DISSEMINATOR

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS
September-October 2021



Florida's Turnpike Puts Connected Vehicle Technology on Display

TSM&O Resources Benefit Construction Safety Initiatives

Systems Upgrade for State Emergency Operations Center (SEOC) and Barry Emergency Operations Center (BEOC)





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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 Lauren Bamford (Lauren.Bamford@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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By Javier Rodriguez, District Six TSM&O Program Engineer, FDOT

The Florida Department of Transportation (FDOT) District Six hosted a multi-agency press conference in August to raise public awareness for the Move Over Law and its recent amendment. The Move Over Law was established in 2002 to improve safety for law enforcement, emergency, sanitation, utility, tow, and Road Ranger vehicles. The law was recently amended to include construction and maintenance vehicles as well.

FDOT partnered with the Florida Highway Patrol (FHP) Troop E, Miami-Dade Fire Rescue, Road Rangers, and other first responders for the event which garnered full coverage by the local media. District Six held this event to shed light on recent traffic violations that jeopardized Road Ranger safety earlier in the year. The idea came as a request from the Traffic Incident Management (TIM) Team who wanted to increase upon the District's ongoing public awareness efforts for the law, especially as back-to-school traffic began, and overall traffic has increased. The Department urged the public to move over or slow down for the identified service vehicles and announced the recent changes. FDOT was followed by representatives from FHP, the Community Traffic Safety Team, and the Road Ranger Service Patrol Unit. They reiterated the importance of the law, spoke about their collective actions and experiences, and reminded the public that everyone deserves the opportunity to get home safely. This multi-agency approach served to humanize the law and show the faces behind the first responders who put their lives on the line every day to keep the roadways moving.

The event was covered by a total of five English and Spanish media channels who broadcasted the story on their television and web platforms. The press conference was proceeded by a law enforcement detail that was comprised of nine local police agencies. The four-hour operation yielded a total of 7 arrests, 145 citations, 12 written warnings, and distributed 107 traffic safety educational materials. FDOT also reinforced this effort by displaying Move Over public service announcements on its regional dynamic message signs for one month after the press conference.

The press conference was one of the most successful to date in terms of education and enforcement goals. FDOT and its partners remain committed to raising awareness about all traffic laws to improve roadway safety in our region. For a full recap of the event including videos and photos, please visit the FDOT District Six Safety Resources site, here.

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Florida's Turnpike Puts Connected Vehicle Technology on Display

By Mary Lou Veroline, TSM&O Technical Writer and Umesh Subramanyam, ITS Performance Oversight & Monitoring Manager, Florida's Turnpike Enterprise



Turnpike Florida's **Enterprise** (FTE) and the SunTrax facility in Polk County hosted members of the Southern Association of State and Transportation Highway Officials (SASHTO) on August 1, 2021, for a technical tour highlighting connected vehicle technology. The event capped a 25-month pilot project that saw the team progress from initial research through implementation and testing.

First, a little history... Phases one and two of the pilot were completed in 2020. The project team's first order of business was learning about device offerings and how each could ultimately look and function on Florida's Turnpike. Multiple vendors were selected for product comparison in a lab environment before narrowing the candidates to four and moving on to field evaluation.

Roadside units (RSUs) from the selected vendors were installed on existing CCTV poles along the Turnpike Mainline near the Pompano Beach Service Plaza. On-board units (OBUs) that would be used to communicate with the roadside devices were then installed in Turnpike fleet vehicles. Algorithms and alert thresholds were developed to conduct trials using various real-world scenarios. To mimic the alerts and warnings that a "connected" motorist would receive, the team utilized a smartphone application capable of producing both visual and audible messages.

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Florida's Turnpike Puts Connected Vehicle Technology on Display, continued from page 4

Entering phase three of the project, the team needed to expand their field trials and made a change in location to FTE's SunTrax facility. There, they had access to a 2.25-mile high-speed test track that could simulate unlimited driving conditions. The oval was also equipped with tolling gantries that enabled technicians to ensure there would be no interference between toll equipment and connected vehicle devices.

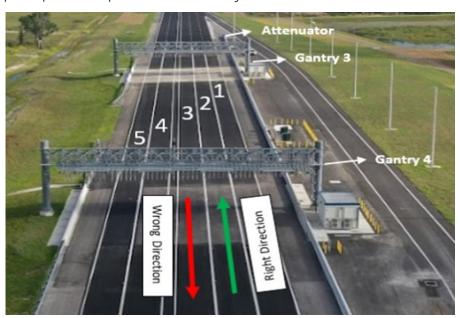
In the early summer of 2021, the team began readying for the SASHTO event. This would be the first time the Turnpike's pilot technology was demonstrated to an external audience. Installation of the RSU devices on SunTrax gantries took place in May and a full "dress rehearsal" was staged in July to allow for last minute tweaks and fine-tuning.

