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SUNGUIDE®
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CELEBRATING 20 YEARS OF THE DISTRICT SIX TRANSPORTATION MANAGEMENT CENTER

ANNUAL REPORT

Fiscal Year
2023–2024

SUNGUIDE TRANSPORTATION MANAGEMENT CENTER
20 YEAR ANNIVERSARY

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

A MESSAGE FROM THE DISTRICT SIX SECRETARY

I am delighted to recognize the 20th anniversary of the SunGuide Transportation Management Center (STMC). What started as a building to support District Six's growing Intelligent Transportation Systems (ITS) program has grown into a regional information hub working to manage traffic in southeast Florida. The district began building ITS infrastructure in the early 1990s. In 1997, the Intelligent Corridor System (ICS) project installed the first fiber optic cable backbone along 17 miles of I-95 including cameras, video traffic detectors, and dynamic message signs (DMS). The second phase continued the installation of additional devices, culminating with a third and final phase — the construction of the STMC — which opened its doors on June 25, 2004.

The operations control room at the STMC began with eight workstations and was expanded to 18 workstations in 2015, anticipating growth from Palmetto Express, 75 Express, and arterial operations. In addition to housing today's Transportation Systems Management and Operations (TSM&O) Office, the STMC is also the site of several co-located agencies, including dispatch for the Florida Highway Patrol (FHP) Troop E and the Greater Miami Expressway Agency (GMX) TMC. We welcomed the City of Miami Beach TMC in February 2024.

In June 2024, we completed the construction of the Keys Connecting Overseas to Advance Safe Travel (Keys COAST) pilot project along US 1 in Monroe County. This new technology allows connected vehicles to communicate with roadside units installed along busy US 1 and receive important road travel information. The effort continues with implementation of more advanced technology to achieve the full potential of Keys COAST.

The dedicated staff at the STMC continued coordinating and providing onsite support for numerous events at the Hard Rock Stadium and Homestead Speedway, including concerts, college and professional football games, international soccer games, car races, and more. Along with sharing camera video feed and traffic event information, STMC staff provides real time information to the event coordination teams to alleviate traffic entering or exiting the venues.

Planning is already underway for the 2026 World Cup. As a host city, Miami will welcome seven World Cup games including the bronze final match. In preparation for the arrival of soccer fans from around the world, our onsite STMC staff is already underway,

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

collaborating with our transportation partners, including FHP, Miami-Dade County Department of Public Works Traffic Signals and Signs Division, Florida's Turnpike Enterprise, and other local law enforcement and rescue agencies.

Over the past 20 years, participation in our Traffic Incident Management (TIM) teams has increased, making operations more efficient and safer. We support two TIM teams in Miami-Dade County and Monroe County which collaborate to share lessons learned, changes in incident management policies, information on new and on-going construction projects, and upcoming special events. These meetings also foster important interagency coordination with local, county, and state agencies.

Our incident management resources have provided over 948,000 assists during the last 20 years. Our Road Rangers and Incident Response Vehicle (IRV) operators are frequently the public's main interaction with FDOT. It is comforting to know this service helps so many people in need. Roadway clearance time in FY 2023-2024 averaged 30.9 minutes, representing a 38% reduction over the 2005 baseline of 50 minutes. Road Rangers continue to play a significant role in keeping our roads safe and clear by responding to over 59,000 activations during the past fiscal year.

Our TSM&O community outreach efforts have also evolved over the last 20 years. Initially, community outreach focused on customer service regarding the opening of 95 Express. Today, community outreach staff assist with STMC tours, presentations, social media, agency collaboration, and many other outreach efforts. They play a critical role in planning annual efforts for Crash Responder Safety Week (CRSW) and the Move Over Law press conference. Our staff actively provides content to the District Six Public Information Office for posting on several social media outlets.

In the coming year, we look forward to embarking on new projects and services that will continue to help increase safety and mobility. Congratulations to the STMC and the TSM&O Office for an outstanding 20 years.

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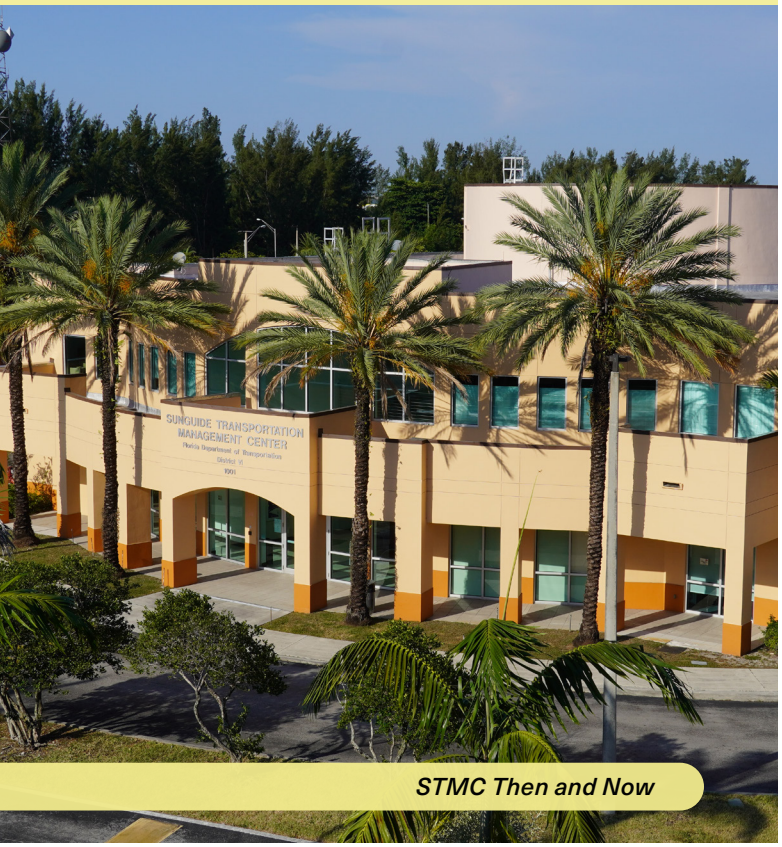


STMC Then and Now

The District Six TSM&O Office is proud to celebrate the 20th anniversary of the STMC. The TSM&O Office has evolved over the years to meet the growing needs of traffic management in the region and the expansion of its services and infrastructure. What started as a one-room operation in the District Six Headquarters grew to a 32,000 square feet building providing traffic management services throughout the southeast Florida region.

