

# TSM&O DISSEMINATOR

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS

July - August 2019

## On MCSAW, TDA, and TSM&O Synergy: Intelligent Connected Freight Mobility



New District Five Regional  
Transportation Management Center  
(RTMC) to Support **ATTAIN** Central  
Florida TSM&O Programs



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# FDOT TRAFFIC ENGINEERING AND OPERATIONS MISSION AND VISION STATEMENTS

## MISSION

Provide leadership and serve as a catalyst in becoming the national leader in mobility.

## VISION

Provide support and expertise in the application of Traffic Engineering principles and practices to improve safety and mobility.

## Looking to be a Contributor for the Next Issue of the TSM&O Disseminator?

Email Jennifer Rich  
(Jennifer.Rich@dot.state.fl.us)  
with your story subject and title.

We would love to have your contribution be a part of the next edition.

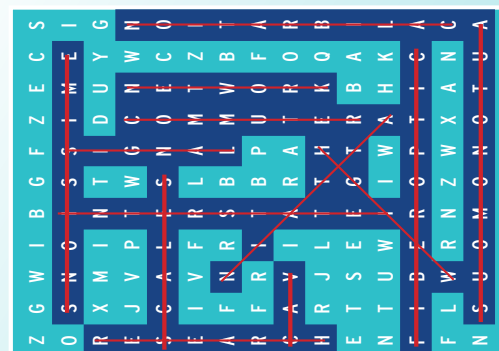
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### PHYSICAL ADDRESS:

Rhyne Building  
2740 Centerview Drive, Suite 3B  
Tallahassee, FL 32301

### MAILING ADDRESS:

Burns Building  
605 Suwannee Street, MS 90  
Tallahassee, FL 32399



# Ramp Signals Coming Soon to District Four

By Daniel Smith, Freeway Operations Manager, District Four, FDOT

**Beginning in late 2018, the Florida Department of Transportation began installing ramp signals at I-95 entrance ramps in Broward and Palm Beach Counties, with the goal of reducing traffic congestion.**

Monitored by the District Four Regional Transportation Management Center, via closed-circuit television cameras, these signals are a part of the congestion-relief plan for I-95, along with the I-95 Express Lanes. The signals will operate based on real-time traffic conditions and turn on during peak travel times or other periods of heavy congestion.

Ramp Signal installations are underway at the following I-95 interchanges, totaling 60 ramp signals for the entire District Four network.

- » Hallandale Beach Blvd.
- » Cypress Creek Rd.
- » Pembroke Rd.
- » Andrews Ave.
- » Hollywood Blvd.
- » Atlantic Blvd.
- » Sheridan St.
- » Copans Rd.
- » Stirling Rd.
- » Sample Rd.
- » Griffin Rd.
- » SW 10th St.
- » State Road 84
- » Hillsboro Blvd.
- » Davie Blvd.
- » Palmetto Park Rd.
- » Broward Blvd.
- » Glades Rd.
- » Sunrise Blvd.
- » Yamato Rd.
- » Oakland Park Blvd.
- » Congress Ave.
- » Commercial Blvd.
- » Linton Blvd.

Once operational, District Four ramp signals will improve the overall flow of traffic, reduce travel times and crashes, and decrease vehicle emissions by working to eliminate “bottlenecking” on South Florida’s on-ramps.

For more information on the ramp signal system or upcoming operations, contact Daniel Smith by phone at (954) 847-2633 or at [Daniel.Smith@dot.state.fl.us](mailto:Daniel.Smith@dot.state.fl.us) or visit [www.95express.com](http://www.95express.com).



# New District Five Regional Transportation Management Center (RTMC) to Support ATTAIN Central Florida TSM&O Programs

By Tushar Patel, District Five TSM&O PM Supervisor, FDOT and Greg Nixon, Senior Consultant, Global-5

**Florida Department of Transportation (FDOT) District Five's new Regional Transportation Management Center (RTMC) in Seminole County, just north of Orlando, officially began operations in August 2019. The 44,700-square-foot, hurricane-ready facility is the most technologically advanced of its kind in the State of Florida and where FDOT monitors 795 miles of highways and state roads in Central Florida around the clock.**



More than 100 RTMC traffic managers and other staffers work to minimize congestion by coordinating incident management with police, firefighters, and medical first responders, and communicating with drivers by sending alerts to overhead roadway signs, news outlets, and social media channels. The Florida Highway Patrol's Orlando Regional Communications Center (ORCC), which is the dispatch center for six counties, is also located in the new District Five RTMC.

Five new TSM&O projects funded by a Federal Highway Administration (FHWA) Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) grant titled "ATTAIN Central Florida" will be integrated into operations at the new District Five RTMC. What the projects all have in common is the potential to improve mobility and safety on the interstate and arterial roads throughout the nine counties in District Five.