Recognizing that the fleet vehicles used in earlier testing would not suffice in a group setting, two eight-seat SUVs were rented to accommodate multiple participants in each run. The team installed iPad display units in both vehicles to ensure that alerts could be heard and seen by all, and trackside tents were staged with large monitors where engineers presented the project's journey from start to finish, along with the pilot dashboard and operator interface.

On the track, the team demonstrated the following alert scenarios:

Speed Warning: Each vehicle was accelerated individually to reach speeds greater than 35 mph (the threshold set for testing purposes). A visual and audible alert was generated within the "speeding" vehicle alone, announcing, "You are traveling above the posted speed limit."

Stopped Vehicle Alert: Both visual and audible warnings were generated within the stopped vehicle and the second "connected" vehicle when no movement was detected for 15 seconds or more. To demonstrate, Vehicle A was stopped while Vehicle B continued to drive nearby. Participants in the stopped vehicle heard and saw, "Your vehicle appears to be stopped" while the nearby vehicle received a message saying, "Stopped vehicle detected". The visual alert was also accompanied by the distance calculated to the stopped vehicle. The SUVs alternated roles to allow participants to experience both messages.



SunTrax connected vehicle lane configuration utilized for the SASHTO event.

Wrong Way Alert: The track area was geofenced from the top of the roadside attenuator to Gantry 4 (see image left). Vehicle A mimicked wrong way driving in Lane 3 while Vehicle B was stopped within the geofenced area in Lane 2. Both vehicles received visual and audible alerts. Vehicle A (the wrong way driver) received an alert saying, "You are driving in the wrong direction" while Vehicle B received, "Wrong way driver detected in Lane 3". The visual alert for Vehicle B also included the closing distance to the wrong way driver. Again, the SUVs then switched position to mimic the other experience.

At the end of the day, the event proved favorable for both presenters

and participants. SASHTO attendees were treated first-hand to a connected vehicle experience that went off without a hitch. For the Turnpike team, there is no time to rest on laurels as preparation has already begun for the next phase of real-world trials. A little teaser? Look for future articles highlighting connected corridors on both the Turnpike Mainline and Beachline Expressway, both slated to begin equipment installations later this year.

For more information, please contact John Easterling at (954) 934-1620 or by email John.Easterling@dot.state.fl.us.

TSM&O Resources Benefit Construction Safety Initiatives

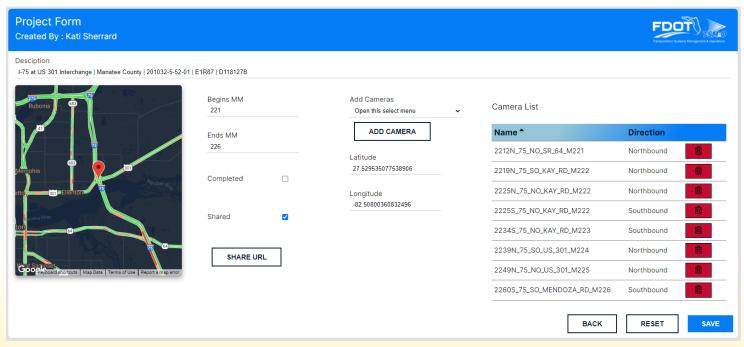
By Chrissie Collins, District One TSM&O IT Specialist, FDOT

Kati Sherrard from District One Construction was approached by District Leadership to find a way to improve an issue with daily congestion at a current project, which led to her evaluating a variety of perspectives when identifying issues and possible solutions. Consideration was given to the viewpoints of Design, field staff, drivers, and the Satellite Transportation Management Center (STMC) which prompted her to approach the District Traffic Operations Engineer, Mark Mathes, for possible solutions using existing technology.

With access to so many technical resources, the IT staff listened to Kati's issue and then quickly brainstormed to put together a viable solution that falls in line at the very core of the Vital Few by enhancing safety and mobility for travelers.