Some of the significant STMC milestones are highlighted below.

2004 – STMC opens to the public

2008 – Launches 95 Express

2009 – Launches the Rapid Incident Scene Clearance (RISC) program and ramp signals in Miami-Dade County

2012 – Expands traveler information to mobile traffic applications

2015 – Retrofits the STMC control room to accommodate program growth

2020 – Achieves operations and maintenance of the Monroe County Traffic Signal System

2024 – Completes first connected vehicle project in Monroe County

Over the past 20 years the STMC and its services have resulted in impressive results.

- Managed over 863,000 traffic events
- Managed over 300,000 lane blockage traffic events
- Provided over 948,000 Road Ranger assists
- Posted over 62,000,000 DMS messages

The STMC has played a significant role as it evolved from monitoring the major freeways in Miami-Dade County to becoming a multi-agency information hub for South Florida. The STMC shares data among

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.

its partners including the FHP, FDOT District Four, GMX, Florida's Turnpike Enterprise, Miami-Dade County, Port Miami Tunnel, Monroe County Sheriff's Office, and many others. The STMC welcomed the City of Miami Beach TMC as another co-located agency along with FHP Troop E Dispatch and GMX TMC. These agencies all work together to keep motorists informed, keep traffic moving, and coordinate quick clearance of traffic incidents.

This fiscal year showcased several projects and initiatives that epitomize what the TSM&O Office and its STMC has been striving for over the years. Wrong way detection systems (WWDS) were deployed to more off ramps in an effort to counter wrong way driving. The Keys COAST connected vehicle pilot project in Monroe County will provide enhanced traveler information and traffic management capabilities. The Bridge Notification System (BNS) was expanded to all drawbridges on state roads in Miami-Dade and Monroe counties. The BNS provides information to FL511 when drawbridges are up or down.

This FDOT District Six TSM&O Annual Report aligns with the program's five primary functional areas listed below.

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, 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 19th edition of District Six's TSM&O Annual Report containing informative details about the TSM&O program. We are extremely proud of the accomplishments over the last 20 years. All of this could not be possible without the support of dedicated people keeping the 24/7 operations working every day and striving to constantly improve the processes and technology needed to adapt to changes in traffic. We are excited for what the next 20 years will bring.

ITS DEPLOYMENTS

The TSM&O Office has completed many projects over the last 20 years. The STMC was a milestone project providing not only the center for transportation management but the hub for ITS device testing from new projects and ongoing maintenance. Projects like 95 Express, Palmetto Express, 75 Express, ramp signals, and WWDS have paid off in more reliable, efficient, and safer roadways. A summary of FDOT District Six TSM&O projects in progress or completed during FY 2023–2024 follows.

I-395/SR 836/I-95 Design-Build Project – The I-395/SR 836/I-95 design-build project continued during FY 2023–2024. This project began in January 2019 and is expected to be completed in 2027. It will completely reconstruct 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. Several cameras became operational and are being used by the STMC. Additional ITS devices will be added as the elevated infrastructure takes shape. For more information, visit the project website.

Golden Glades Interchange Project Looking North Along I-95 and at the Golden Glades Multimodal Transportation Facility

Golden Glades Interchange (GGI) Enhancement Project – The GGI Project began in March 2024. The GGI is where I-95, SR 826, Florida's Turnpike, and US 441 converge. This project spans more than 10 miles of roadway and ramps and will enhance regional mobility and reduce travel times by revitalizing this major transportation interchange. The GGI Project will enhance ITS devices, provide additional WWDS, and make significant changes to 95 Express. Project completion is expected in Spring 2029. Visit the project website for more information.

Districtwide ITS Device Replacement Project (Miami-Dade and Monroe Counties) – The TSM&O Office continued its ITS replacement projects this year. The most recent project started in September 2022. The project is replacing 15 DMS, replacing three field generators, adding four traffic detection systems, and replacing DMS confirmation cameras. Project completion is expected in the first quarter of 2025.

Bridge Notification System – The TSM&O Office expanded the BNS to include 12 drawbridges along state roads in Miami-Dade County and the Snake Creek Bridge in Monroe County. Bridge up or down status is received at the STMC and then sent to FL511. Users of the FL511 application can see the status of the drawbridges on a map or receive text and email alerts.

SR 826 Southbound Capacity Project – This project began in April 2022 and is modifying southbound SR 826 between NW 103rd Street and I-75. The main objective of this project is to increase capacity for the general purpose lanes and modify the flyover at NW 103rd Street to allow roadway widening. The project will also add three WWDS and enhance the ITS devices in the area to accommodate the new roadway configuration. This project is expected to be complete in spring 2025. For more information on this project, please visit the project website.

Wrong Way Detection System Projects – The Phase 1 project wrapped up by adding WWDS along 10 off-ramps in Miami-Dade County. The Phase 2 WWDS project is currently under construction and expected to be completed at the end of 2025. This project will add 25 more WWDS. At the beginning of 2025, WWDS from two construction projects will add six more WWDS to the current 14 operational WWDS. Ultimately there will be a total of 95 WWDS installed throughout Miami-Dade County.

STMC Operations Control Room

The following table illustrates the increase in deployed ITS devices from 2004 to 2024.