### Automated Traffic Signal Performance Measures

The automated traffic-signal performance measures project will connect approximately 1,000 traffic signals in Central Florida to the new District Five RTMC to capture high-resolution signal controller data from each signal to measure and generate performance reports.

### Adaptive Signal Control Technologies

The adaptive signal control technologies (ASCT) project is installing new system hardware and software at intersections to capture current traffic demand data and transmit it back to the RTMC for optimizing signal operations such as timing, phasing, and servicing. Successful deployments of these technologies can improve traffic flow and reduce delays at each location, and also increase operational efficiencies by allowing signal timing and phasing to be reset more frequently and at a lower cost.

### Regional Integrated Corridor Management Software

Regional Integrated Corridor Management Software (RICMS) will help the District Five RTMC manage incidents on I-4, which impact the interstate and arterials leading to detouring of traffic off I-4. The software will recommend predefined plans to be implemented across multiple agencies. The ICM system includes modeling software that will be able to predict traffic conditions throughout the region up to 30 minutes into the future. Additionally, the RICMS will allow for arterial management needs to be measured, organized, and implemented without field data collection. Real-time device information will be aggregated into clustered scenarios that are applied across deterministic modeling software for a determination of goodness of fit.

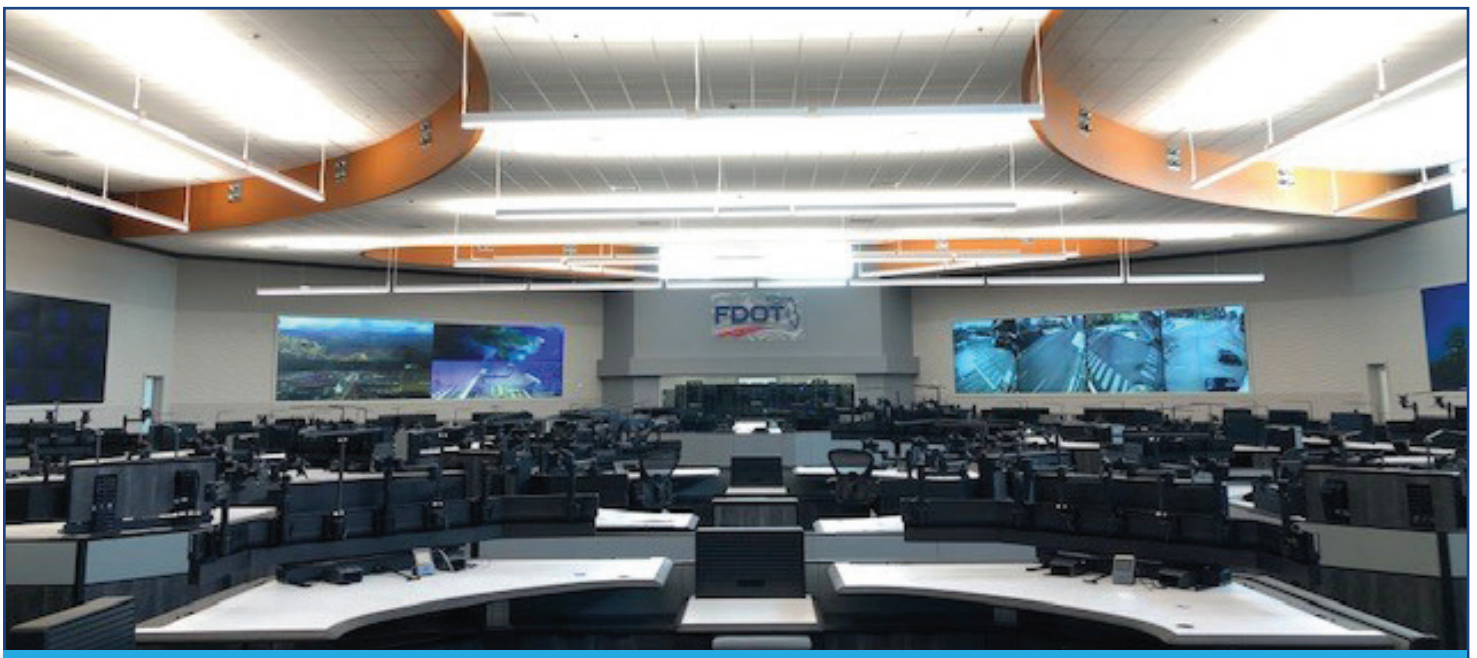
### Pedestrian and Bicycle Collision Avoidance System

The new District Five RTMC manages a pedestrian and bicycle collision avoidance system for reducing vehicle conflicts with pedestrians and bicyclists in crosswalks. The system will use connected vehicle (CV) and roadside unit (RSU) technologies deployed in existing traffic signals and on-board units (OBU) in vehicles owned and operated by FDOT, the University of Central Florida (UCF), and partner agencies. Additionally, OBU emulator software will be integrated into a smartphone mobile app for pedestrians and bicyclists.