A dynamic dashboard was quickly developed within a couple weeks that the construction staff could use to display on large TVs or monitors at their field offices to keep an eye on the projects in real time. Kati was given the ability to create her own dashboards by clicking on a map module of the construction site and then to select cameras to display in the dashboard. Once created, a button generates the hyperlink to share with the construction engineers. Other features were added like the weather forecast that starts out with the current conditions and provides an hourly forecast for the next 12 hours to assist the engineers with anticipating impacts to the construction zones. The map shows real time traffic flow conditions, and each camera can be changed to full screen mode for better visibility.

Having real time information on hand provides the construction engineers with the ability to detect mobility issues in real time and partner with the contractor to investigate the issue and quickly work towards solutions that increase safety and mobility to the travelers.

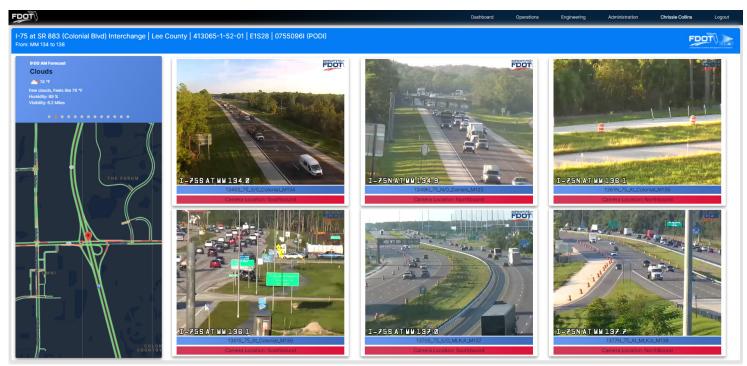


Adding a new construction project is as simple as dropping a pin on the map and then selecting cameras in that location. continued on page 7

TSM&O Resources Benefit Construction Safety Initiatives, continued from page 6



Once added, the projects are shown with detailed information that indicates the beginning and ending mile markers.



The construction project can be shared with others that are authorized to access the construction dashboards.

This is a new application that has so much more potential to further equip the construction engineers and increase safety and mobility. Future enhancements include traffic speed in real time to compliment the visual display of each camera.

Innovation in technology continues to bring the Vital Few to fruition in District One TSM&O.

For more information, please contact Chrissie Collins at (863) 519-2262 or by email chrissie.collins@dot.state.fl.us.

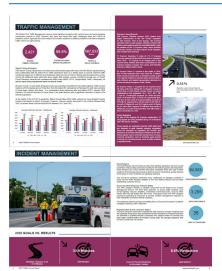
District Four Publishes Highly Anticipated 2020 TSM&O Annual Report

By Alexandra Lopez, District Four TSM&O Program Engineer, FDOT

With great enthusiasm, the District Four Transportation Systems Management and Operations (TSM&O) program officially published the highly anticipated 2020 TSM&O Annual Report. This annual report highlights District Four's



ingenuity and adaptability in Transportation Management Center (TMC) operations, incident management, and arterial management due to the COVID-19 pandemic.



A major theme throughout this year's report was TSM&O's enhanced performance. As outlined in the report, throughout 2020, the COVID-19 pandemic impacted all aspects of TSM&O. In response to these impacts, an emergency teleworking plan was created for TMC operations. The plan consisted of a comprehensive set of procedures, scenarios, equipment, and resources needed to facilitate teleworking capabilities for operational staff at partial or full capacity. Without any disruption to the TMC's 24/7/365 operations, District Four TSM&O was successful in operating under a preemptive solution focused on operations-centric roles. For instance, non-essential staff vacated their offices, allowing for increased social distancing, while TMC operators filled the vacated offices and converted them into traffic monitoring consoles.

Also reflective of an enhanced performance was District Four's Average Roadway Clearance Duration, a key metric of any incident management program. In 2020, District Four TSM&O continued its record of advancement with an average roadway clearance of 30.90 minutes, which accounted for a 4.8 percent improvement in roadway clearance since 2019.

In 2020, focus also shifted to enhanced signal timing strategies for District Four TSM&O's arterial roadways in Broward County. District Four observed impressive benefits from an Adaptive Traffic Control Systems (ATCS) deployment on Pines Blvd., from the Dykes Rd. intersection to the Flamingo Rd. intersection. Improvements were made to travel times, delays, and stops. In a comparative study performed with and without ATCS, January 2020 showed a 30 percent reduction in travel times in the peak direction with a significant reduction in stops in the arterial progression.