Increase in deployed ITS devices from 2004 to 2024.

ITS DEVICE	2004	2024
Cameras	69	503
DMS	22	195
Detectors	205	544
Ramp Signals	0	41*
WWDS	0	14

* 19 ramp signals along SR 826 are not yet operational

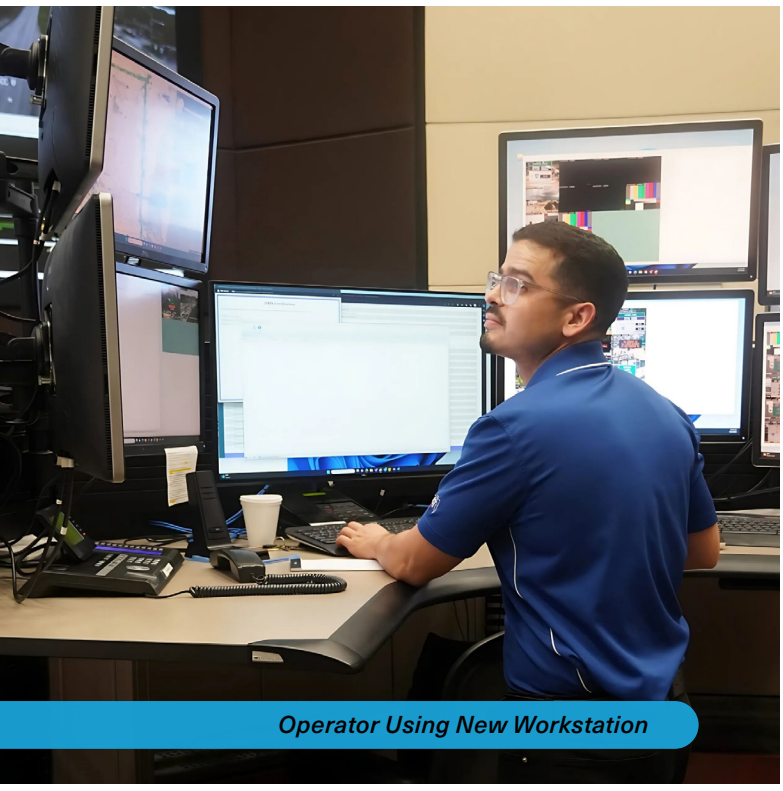
STMC OPERATIONS

STMC Operations has significantly evolved over the last 20 years. Initially, the focus was on I-95 in Miami-Dade County. Operations has grown to cover all major freeways and select arterials in Miami-Dade County and all of US 1 in Monroe County. STMC Operations is what provides traffic management and traveler information services to the motoring public.

FREEWAY OPERATIONS

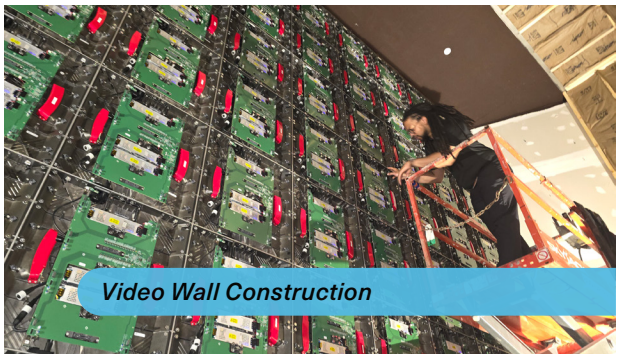
The ITS program began in the mid-1990s with DMS and cameras installed in the Golden Glades Interchange area. In the late 1990s, two ITS deployment projects along I-95 began the fiber optic communication backbone. Today there are hundreds of miles of fiber optic cable and many wireless devices to complete a robust, redundant communication system to connect field devices as far away as Key West to the STMC in Miami.

Control Room Workstations – The STMC improved the ergonomic capabilities of its operations workstations. In August 2023, 18 control room workstations were upgraded to accommodate sit/stand functionality. This allows an additional level of ergonomic comfort for the TMC Operators during the 24/7 operations. This upgrade also included three workstations for the GMX Operators who are co-located in the control room.



Operator Using New Workstation

Video Wall – The STMC installed a new Direct View LED technology video wall. The new video wall significantly increases the resolution of the video images and provides seamless operation. The project started in September 2023 and was completed in June 2024.



Video Wall Construction

95 Express – The STMC operates 21 miles of 95 Express from SR 112 to I-595 and is completing its 15th year in operation. Significant coordination has been occurring with District Four as the 95 Express expansion north of Miami-Dade County into Palm Beach County is nearing completion. The focus is making sure the customer experience along 95 Express is seamless between the districts. The adjacent portion of that project, Phase 3C, is expected to be completed in 2025. Construction continues on the I-395/SR 836/I-95 design-build project at the southern end of 95 Express. The

Golden Glades Interchange Enhancement project began construction in March 2024 and will have significant impacts on 95 Express.

Palmetto Express and 75 Express – The SR 826 Southbound Capacity Project began construction in April 2022 and is expected to be completed in early 2025. This project is modifying SR 826 and Palmetto Express between NW 103rd Street and I-75. This project continues to have an operational impact on how Palmetto Express is managed until its completion.

Ramp Signaling Operations – Ramp signals along I-95 moved into their 14th year of operation and continue to help manage traffic along the corridor. There are 22 ramp signals along both directions of I-95 from NW 62nd 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 signals for 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 25th Street to NW 154th 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 2025.

ARTERIAL OPERATIONS

Arterial Operations did not become a major component of overall STMC Operations until 2017 with the deployment of an adaptive signal control technology (ASCT) system along SW 8th Street. In 2018, the TSM&O Office assumed operation and maintenance of all traffic signals and other traffic control devices in Monroe County north of the City of Key West. This was the beginning of operations for the Monroe County Traffic Signal System. The system was expanded in 2019 with inclusion of the traffic signals in the City of Key West.

