversible deterioration of intellectual faculties

Those alerts along with public safety announcements, travel times, and construction closures provide the public with vital information. During FY 2021–2022, more than 720,000 messages were displayed on District Six DMS. Figure 5 summarizes the types of DMS messages displayed this fiscal year.

These alerts along with traffic information are distributed in the statewide Florida Advanced Traveler Information System or FL511. District Six publishes traffic event information on [FL511](#) for all motorists using the application. The FL511 application publishes real-time traffic information to the public through its website and smartphone application. FL511 also gathers traffic event information, camera images, and DMS messaging from all FDOT districts.

District Six’s TSM&O website, [sunguide.info](#), provides the same interface to allow motorists to view live feeds of the TSM&O office’s CCTV cameras in Miami-Dade and Monroe Counties. During FY 2021–2022, District Six published over 47,000 traffic event updates to FL511. Figure 6 shows the types of events published on FL511.

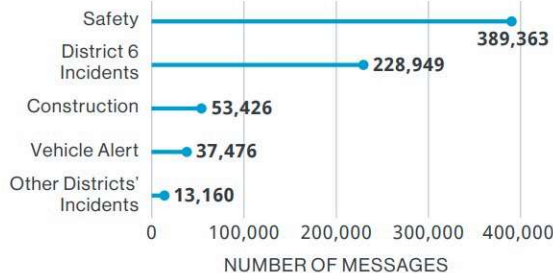


FIGURE 5. Posted DMS messages by type

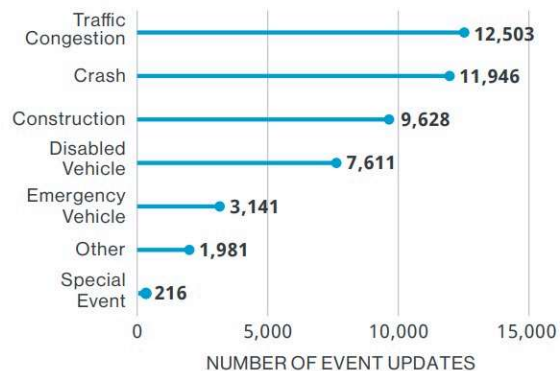


FIGURE 6. FL511 Published traffic information by event type



# PUBLIC OUTREACH

The Public Information (PI) staff was finally able to move forward with doing what they do best: conduct tours at the TMC, participate in media events, and support public outreach efforts. The second half of the fiscal year featured a return to in-person tours. PI staff hosted several tours at the STMC for the following groups:

- Florida International University Student Chapter of the American Society of Civil Engineers
- District Six New Staff
- Metropistas Puerto Rico
- FDOT Take Your Child to Work Day
- FHP Statewide Law Enforcement Radio System Showcase
- Miami-Dade County Transportation Planning Organization (TPO)
- District Six Utilities Staff
- Florida Puerto Rico District Institute of Transportation Engineers
- Indiana DOT and Federal Highway Administration (FHWA) Representatives
- Traffic Incident Management Team and FHP

The PI staff helped organize a joint FDOT/FHP Move Over Law press conference. This event was attended by local media and featured speakers from FDOT, FHP, and the Road Ranger team. The importance of this event cannot be overstated, as it reminds the public of the Move Over Law requiring vehicles to move over a lane or slow down to 20 mph below the speed limit when approaching first responders.

The PI staff produced a video about the District Six TSM&O program. A previous video was made in 2004, so it was due for an update. The new video highlighted all of the functions that happen at the STMC.



*Video produced by PI staff*

The TMC participated in Crash Responder Safety Week (CRSW) during the week of November 8 through 14, 2021. CRSW (formerly known as National Traffic Incident Response Awareness Week) is an FHWA initiative to increase awareness about responder safety. District Six participated by posting related DMS messages and many social media posts highlighting the individuals that help stranded motorists every day.



*Social media posting*

# BENEFITS TO THE PUBLIC



*Move Over Law media event*

The TSM&O office strives to move forward and push the envelope for improving systems, creating efficiencies, and providing innovative solutions for the traffic issues in Miami-Dade and Monroe Counties.

The TSM&O office invests in its infrastructure and staff to keep the overall system and program operational. Annual equipment replacement projects keep the system current and resolve necessary improvements. Preventive maintenance and quick response for repairs ensures the availability of the system. Maintaining a fleet of efficient Road Rangers and IRVs and coordinating with partnering agencies all contribute to quicker clearance of lane-blockage events.

The critical functions of the TSM&O office is keeping the roadways cleared of events so that traffic and freight operations can continue flowing. The effort spent keeping the roadways clear reduces incident

duration and in turn reduces traffic delays and improves safety.