### Transit Signal Priority

Transit signal priority will modify traffic signal timing to improve on-time arrivals of transit vehicles and emergency responders. The tools will communicate directly with traffic signal cabinets to lengthen green cycles or shorten red cycles. The tools will also be able to handle left turns.

For more information, contact Tushar Patel at (386) 943-5315 or by email at [Tushar.Patel@dot.state.fl.us](mailto:Tushar.Patel@dot.state.fl.us).



# District Six Completes Its First Year Managing and Operating Traffic Signals in the Florida Keys

By Javier Rodriguez, District Six TSM&O Engineer, FDOT

**The District Six Transportation Systems Management and Operations (TSM&O) Office successfully completed its first year operating and maintaining the traffic signal system in Monroe County. The system has 17 signalized intersections located along a 102-mile stretch of US 1 in the Florida Keys.**

This project launched in July 2018 and marked the first time that District Six assumed operations of an arterial signal system after three municipal agencies opted out of their long-standing Traffic Signal Maintenance and Compensation Agreement with the Florida Department of Transportation (FDOT).

The district worked for more than a year to prepare for this launch. District staff members met with area stakeholders to develop an operational continuity plan to ensure a smooth transition. The plan also established clear working agreements and response procedures to promote good communication between the agencies. On the technical side, the district made the necessary changes to the SunGuide Transportation Management Center (TMC) located in Miami-Dade County to support this new operation. They installed a new advanced traffic management system (ATMS) software, developed standard operating guidelines, and trained staff to manage the new system. The district also replaced many of the signal devices and components because they were weathered or had become obsolete. The district brought many of these devices up to current standards and installed a backup power supply system to reduce signal outages.

The district achieved a smooth transition and modernized the system's device and communication infrastructure to improve the safety and reliability of this critical corridor. The success of this project has proved beneficial for all partners, as well as for the traveling public. The district will continue to build on this success by making additional enhancements to the corridor's operations. Later this year, the district will enhance incident management services by adding Rapid Incident Scene Clearance (RISC) services to the corridor. Shortly, the district will assume maintenance and operations for the signals in the City of Key West. Lastly, the district is working on deploying the Keys COAST Connected Vehicle Pilot Project.

The combination of these efforts shows FDOT's commitment to continue to operate its roadways more efficiently. The expansion of its services is improving partner agency relations, making the corridor safer, and providing more drivers with reliable traveling experiences.

For more information, contact Javier Rodriguez by phone (305) 640-7307 or by email at [Javier.Rodriguez2@dot.state.fl.us](mailto:Javier.Rodriguez2@dot.state.fl.us).



# Welcome Aboard!

## District One Traffic Operations



By Keith Slater, District One Director of Transportation Operations, FDOT

**Announcing the appointment of Trisha Hartzell, P.E., to the position of District Traffic Operations Engineer, effective Monday, July 15, 2019.**

Trisha received her Bachelor of Science in Civil Engineering degree from the University of North Carolina and is a Florida Registered Professional Engineer as well as a Certified Public Manager.

Trisha has over 19 years of experience in the Transportation Engineering industry and prior to moving to Florida, Trisha spent half of her career in the private sector as an engineering design and operations consultant, leading teams on projects for both private and public sector clients. The other half was spent with the North Carolina Department of Transportation (NCDOT), beginning in the Engineering Training Program, then Construction as an Assistant Resident Engineer, and next in Operations as the Assistant District Engineer for traffic engineering, permits and maintenance. During her career with NCDOT, she worked on many innovative intersection and corridor projects; from the inception of complete streets in North Carolina, to implementing a road diet, one-way pairs, a median U-turn intersection, a design-build interchange modification project, and many more.

She began her career with the Department in 2014 as the Construction Engineer for Sarasota-Manatee Operations. In March 2018, she joined the Manatee County Government in the Traffic Engineering Division.

On a personal note, Trisha was born in Illinois and raised in southwest Florida. Trisha's and her husband Jeremiah's decision to pack up and move to Florida was an easy one, as they both enjoy the outdoors and being on the water. They reside in Sarasota and have three four-legged children, two Weimaraner's and a Pomeranian-Shih Tzu mix.

I am confident Trisha's experience has prepared her well for this opportunity. Please join me in congratulating Trisha on her new position and welcoming her back to the Department.

**Thank you Brent Setchell for serving as the Interim District Traffic Operations Engineer. He has done, and continues to do, a great job for District One.**

For more information, contact Keith Slater by phone (863) 519-2202 or by email at Keith.Slater@dot.state.fl.us.