Monroe County Traffic Signal System (MCTSS) – The MCTSS continued to deliver reliable service for its users by adjusting signal timing to resolve short term congestion, quickly responding to equipment issues, and addressing motorists concerns and comments.

Traffic Signal Along US 1/Overseas Highway

The Keys COAST project was completed in June 2024. Arterial Operations staff has been actively using the 40 new cameras installed at signalized intersections within the MCTSS. Improvements are being made on monitoring the health of roadside units (RSUs) and onboard units (OBUs) through the Security Credential Management System. Florida International University and the University of Florida have begun an evaluation of the project benefits along the corridor. Operations staff will be coordinating with local agencies for transit signal priority and emergency vehicle preemption functionality.

The results of the effort and coordination for the MCTSS can be demonstrated in the continued reliability of the system. During FY 2023–2024, the traffic signals in the MCTSS were available 99.5% of the time, traffic signal controllers were available 100% of the time, and traffic detection was available 99.5% of the time.

Traffic Signal Retiming – The District Six TSM&O Office has an active traffic signal retiming program covering 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 2023–2024, the TSM&O Office completed the retiming for 107 traffic signals in Miami-Dade County and 34 traffic signals in Monroe County.

Traffic Signal Maintenance and Compensation Agreement (TSMCA) – There are approximately 2,800 traffic signals in Miami-Dade County including over 1,300 on state roads. FDOT District Six is responsible for the traffic signals on its state roads but works with the county through the 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.

SOFTWARE ENHANCEMENTS

Over the years, the software development team at the STMC has made tremendous achievements with applications that help keep the TSM&O Office and the STMC moving efficiently. The Operations Task Manager (OTM) and the Statewide Express Lanes Software (SELS) continue to be utilized by District Six and other districts throughout Florida. The software development team continues to help test the next generation of managed lanes software (Next Gen SELS). This software is anticipated to have phase 1 deployment in 2025. District Six developed the Road Ranger Driver Information System (RRDIS) to help manage the growing service patrol program. Staff information, schedules, vehicles, and vehicle inspections are easily input and summarized for the Road Ranger and IRV teams. FDOT is currently looking to expand RRDIS use in other districts.

PERFORMANCE MEASURES

In December 2007, District Six set targets for key operational performance measures. During FY 2023–2024, 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.

Toll Amount DMS along 95 Express

Figure 1 shows the number of events during FY 2023–2024 compared to FY 2006–2007. In that time frame, there has been a 70% increase in overall traffic events and a 370% increase in lane blockage events. STMC operators managed 57,300 total events and 23,100 lane-blocking events during FY 2023–2024.

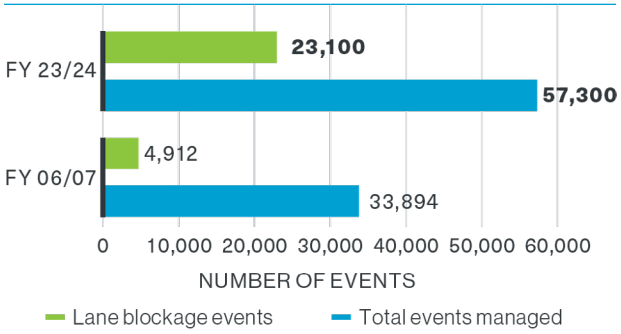


FIGURE 1. **FDOT District Six Events Managed**

PERFORMANCE MEASURES	FY 07-08 AVERAGE	FY 19-20 AVERAGE	FY 20-21 AVERAGE	FY 21-22 AVERAGE	FY 22-23 AVERAGE	FY 23-24 AVERAGE	TARGET
Dispatch Road Rangers (GPL)	00:00:51	00:00:33	00:00:29	00:00:32	00:00:31	**00:00:27**	≤00:02:00
Dispatch Road Rangers (EL)		00:00:25	00:00:24	00:00:25	00:00:27	**00:00:22**	≤00:00:60
Time to Confirm an Event (GPL)	00:01:59	00:01:14	00:01:02	00:00:58	00:01:04	**00:01:09**	≤00:02:00
Time to Confirm an Event (EL)		00:00:28	00:00:17	00:00:21	00:00:21	**00:00:31**	≤00:01:00
Time to Post DMS (GPL)	00:02:15	00:01:39	00:01:37	00:01:43	00:01:23	**00:01:19**	≤00:03:00
Time to Post DMS (EL)		00:01:06	00:01:02	00:01:06	00:01:04	**00:01:13**	≤00:01:30
Notify Other Agencies (GPL)	00:02:04	00:01:45	00:01:41	00:01:49	00:01:32	**00:01:33**	≤00:07:00
Notify Other Agencies (EL)		00:01:30	00:01:14	00:01:20	00:01:18	**00:01:23**	≤00:04:00

DMS = Dynamic Message Sign; EL = Express Lane; GPL = General Purpose Lane; LB = Lane-Blocking; NLB = Non-Lane-Blocking

INCIDENT MANAGEMENT

Incident management has significantly grown over the last 20 years. The incident management program operates along District Six highways and selected arterials. However, as traffic increases, the number of crashes and motorist assistance needs also increase. The Road Ranger fleet has increased to 55 vehicles today. The IRV program was added for the opening of 95 Express in 2008 and expanded for the opening of 75 Express and Palmetto Express in 2018. Between the Road Rangers, IRV, and service patrols from active construction projects, there is an incident management fleet of over 70 vehicles.