The FDOT District Six TSM&O office's budget for FY 2021–2022 included operating, maintenance, and capital improvement costs for its freeway and arterial operations. One benefit of TSM&O strategies is they are relatively cost efficient when compared to capital costs for road and bridge construction projects.

One tenet of the incident management program is that when delays associated with incidents are reduced, motorists and commercial vehicles save time. These time savings translate directly to a dollar amount when considering user costs of vehicles. As user delay is reduced by the resources deployed by the TSM&O office, the savings have a significant impact. 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 express corridors and the ramp signaling system also contributed to the reduction of delays during peak hours, translating into savings of \$48.1 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 2021–2022 to the total annual operating expenses and capital investments (annualized over 10 years at 7%), the TSM&O program yields \$40.98 in economic benefit for every dollar spent (benefit-cost ratio of 40.98:1).

Figure 7 shows the benefit-cost ratio for FY 2021–2022 and previous years.

**Fiscal Year 2021–2022 Costs**

ITS Operations	<b>\$12,642,029</b>
ITS Maintenance*	<b>\$7,824,120</b>
Road Rangers	<b>\$9,227,404</b>
RISC	<b>\$52,000</b>
FDOT Cost Center Operating Budget	<b>\$2,740,807</b>
Other (Consultants, FTE, FHP, FIU)**	<b>\$33,940,227</b>
<i>Total Annual Operating Costs</i>	<b>\$66,426,587</b>
<i>Total Annualized Capital Costs</i>	<b>\$16,257,055</b>
<i>Total Annual Costs</i>	<b>\$82,683,642</b>

**Fiscal Year 2021–2022 Benefits**

Incident Management	\$3,339,875,340
Express Lanes / Ramp Signals	\$48,162,887
<i>Total Benefits</i>	<b>\$3,388,038,227</b>

\* Includes express lanes ITS maintenance and express lane tubular marker repair  
 \*\* Includes Florida's Turnpike Enterprise operational costs for express lanes in Miami-Dade County (District Six)

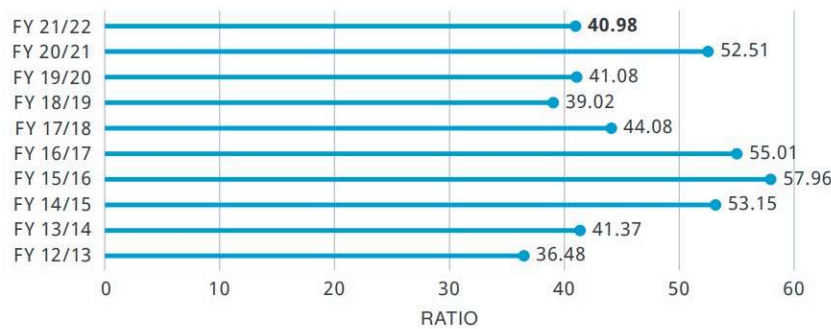


FIGURE 7. Benefit-Cost Ratio

# A LOOK AHEAD

Keeping a focus on moving forward inspires the TSM&O office to find innovative solutions to everyday traffic issues. Creating diversion route plans and improving network performance are relatively small efforts yielding significant positive results. However, it does take larger projects to expand the system, invest in technology, and provide the tools for the TSM&O office to keep providing benefits to the region's transportation users.

FY 2022–2023 will bring challenges as traffic continues to return to pre-pandemic levels, but the District Six TSM&O office will continue to make advances and implement ideas to manage traffic in the southeast Florida region. The following projects are in progress or planned for FY 2022–2023.

## Express Lanes Projects.

Projects along the express lane corridors continue to



focus on improvements to the existing system. Work will continue next fiscal year on the southbound capacity improvement for Palmetto Express. Estimated completion is mid-2024.

**ITS Device Replacement Projects.** Another ITS device replacement project will start next fiscal year. This project will replace seven freeway DMS, seven arterial DMS, and four permanent generators for communication hub buildings. Construction is expected to be completed in mid-2024.

## Keys COAST.

The Keys COAST project is moving forward next fiscal year with construction anticipated to start in early 2023. The Keys COAST project brings connected vehicle technology to the Florida Keys along US 1/Overseas Highway. The project will take advantage of existing



traffic signal controller improvements to provide signal phasing and timing (SPaT) information and introduce automated traffic signal performance measures (ATSPM). Applications include pedestrian and cyclist safety, vehicle-to-vehicle communications (V2V), drawbridge management, emergency vehicle preemption, freight signal priority, transit signal priority, and freight vehicle weigh-in-motion. The project is anticipated to be completed in mid-2023.