## I<sup>3</sup> Transportation Showcase



More than 575 transportation professionals from across the U.S. came together in June, in Orlando Florida, for the I<sup>3</sup> Transportation Showcase. The Intelligent Transportation Society of Florida (ITS Florida), the Florida Section of the Institute of Transportation Engineers (FSITE), and the International Municipal Signal Association (IMS A) jointly sponsored the Showcase.

The ITS community provided tremendous support for the event with 55 exhibits of the latest ITS technologies. Topics covered during the conference included: autonomous vehicles, connected vehicles, transportation technology, cyber security, and artificial intelligence in transportation. IMSA offered technical training classes during the event for Traffic Signal Inspections, Roadway Lighting, and Transportation Center Systems. ITS Florida hosted a workshop entitled: Connected Vehicle 201: Preparing for Connected Vehicle Deployment.

This conference was highlighted by a series of networking events, deep technical discussions of emerging technology, and an exhibit hall displaying the latest in hardware advancements.

# On MCSAW, TDA, and TSM&O Synergy: Intelligent Connected Freight Mobility

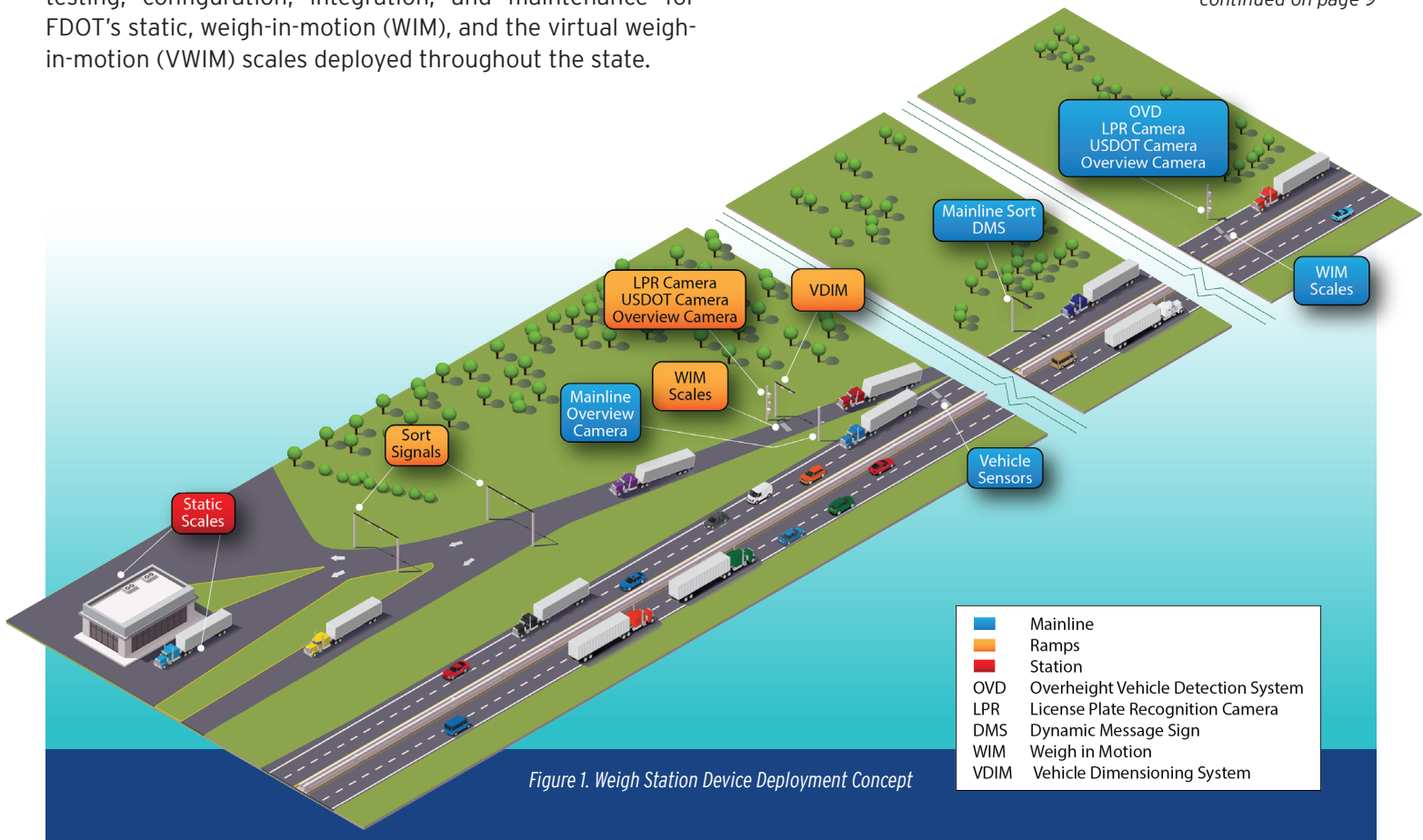
By Paul Clark, Statewide Scale Operations Manager, FDOT; Ed Hutchinson, Transportation Data and Analytics Office Manager, FDOT; Pradeep Rao, HNTB Corporation