The District Six TSM&O Office helps to maintain the collaborative approach between its Road Rangers, IRV, and Rapid Incident Scene Clearance (RISC) resources through its TIM teams. District Six hosts the Miami-Dade TIM and the Monroe TIM teams. These teams allow incident management stakeholders to network and share lessons learned. Incident responder safety and safe, quick clearance for every traffic incident is the overall goal. This is represented by our average roadway clearance time of 30.9 minutes (see Figure 2), which is a 38.2% reduction since the benchmark of 50 minutes in 2005. The reduction in time that incident management resources are on the roadway results in a reduced chance for a related incident.

TIM – The TIM team meetings are an excellent way for many agencies to share information and get to know each other. The TIM teams in Miami-Dade and Monroe Counties represent the incident management community. It is helpful when resources are deployed for a crash in the middle of the night that responders are familiar with each other and are on the same page for the task at hand. The District Six TSM&O Office maintained its annual schedule of two regional meetings with District Four and the Florida's Turnpike, two meetings in Monroe

Road Ranger along SR 826

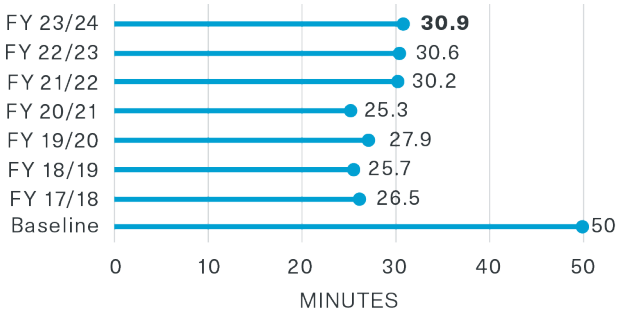


FIGURE 2. **Average Annual Roadway Clearance Duration**

County, a 95 Corridor meeting, and a Palmetto Corridor meeting. The 95 and Palmetto Corridor meetings are smaller forum-style meetings focusing on the unique traffic concerns along these corridors and related parts of Miami-Dade County.

Road Rangers – Road Rangers have been the first sign of help for stranded motorists for more than 20 years. Safety has become increasinglyimportant for Road Rangers and other first responders. Dstrict Six started an initiative to outfit the incident management fleet with rear red strobe lights. Studies have shown that a combination of flashing red and white lights gets the attention of motorists. This installation is expected to be completed at the beginning of 2025. District Six helped promote the changes to the state's Move Over Law by hosting a joint press conference with FDOT and FHP. The press event was well attended and helped put the focus on having everyone get home safe.

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. Some Road Rangers patrol sections of the highways along defined beats. A new beat established last year continued to provide additional services along I-195 and I-395 with the expectation of making this a permanent beat.

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. Figure 3 shows the heavy-duty wrecker activity and average clearance times.

Figure 4 shows that more than 90% of Road Ranger assists are for maintenance of traffic (MOT), repair, or clearance services (includes tows, car pushes, and motorist transports). Road Rangers responded to over 59,000 activations with over 100,000 assists.

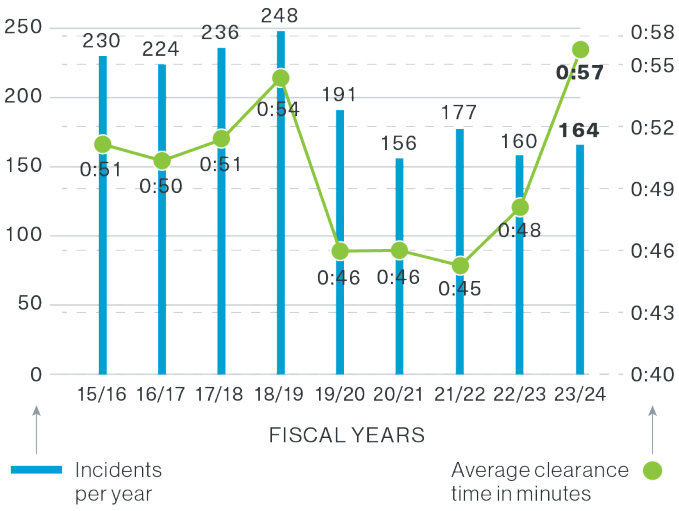


FIGURE 3. **Incidents Responded To by Heavy-Duty Wrecker with clearance times in minutes**

Incident Response Vehicles – District Six's IRV program continued operation covering 95 Express, Palmetto Express, and 75 Express. IRV operators responded to 406 events and provided 2,023

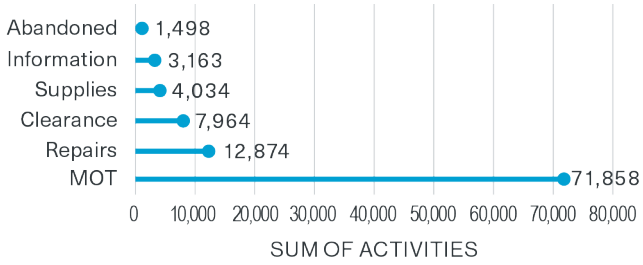


FIGURE 4. **Road Ranger Assists by Type**

assists during FY 2023–2024. The IRV trucks were also outfitted with the rear red strobe lights. IRV operators have noticed that motorists are slowing down and moving over sooner.

IRV operators, along with FHP, Road Rangers, and other responders, contributed to keeping 95 Express open and available for 97.8% of the time and Palmetto Express/75 Express open for 96.7% of the time during the fiscal year. The average travel lane blockage duration for 95 Express was 33.3 minutes in the northbound direction and 27.1 minutes in the southbound direction. The average travel lane blockage duration for Palmetto Express and 75 Express was 33.6 minutes in the northbound direction.

RISC Updates – RISC is an incentive-based program for the rapid removal of the more complex, longer duration incidents such as overturned tractor trailers or large debris spills. 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, and portions of Krome Avenue and Okeechobee Road. During FY 2023–2024, the average RISC response time was 53 minutes, while the average RISC travel lane clearance time was 66 minutes. RISC was used 10 times during the fiscal year. The following table summarizes historical RISC response times by fiscal year.