One of the most important metrics displayed in the 2020 Annual Report is the Average Annual Combined Benefit-Cost (B-C) ratio; a figure-value that represents the benefits toward motorists based on improvements to freeway and arterial management programs. In 2019, the Average Annual Combined B-C ratio was 13.06. 2020's B-C ratio was reported as 10.51. The decrease is attributed to a reduction in traffic volumes and corresponding road user benefits, due to the COVID-19 pandemic. Despite the decrease, the 2020 B-C ratio signifies that every dollar spent on improvements within the TSM&O program generated \$10.51 worth of motorist benefits in arterial and freeway travel times and fuel savings.

District Four's perseverance and innovation continues to set trends within the state and region. The above-mentioned accomplishments, plus more, are highlighted in the 2020 TSM&O Annual Report. To review the full report, please visit: https://www.fdotd4traffic.com/assets/pdfs/documents/annual/2020AnnualReportFinal.pdf

For more information about District Four's TSM&O strategies, please contact Alexandra Lopez at (954) 777-4376 or by email Alexandra.Lopez@dot.state.fl.us.

District Two Road Ranger Rescue

By Dee Dee Crews, District Two ITS Operations Project Manager, FDOT

The District Two Road Ranger Service Patrol began in 2000 with only eight routes in the Jacksonville area. Over the past two decades the program has expanded to include eighteen routes, covering 384 center line miles on I-10, I-75, I-295, I-95, 9B, SR23 and J Turner Butler Boulevard. These routes include 24-hour coverage, 7 days a week. We recently started a new route covering the Mathews Bridge, Arlington Expressway, and Martin Luther King Parkway. This newly expanded route services a major corridor in and around the downtown Jacksonville area.



During this expansion, we've come to the realization that not all heroes have starring roles in action movies. Some drive Florida's highways looking for opportunities to keep the motoring public safe. One such opportunity came for Road Ranger Anthony Weakley in the early morning hours of August 21st. Weakley was just about to finish up his overnight shift when his headlights reflected off something in the tree line. Weakley soon realized he was looking at the tail lights of a crashed Nissan Altima on I-295

near Dunn Avenue, but when he spotted orange flames coming from the front end of the vehicle, he knew he had to act quickly. As Weakley was running over to the Nissan, he heard screams and arrived just in time to see the driver trapped inside, wedged between the dashboard and floorboard. Within seconds, the flames spread, engulfing the entire front end of the vehicle. After first checking with the driver to see if he felt like he could be moved, Weakley then carefully pulled the victim to safety. It was later determined that the victim suffered breaks in both legs from the crash.

Law enforcement arrived on scene minutes later. While the victim was prepped for hospital transport, Weakley began assisting with traffic maintenance. Police Sergeant M.J. Lessard with the Jacksonville Sheriff's Office later sent an email to Tracy Hisler-Pace, Communications Manager with the Florida Department of Transportation District Two, commending Weakley's heroic efforts. According to Sgt. Lessard, "Road Ranger Anthony Weakley was first on scene and observed the vehicle in the wood line as it began smoking. The driver was pulled to safety and not harmed by the fire that completely engulfed the engine and front compartment of the vehicle. His swift actions saved the driver from sustaining serious burns or great bodily injury."

Weakley was guick to note that he had already stopped to check on a couple of abandoned vehicles that same night, and that he was driving even slower than usual because he didn't feel well. All those factors worked together to put him in the right place at the right time. Weakley is convinced that if even one of those factors had been removed from the equation, he wouldn't have been there at that moment. Just another day on the job for Road Ranger Anthony Weakley, but a dividing line in time for one very grateful motorist.

For more information, please contact Dee Dee Crews at (904) 903-2009 or by email deedee.crews@dot.state.fl.us.

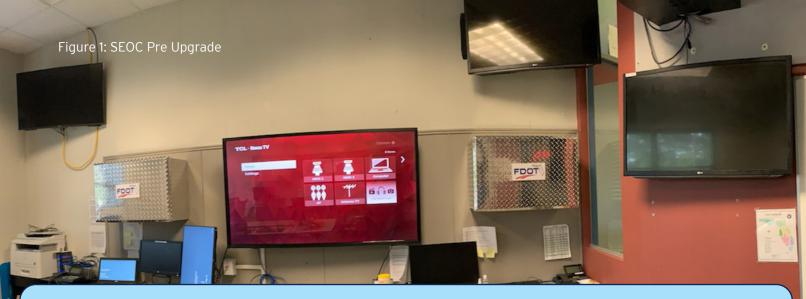
Break Time

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REPORT VITAL **SOLUTIONS DISPLAY JEOPARDIZE** RESPONDERS **GANTRY ATTENUATOR THRESHOLDS** DASHBOARD