**The Florida Department of Transportation (FDOT) Motor Carrier Size and Weight (MCSAW) Office supports the mission of increased safety and mobility of Florida's roadway system through effective size and weight enforcement. Motor carriers (commercial vehicles) apply more stress on a roadway versus a passenger car. The greater the weight carried by a vehicle, the greater the wear and damaging effects to the roadway. These effects increase exponentially as weight increases.**

A Class 9 commercial vehicle (five-axle truck tractor trailer combination) with a gross vehicle weight (GVW) of 80,000 to 100,000 pounds is equivalent to 26,000 to 70,500 passenger cars. MCSAW checks commercial motor carrier size and weight on the Florida roadway system and implements measures to safeguard roadway infrastructure and provide safe transportation of goods. MCSAW provides strategic planning, project development, deployment, testing, configuration, integration, and maintenance for FDOT's static, weigh-in-motion (WIM), and the virtual weigh-in-motion (VWIM) scales deployed throughout the state.

Research data from the American Transportation Research Institute (ATRI) in 2018 shows that the freight industry represents one out of every 21 jobs in Florida. The freight industry in Florida paid about \$1.4 billion in federal and state roadway taxes. That amount represents 33 percent of all the federal and state roadway taxes owed by Florida motorists despite the freight industry representing only seven percent of all vehicle miles traveled in Florida. In 2016, the freight

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## On MCSAW, TDA, and TSM&O Synergy: Intelligent Connected Freight Mobility *(continued from page 8)*

industry's share of the total cost of congestion in Florida was more than \$5.6 billion. In steps towards reducing freight congestion cost in Florida, MCSAW is currently in the design and deployment phases of mainline WIM to complement the static and ramp WIM at 20 interstate locations. The mainline WIM will provide interstate speed screening of size and weight through embedded WIM scales and overhead height sensors upstream of the weigh stations. The measurement devices will be supplemented with additional screening technologies to process vehicles against the Federal Motor Carrier Safety Administration (FMCSA) Performance and Registration Information Systems Management (PRISM) program as well as permit and partner agency credential databases maintained by FDOT (see VWIM device deployment concept below).

The FDOT MCSAW system is designed as a series of components that establish a local area network (LAN) of all facility devices as well as a wide area network (WAN) of all state MCSAW facilities on interstates and arterials. The system is comprised of standalone devices that are governed by FDOT specifications regulating performance criteria, like the establishment of Intelligent Transportation System (ITS) devices. The MCSAW office also supports a centralized database in the Traffic Engineering Research Laboratory (TERL) and a storage area network (SAN) with MCSAW facilities throughout the state.

The local devices are integrated into a centralized operating software at each location, which includes adjustable parameters for the screening of commercial motor carriers. Through the statewide MCSAW and a local fiber-optic network, the devices can screen for size, weight, safety, and other credentials at highway speed, ramp speed (45 mph), and at a static weigh-in. Each interstate weigh station will be connected to the MCSAW fiber-optic network (see MCSAW fiber-optic network map below).

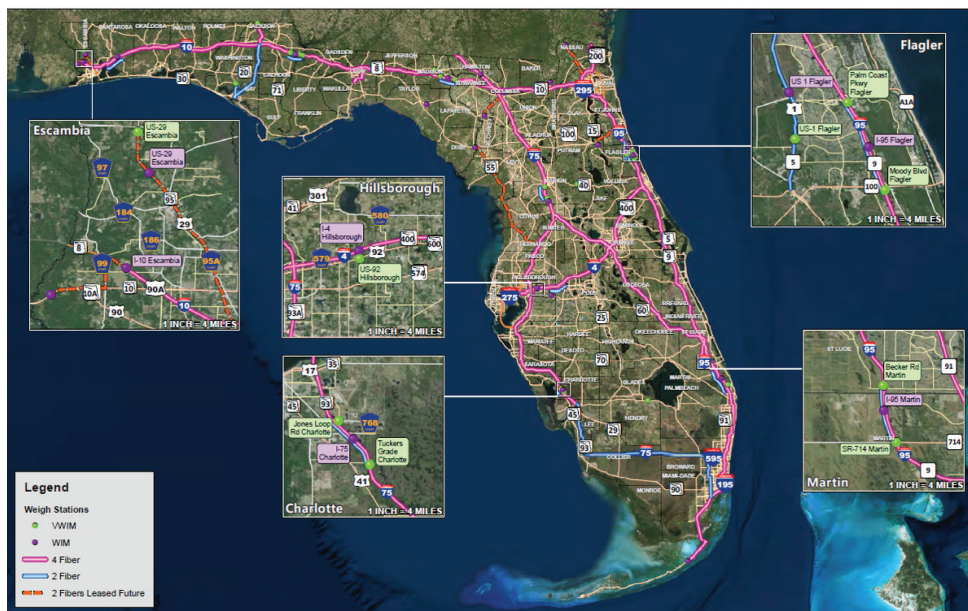


Figure 2. MCSAW Fiber-optic Network

The Transportation Data and Analytics (TDA) Office is the FDOT's central clearinghouse and principal source for highway, traffic, travel time, multimodal, and freight and passenger data. TDA gathers data directly through automated means and indirectly through district field personnel or others. TDA has deployed