RISC PERFORMANCE	2009-2010	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	TARGET
Activation Time	na	27 m	20 m	28 m	28 m	**32 m**	--
Response Time	50 m	57 m	59 m	56 m	58 m	**53 m**	60 m
Travel Lane Clearance Time	76 m	55 m	71 m	50 m	57 m	**66 m**	90 m
Total Incident Clearance Time	na m	158 m	162 m	151 m	168 m	**164 m**	--
Total RISC Events	10	28	41	19	26	**10**	--

IT/ITS MAINTENANCE

With all the projects and technological advancements deployed over the years, it takes a well-trained and skilled team providing maintenance to keep everything operational. The IT/ITS Maintenance team has been keeping devices and communication systems running for over 20 years. In the early years of ITS deployment, projects focused on expanding the system to provide coverage and infrastructure throughout the region. With each expansion, more devices and more fiber optic cable were installed. The IT team is responsible for the network at the STMC out to the various field communication hub buildings. The IT team also includes staff to locate underground power and fiber optic cable to prevent damage from third parties. The ITS Maintenance team is responsible for the field devices from the field communication hub buildings to each field device. All of the data transmitted to and from multiple systems to create alerts for wrong way driving, crashes, and bridge notifications would not be possible without help from the IT/ITS Maintenance program.

IT staff completed upgrading its Layer 3 communications network by migrating to new network switches. This initiative required close coordination between both IT staff and the ITS Maintenance team. The IT team also completed a migration to cloud based service by moving from Microsoft Exchange Server on-premises to Microsoft 365 cloud platform. This is a significant shift and puts the STMC on a path to be receptive to cloud based services.

The ITS Maintenance team has a critical role ensuring field equipment and the network system are working properly with minimal downtime. During FY 2023–2024, the ITS Maintenance team managed

ITS Maintenance Team Installing Fiber Optic Cable

more than 1,900 critical trouble tickets and more than 2,840 tickets overall, which includes field equipment maintenance by contractors on active construction projects.

In addition to preventative maintenance and repairs, the ITS Maintenance team conducts special projects to improve and enhance the ITS infrastructure and communication network. Some of the special projects underway this fiscal year included upgrading the backup power for the MCTSS with new uninterruptible power supplies (UPS), implementing field recommendations to improve network security, and replacing 45 cameras that have reached end-of-life.

The following table shows the availability of key IT/ITS system components during FY 2023–2024 compared to previous fiscal years.

Availability of key IT/ITS system components during FY 2023-2024 compared to previous fiscal years

SUBSYSTEM	2007-2008	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
Cameras	93.9%	83.7%	96.2%	97.2%	96.6%	**92.4%**
DMS	85.9%	96.8%	97.8%	97.9%	97.4%	**97.6%**
Vehicle Detectors	97.0%	84.5%	95.6%	97.2%	96.6%	**93.0%**
Video Wall	na	99.9%	99.8%	100%	100%	**99.9%**
SunGuide	99.5%	98.4%	100%	100%	98.7%	**100%**
OTM	na	97.5%	99.8%	99.9%	100%	**99.9%**

Utility Infrastructure Location Services – The utility locate team helps keep the outside underground power and communication infrastructure unharmed from third parties. The locates team is notified of pending conflicts through Florida's Sunshine 811 service. Damage in any of this infrastructure can have a significant adverse impact on field device availability. District Six also shares fiber optic cable with other partner agencies, so a fiber cut can impact others. The team locates and marks the underground ITS infrastructure before digging or construction begins. During this fiscal year, 23,222 Sunshine 811 tickets were received, and of those, 7,905 tickets were located. Figure 5 shows the number of locates from FY 2014–2015 to FY 2023–2024.

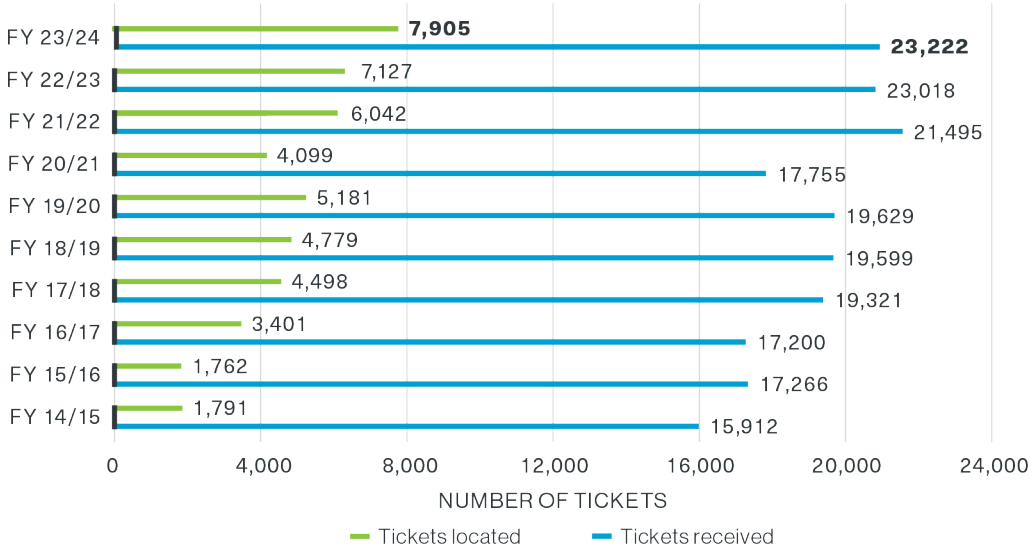


FIGURE 5. **Locate Ticket Summary**

TRAVELER INFORMATION

The way the public consumes information has drastically changed over the years. Paper maps have been replaced with real-time traffic navigation applications for the mobile phone. Traffic information and crowd sourced data provides users with powerful tools to make intelligent decisions on how to get to their destination. Traveler information is the primary way that the TSM&O Office can reach the motoring public.