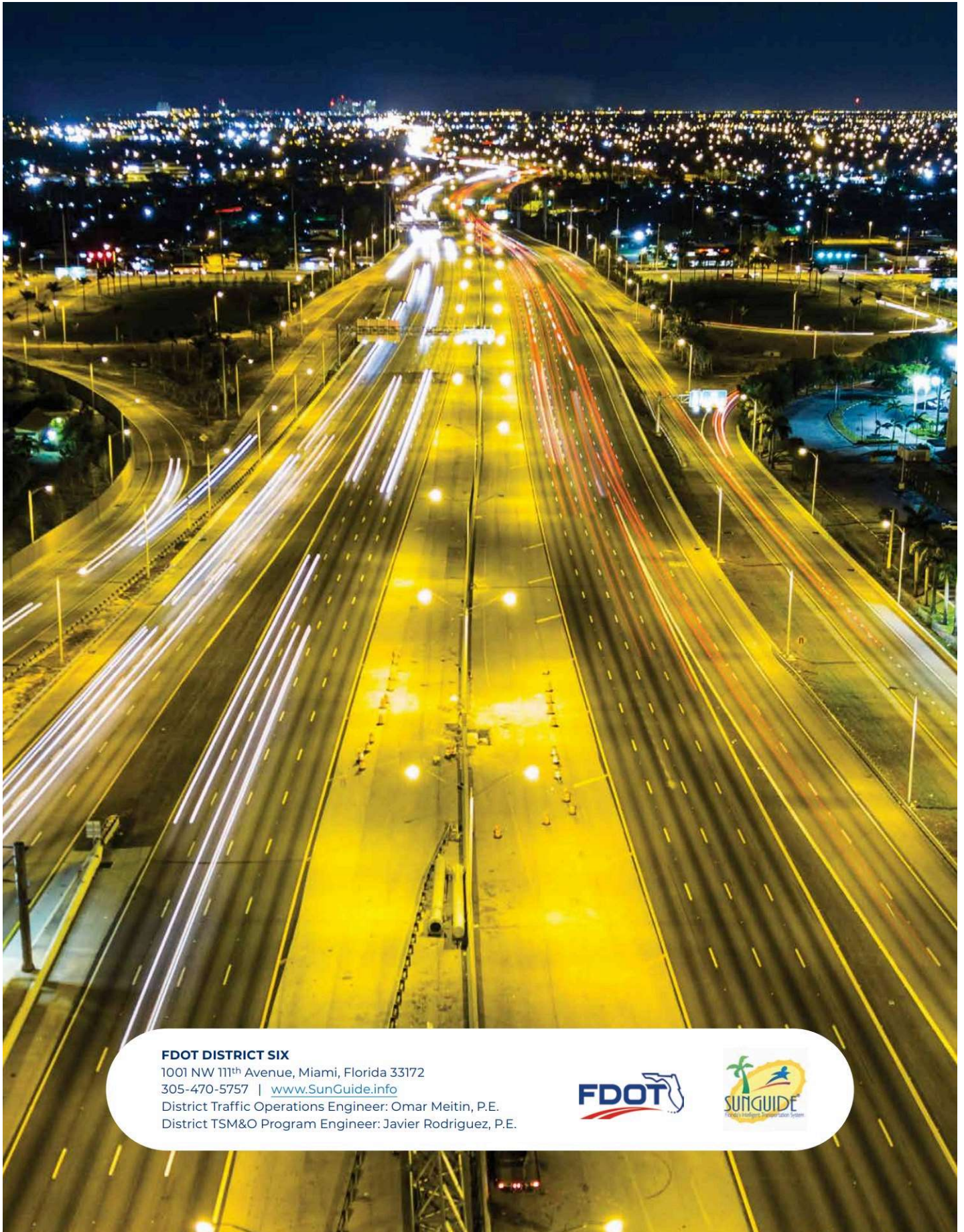
**Wrong Way Driving Countermeasures.** This design-build project will install WWDS at 11 on ramps along I-95, I-75, I-195, and SR 826. The WWDS will be integrated and operated at the STMC. Construction is expected to be completed at the end of 2023.

## US 27/SR 25/Okeechobee Road Projects.

Five projects over seven segments will bring vital roadway and traffic signalization improvements to the Okeechobee Road corridor from SR 826 to the Miami-Dade/Broward County line. This strategic corridor has a significant amount of commercial vehicle traffic and is a major cross-county connector. This is a large undertaking, and the entirety of the project is expected to be complete in 2032

**SR 997/Krome Avenue TSM&O Infrastructure Deployment.** Following on the heels of Keys COAST, the next TSM&O project will be along Krome Avenue. This project is currently in the planning stages. It will cover 34 miles of Krome Avenue from Campbell Drive to Okeechobee Road. Krome Avenue is considered a Strategic Intermodal System Corridor, a Statewide Arterial Management Program Priority Corridor, and an emergency evacuation route. The goal is to improve safety and mobility along the corridor by deploying a fiber optic backbone, CCTV cameras, arterial DMS, traffic detection, and other TSM&O strategies.





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