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# Break Time



INTERSTATE  
 SCALES  
 RESEARCH  
 FIBER OPTIC  
 CALIBRATION  
 COMMUTER  
 NETWORK  
 EMISSIONS  
 ATTAIN  
 WEIGH  
 TRAFFIC  
 SIGNAL  
 AUTONOMOUS  
 CAV

# On MCSAW, TDA, and TSM&O Synergy: Intelligent Connected Freight Mobility

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automated sensors statewide to measure truck weight and traffic count information. These statewide automated sensors stations are connected using various communication media. TDA is in the process of connecting automated sensor stations to the statewide MCSAW fiber-optic network.

Currently, manual calibration of the WIM scales is performed annually. FDOT aims to validate automatic calibration as an equivalent means of calibrating the WIM scales. Leveraging the statewide MCSAW fiber-optic network, the MCSAW office is working in collaboration with the FDOT Transportation Technology Office (TTO) and TDA to develop a tool for remote adjustment weight scales of the various VWIM sites located throughout the state. By developing a unique identification feature of the commercial vehicles, aside from license plate recognition, the goals are to leverage certified static weights for adjustment of the VWIMs in real time. This identification will also serve to allow for increased bypass of commercial vehicles previously found to follow weight, size, and other parameters and confirmed travel times, leveraging the ITS devices for travel time between facilities. This will be achieved by collecting and processing data in the Freight Operations Exchange (FOX) server located at the FDOT TERL. This application, that sorts decisions currently displayed on Dynamic Message Signs, will be delivered to the specific vehicle, leveraging the unique identification protocol

via smartphone or on-board units (see the freight operation schematic).

The collaboration, effective and secure data sharing between MCSAW and the TDA office will help achieve autocalibration at each VWIM station. A communications interface between the weigh station data collected at calibrated static MCSAW scales and the calibration processor of the TDA traffic monitoring site controller will allow the calibration of the controller automatically. The communication between TDA and MCSAW will facilitate more-effective tracking and movement of freight throughout the state.

The goal of this deployment uses several strategic tactics: increase the safety of the roadway network by reducing the number of exit and entrance movements into the weigh stations; use discrete freight weight enforcement to protect the Florida roadway network and its commuters; accrue cost savings by avoiding yearly manual calibrations; experience TDA communication cost savings by using the MCSAW fiber network; reduce freight industry congestion cost; and improve the mobility of commercial vehicles by allowing greater bypass of static scales and weigh stations.

For more information, contact Paul Clark by phone at (850) 410-5540 or by email at Paul.Clark@dot.state.fl.us.