During FY 2023–2024, more than 760,000 messages were displayed on District Six DMS, with most messages for safety and traffic alerts. Figure 6 summarizes the types of DMS messages displayed this fiscal year.

District Six publishes real-time traffic event information on FL511's website and smartphone application. FL511 also gathers traffic event information, camera images, and DMS messaging from all FDOT districts.

During FY 2023–2024, District Six published over 67,700 traffic event updates to FL511. Figure 7 shows the types of events published on FL511.

Operations Manager and IRV Operator Working Together

District Six's TSM&O website, sunguide.info, provides the same FL511 interface to allow motorists to view live feeds of the TSM&O Office's cameras in Miami-Dade and Monroe Counties. The website provides access to the TSM&O Office's services, newsflashes, publications, and newsletters.

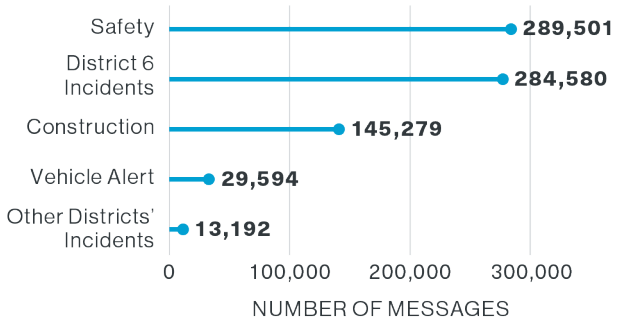


FIGURE 6. **Posted DMS messages by type**

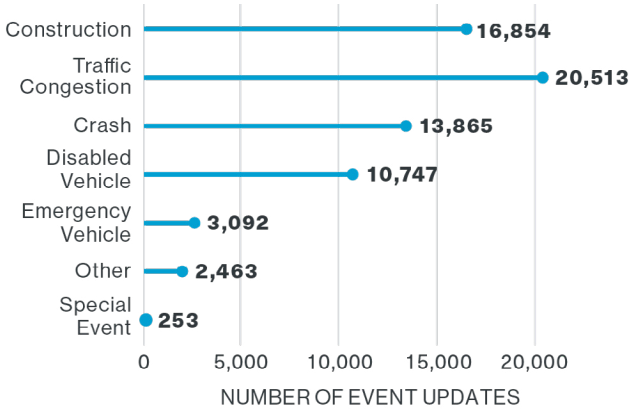


FIGURE 7. **FL511 Published traffic information by event type**

PUBLIC OUTREACH

FDOT TSM&O Staff Participates in Career Day

Public Information (PI) and Community Outreach has been a cornerstone since the beginning of the ITS deployment in the 1990s. Change on our roadways is something our road users notice very quickly. There were many questions once the public noticed dynamic message signs and cameras being installed. Continuing with implementation of managed lanes, ramp signals, and wrong way driving detection systems; PI staff have been there to listen to comments, complaints, and questions. Many times the customer just need to be informed about the TSM&O program and the reason behind various initiatives.

PI staff hosted several tours at the STMC for the following groups:

- FDOT Days
- Broward County Transit
- City of Miami Beach
- FIU Emergency Management Interns
- FDOT New Employees
- Miami-Dade County STEM Program
- South Florida Section Institute of Transportation Engineers
- FDOT Take Your Child to Work Day
- Florida Transportation Commission
- Miami Dade College
- FDOT Central Office Right-of-Way
- Nevada DOT
- Miami-Dade STEM Teacher Advisory Board
- FIU Panther Shadows

The PI staff helped coordinate several media events to provide awareness on several initiatives by FDOT District Six. Media events covered the following topics:

- Move Over Law Press Conference
- Key Biscayne Ramp Day
- Rickenbacker Causeway Construction Impacts
- Crash Responder Safety Week

The annual FDOT/FHP Move Over Law press conference was well attended by local media. This year's press conference introduced the expansion of the law requiring drivers to move over or slow down for all stopped vehicles. The press conference allows the media to hear directly from first responders providing a reality check to the dangers they encounter along our roadways every day.

The STMC participated in Crash Responder Safety Week (CRSW) during the week of November 13 through 17, 2023. CRSW is an initiative from the FHWA to increase awareness about responder safety. The theme was Protect Those Who Protect You. District Six participated by posting several video testimonials from our Road Ranger and IRV teams along with DMS messages.

CRSW Social Media Post

BENEFITS TO THE PUBLIC

The TSM&O Office with its STMC has demonstrated impressive benefits to the motoring public while at a fraction of the cost compared to roadway infrastructure projects. Services such as Road Rangers, IRV, and RISC show the real benefit of quick incident clearance on vehicle delay cost. As vehicle operating costs continue to increase, this has a significant impact on user delay costs. Providing information through our dynamic message signs, FL511, navigation applications, and connected vehicle applications allows the motoring public to make intelligent decisions on when to begin their trip and what route to take.

The TSM&O Office has a firm belief to make wise investments in its infrastructure and staff to keep its state-of-the-art traffic management system functioning. Planned construction projects, annual equipment replacement projects, and in-house projects keep the field device deployment refreshed based on equipment end-of-life dates. Ongoing repairs and preventive maintenance ensure the overall availability of the system. Keeping incident management resources such as Road Rangers, IRV, and RISC on the road provides benefits in reducing motorists' delay by providing quick clearance of lane-blocking events.

The FDOT District Six TSM&O Office's budget for FY 2023–2024 included operating, maintenance, and capital improvement costs for its freeway and arterial operations. An attractive benefit of TSM&O strategies is they are cost efficient when compared to the capital costs for road and bridge construction projects. The capital cost of ITS technologies and TSM&O strategies can be 5% to 10% of a massive infrastructure project.