CAMERA ENHANCEMENTS ARTERIAL **ANCILLARY SUNTRAX** BROADCAST **SIMULATE** DEMONSTRATE **REDUCTION HURRICANE**





Systems Upgrade for State Emergency Operations Center (SEOC) and Barry **Emergency Operations Center (BEOC)**

By Kenny Shiver, ITS Communications Administrator, FDOT and Joshua Beizer, Atkins

In mid-April 2021, the FDOT Traffic Engineering and Operations (TEO) office was tasked by the Chief Engineer to upgrade the State Emergency Operations Center (SEOC) room ESF 1/3 by mimicking the operational concept of a Regional Transportation Management Center (RTMC). The primary task was to replace the existing video wall solution in the room and have it operational by the start of the 2021 hurricane season.

The existing video wall (see Figure 1) in room ESF 1/3 consisted of monitors controlled by individual computers that were installed on the fly as new data systems became available at the SEOC. For example, one 42" monitor was installed in the middle during Hurricane Michael to provide access to view FL511.com. The rest of the room was outfitted with a projector for SunGuide® video feeds, one 65" monitor for local presentations, one 42" monitor for weather monitoring, and another 42" monitor for controlling the SunGuide video feeds to the projector. This solution was able to provide the critical information to support the SEOC for years but was not user friendly or systematically upgraded to use.

The goal of this upgrade project was to improve the user's experience of the shared displays and expand screen real estate to allow for more content to be viewed concurrently. Multiple video wall solutions were reviewed and discussed. The most important features that were evaluated in each option were how simple the solution was to use, if the system could be managed remotely at the nearby Barry Building, and the system's ability to natively run applications such as the Data Integration and Video Aggregation System (DIVAS) external video wall application.

During normal activations of the SEOC, room ESF 1/3 is tightly packed with an FDOT team that is responsible for various specialized projects. During COVID-19 activations, the SEOC ESF 1/3 room has been operated with limited staff due to the social-distancing requirements, with additional support being provided from the Barry Emergency Operations Center (BEOC) remotely. There is little to no room available for a dedicated video wall operator in either event, which explains the need of a simple-to-use system. Video wall layouts would need to be created and saved allowing the existing staff to easily select what content was shown on each of the room's displays. It was also required that the system could be remotely managed in the event additional layouts were needed during an activation, or if any troubleshooting needed to occur.

The final requirement was that the system would need to be able to natively run standard Windows software and proprietary software such as the DIVAS external video wall application, which was partially built with this application in mind, and have a built-in web browser to view websites such as FL511.com. continued on page 11

Systems Upgrade for State Emergency Operations Center (SEOC) and Barry Emergency Operations Center (BEOC), continued from page 10

The DIVAS external video wall (see Figure 2) application allows the SEOC to display clusters of saved DIVAS video streams on any wall in the room. These clusters are easily created and maintained by FDOT staff via the DIVAS website. Clusters can be created prior to a storm based on the anticipated path allowing the SEOC staff to monitor the Interstate Highways in areas expected to be affected. Similarly, staff can monitor the FL511.com website to ensure any required detours are posted to notify the public in the event of a road closure. Many other offices in the FDOT have dashboards that are also accessible at the SEOC and can be presented as needed.



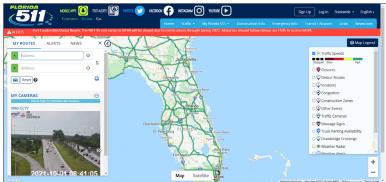


Figure 2: DIVAS External Application & FL511.com

During the new project implementation, three 75" monitors were installed in a horizontal array and configured as a standalone main video wall. These monitors could comfortably fit 18 video streams each and were the largest displays to utilize the space. The existing monitors were relocated around the room to be used as an ancillary video wall, allowing single screen applications (such as FL511.com) to be displayed without taking away space from the main wall. This ancillary wall is composed of one 65" monitor and three 42" monitors.

The TEO office was able to leverage the Florida ITS Operations Network (FION) to provide a connection between the SEOC and the Barry building. This connection allows the wall to be managed from anywhere.

Installation was completed (see Figure 3) at 4:00am on May 28, 2021, before the 2021 hurricane season started, ensuring that the system was ready to support the SEOC. This system has been utilized in the supervision of the Surfside building collapse response in June and Hurricane Elsa that followed shortly after. In the future, the TEO office plans to leverage this new system to provide video walls to the BEOC for any future support that might be needed.



Figure 3: SEOC Walls

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