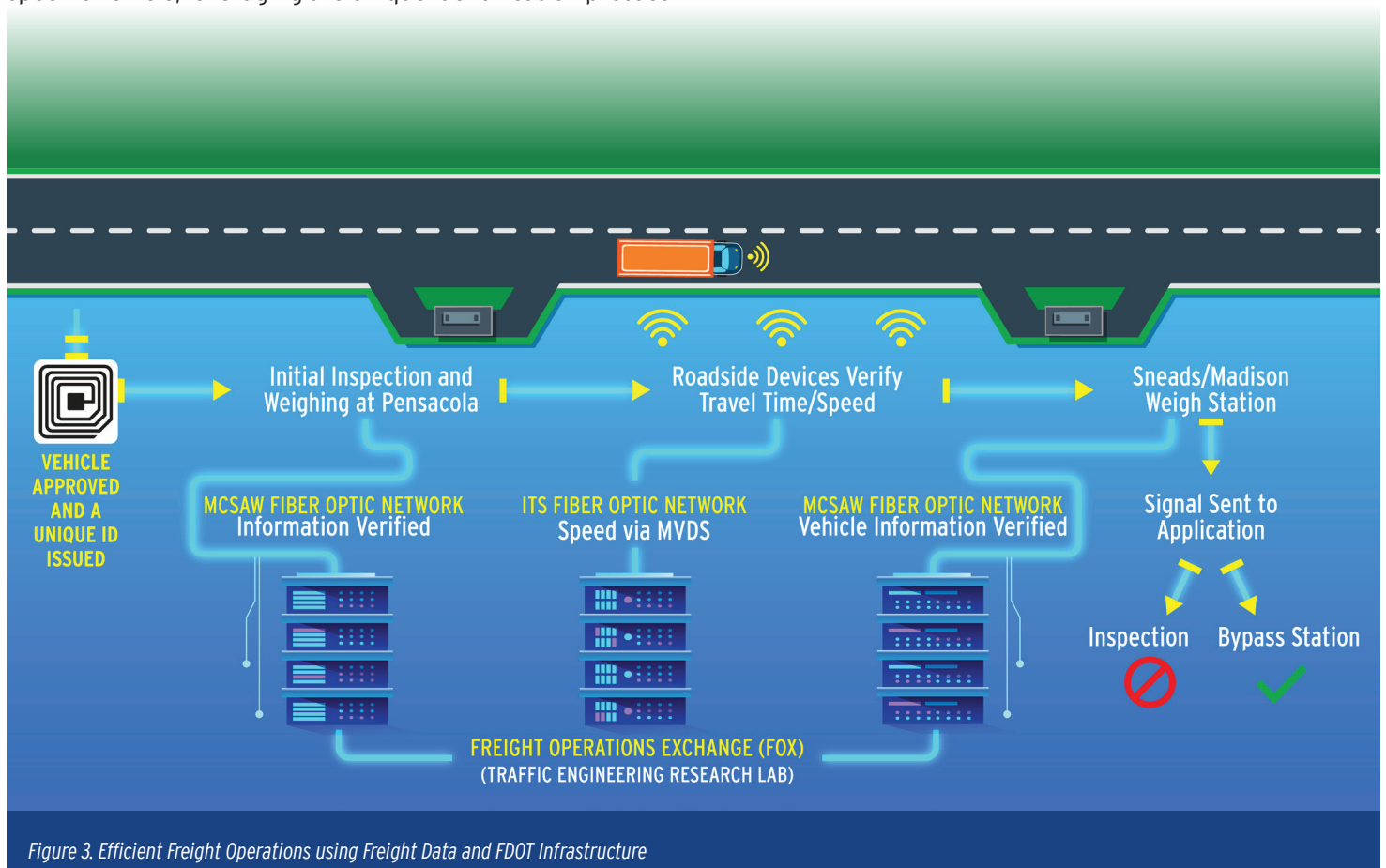


Figure 3. Efficient Freight Operations using Freight Data and FDOT Infrastructure

# ITS Florida to Honor Chester Chandler with Rays Baseball Outing



ITS Florida is going to a Tampa Bay Rays game and invites you to join us. While he was FDOT District Seven's ITS Program Manager, Chester Chandler organized an outing to a Rays game every year. He loved baseball and he loved the ITS community; the outing was his way of combining the two. ITS Florida has decided to continue Chester's tradition, in his honor, by going to the Rays' September 20, 2019 game against the Boston Red Sox at Tropicana Field in St. Petersburg. The game is at 7:00 p.m. and a \$35 ticket gets you a great seat to the big game and a hat (it could be a game that determines if the Rays make the playoffs). To order tickets, go to <https://fs16.formsite.com/ITSFlorida/RaysGame/>. If you have any questions, contact LaQuisha Brown at 662-510-2049 or [lbrown@vibengineering.com](mailto:lbrown@vibengineering.com). Remember, the earlier you order your tickets, the better your seat will be.

*Please join us to have a fun evening  
and to remember Chester.*

**TAMPA BAY RAYS vs. BOSTON RED SOX**  
**September 20, 2019**

**Tropicana Field**  
**St. Petersburg**  
**7:00 p.m. • \$35**

## ITS CEI Trainings Now Available!

*By Clinton Smith, TSM&O Program Development Engineer, FDOT*

***The advancement of Transportation System Management and Operations (TSM&O) in Florida has created the need for new tools to support workforce development and program excellence. The Statewide TSM&O Excellence Program (STEP) was created to meet these needs.***

Four Intelligent Transportation System Construction Engineering and Inspection (ITS CEI) Modules are now available online as computer-based trainings (CBT). Along with the ITS CEI modules, there are also CBTs for ITS Fiber Design and Traffic Signals. All of the links are available at the [State Traffic Engineering and Operations website](#).

### » **Closed Circuit Television Cameras Module**

<http://wbt.dot.state.fl.us/ois/ITS-CCTV/index.htm>

### » **Microwave Vehicle Detection System Module**

<http://wbt.dot.state.fl.us/ois/ITS-MVDS/index.htm>

### » **Road Weather Information System Module**

<http://wbt.dot.state.fl.us/ois/ITS-RWIS/index.htm>

### » **Dynamic Message Signs Module**

<http://wbt.dot.state.fl.us/ois/ITS-DMS/index.htm>

For more information, contact Clinton Smith by phone at (850) 410-5626 or by email at [Clinton.Smith@dot.state.fl.us](mailto:Clinton.Smith@dot.state.fl.us).