The incident management program has a direct impact on the relationship between travel delay and lane-blocking traffic incidents. When delays associated with incidents are reduced, motorists and commercial vehicles save time. The time saving translates directly to a dollar amount when user costs of vehicles are taken into consideration. As

FDOT District Six TSM&O Staff in Action

shown in the benefits table below, the incident management program's contribution to the reduction in delay due to incidents translates into savings of $4.0 billion.

The express corridors and the ramp signaling system also contributed to the reduction of delays during peak hours, translating into savings of $29.2 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.

Move Over Law Press Conference

When comparing the total estimated benefits of the TSM&O program during FY 2023–2024 to the total annual operating expenses and capital investments (annualized over 10 years at 7%), the TSM&O program yields $48.99 in economic benefit for every dollar spent (benefit-cost ratio of 48.99:1).

Fiscal Year 2023–2024 Costs

ITS Operations	$10,891,450
ITS Maintenance*	$7,882,829
Road Rangers	$10,300,141
RISC	$31,500
FDOT Cost Center Operating Budget	$3,085,190
Other (Consultants, FTE, FHP, FIU)**	$32,141,735
Total Annual Operating Costs	$64,332,845
Total Annualized Capital Costs	$18,225,277
Total Annual Costs	**$82,558,122**

Fiscal Year 2023–2024 Benefits

Incident Management	$4,015,341,833
Express Lanes / Ramp Signals	$29,223,826
Total Benefits	**$4,044,565,659**

*Includes Express Lanes ITS Maintenance, and Express Lane Marker Repair
**Includes Florida's Turnpike Enterprise operational costs for express lanes in Miami-Dade County (District Six)

Figure 8 shows the benefit-cost ratio for FY 2023–2024 and previous years.

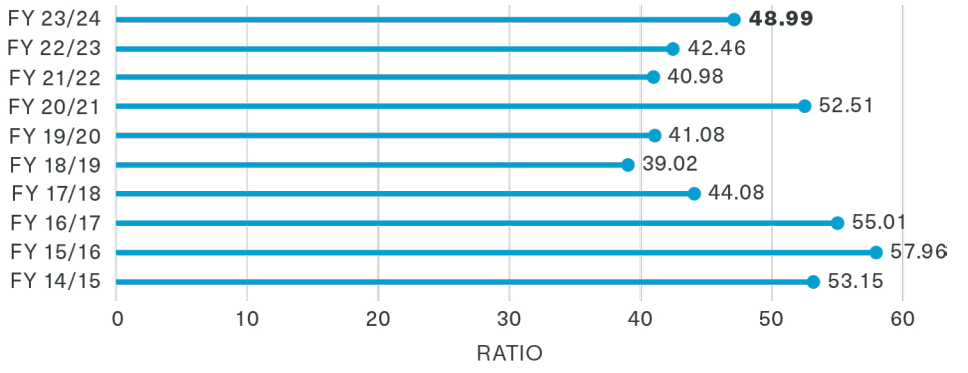


FIGURE 8. **Benefit-Cost Ratio**

A LOOK AHEAD

Over the years, the TSM&O Office has demonstrated its commitment to providing traffic management throughout the region by adapting to changes in the transportation landscape and advancing projects that take advantage of current technology. The next 20 years look bright with advancements in artificial intelligence and CAV. The TSM&O Office plans for the future by evaluating needs and initiatives, prioritizing projects, and forecasting investments. The following projects are in progress or planned for FY 2024–2025.

US 27/SR 25/Okeechobee Road Projects – The first segment of this multi-segment project was completed last year and is being operated by the STMC. This is the first of five projects that will bring needed roadway and traffic signal improvements to this corridor. The overall project extends through the SR 826 interchange and is expected to be completed in 2032.

Express Lanes Projects – Regional express lane projects will continue to focus on improvements and expansion of the existing system. The Palmetto Express southbound capacity improvement project is estimated to be completed in early 2025. Plans are in place to reinstate tolls and to begin operating 19 ramp signals. The 95 Express Phase 3 project in District Four will be nearing completion next fiscal year. The project spans from the Miami-Dade/Broward County line into Palm Beach County. There is a focus in creating a seamless experience for the express lane customer traversing both districts. Efforts will continue to reenergize 95express.com with an informative and user friendly website for the entire 95 Express corridor.

Express Lanes Operator

New RISC Contracts – New RISC contracts will add expanded roadway coverage and incorporate new incentive thresholds. The new thresholds were proposed by FDOT Central Office to expand the list of participating vendors and to continue encouraging active RISC vendors to clear travel lanes as quick as possible. The new contracts will be in place by the end of 2024.

Connected Vehicle Projects – District Six still has work to do even with the completion of the Keys COAST project. Next fiscal year, STMC staff will be working to complete configuration of RSUs and OBUs allowing Florida International University and University of Florida to complete a before and after study. STMC staff will also be configuring user messages such as traveler information, traveler advisory, and personal safety messages. Coordination will continue with transit agency stakeholders to implement transit signal priority. Coordination will also continue with fire rescue and law enforcement stakeholders to implement emergency vehicle preemption in the City of Key West. These efforts are expected to be completed in 2025.

Districtwide Traffic Signal Retiming – The TSM&O Office will continue its next round of traffic signal retiming focusing on state roads in Miami-Dade County. A total of 281 traffic signals are planned to be retimed including 90 traffic signals in the City of Miami Beach.

Wrong Way Driving Countermeasures – District Six will continue WWDS countermeasures deployment with its Phase 3 project at 15 off-ramps along I-95, I-75, and SR 826. Notice to proceed is expected in early 2025. Construction of Phase 2, covering 25 off-ramps, is expected to be complete at the end of 2025.

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

Keys COAST Connected Vehicles Concept

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