# Travel Smart with the FL511 Mobile App to College Football Games



By Clinton Smith, TSM&O Program Development Engineer, FDOT

***The college football season is upon us. Games will be played throughout the state. The Florida Department of Transportation (FDOT) encourages motorists traveling to and from the games and activities to use the FL511 Mobile App for current roadway conditions.***

The FL511 Mobile App provides directions to any destination in Florida with travel times and alternate routes on most roadways throughout the state. Users can also get information on crashes, congestion, construction, and closures on Florida's interstates, toll roads, and other major roadways. The FL511 Mobile App has destination-based routing and the ability to speak your request to the app. For destination-based routing, users enter their destination and are provided multiple routes with travel time based on current traffic conditions. Another feature is the Drive Mode. While in drive mode, users receive detailed alerts for incidents occurring along their route. When requesting information using voice interaction feature, users of the app can now request a city, county, or roadway and the app will play back all associated events within a specific radius.

The Florida 511 (FL511) Advanced Traveler Information System (ATIS) is the state's official source for traffic and travel information. This public information service is accessible by mobile app, website in English and Spanish, Twitter messages, Facebook, Instagram, text alerts, and more. The FL511 App, website, and Twitter feeds provide

information on Florida's interstates, toll roads, and other major metropolitan roadways, allowing drivers to avoid unnecessary delays, as well as receive updates on accidents, congestion, construction and more. FL511 provides camera snapshots on major Florida roads, so users can see current road conditions in FL511 covered areas. The goal is to provide information about current conditions to keep traffic moving safely and efficiently. To accomplish its goal, FL511 offers the latest traffic information, 24 hours a day, seven days a week.

Before heading out, drivers should visit the FL511.com website for important traffic information and incident alerts. Once on the road, have a passenger check to avoid using a phone while behind the wheel.

Travelers can follow FL511 on 13 Twitter handles, on Facebook @FL511, and Instagram @Florida\_511. For more information, visit the website at FL511.com or download the Florida 511 Mobile App on Google Play or the Apple App Store. Travel Smart with the updated Florida 511 Mobile App - Connect. Know. Go.

For more information, contact Clinton Smith by phone at (850) 410-5626 or by email at Clinton.Smith@dot.state.fl.us.

# CONTACTS

## DISTRICT 1

Trisha Hartzell, DTOE  
Mark Mathes  
FDOT District 1 Traffic Operations  
801 N. Broadway Avenue  
Bartow, FL 33830  
(863) 519-2490

## DISTRICT 2

Jim Hannigan, DTOE  
Peter Vega  
FDOT District 2 Traffic Operations  
2198 Edison Avenue  
Jacksonville, FL 32204  
(904) 360-5630

## DISTRICT 3

Steve Benak, DTOE  
Amy DiRusso  
FDOT District 3 Traffic Operations  
1074 Highway 90 East  
Chipley, FL 32428-0607  
(850) 638-0250

## DISTRICT 4

Mark Plass, DTOE  
Jonathan Overton  
FDOT District 4 Traffic Operations  
2300 W. Commercial Blvd.  
Ft. Lauderdale, FL 33309  
(954) 777-4350

## DISTRICT 5

Jim Stroz, DTOE  
Jeremy Dilmore  
FDOT District 5 Traffic Operations  
719 S. Woodland Blvd., MS 3-562  
DeLand, FL 32720-6834  
(386) 943-5310

## DISTRICT 6

Omar Meitin, DTOE  
Javier Rodriguez  
FDOT District 6 Traffic Operations  
1000 NW 111th Avenue, MS 6203  
Miami, FL 33172  
(305) 470-5312

## DISTRICT 7

Ron Chin, DTOE  
Margaret Kubilins  
FDOT District 7 Traffic Operations  
11201 N. McKinley Dr.  
Tampa, FL 33612  
(813) 615-8600

## FLORIDA'S TURNPIKE ENTERPRISE

John Easterling, DTOE  
Eric Gordin  
Florida's Turnpike Enterprise  
PO Box 9828  
Ft. Lauderdale, FL 33310-9828  
(954) 975-4855

## CENTRAL OFFICE

Trey Tillander, Director  
Traffic Engineering and Operation Office  
(850) 410-5419

Fred Heery  
State TSM&O Program Engineer  
(850) 410-5606

Raj Ponnaluri  
State Connected Vehicles and Arterial  
Management Engineer  
(850) 410-5616

Jeff Frost  
State TIM/CVO Program Manager  
(850) 410-5607

Jennifer Fortunas  
State Managed Lanes Engineer  
(850) 410-5601

Derek Vollmer  
Traffic Engineering Research Lab Manager  
(850) 921-7361

Alan El-Urfali  
State Traffic Services Program Engineer  
(850) 410-5416