FLORIDA DEPARTMENT OF TRANSPORTATION

TSM&O DISSEMINATOR

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS
September-October 2020

Situational Awareness Dashboard During Hurricane Sally

Roosevelt Bridge Closure: District Four TSM&O in Action

Statewide ITS Communication Network (SICN) Phase I & II Milestones Accomplishment

FLORIDA DEPARTMENT OF TRANSPORTATION'S
TRAFFIC ENGINEERING AND OPERATIONS PUBLICATION

FDOT TSM&O
Transportation Systems Management & Operations

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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 Langford (Jennifer.Langford@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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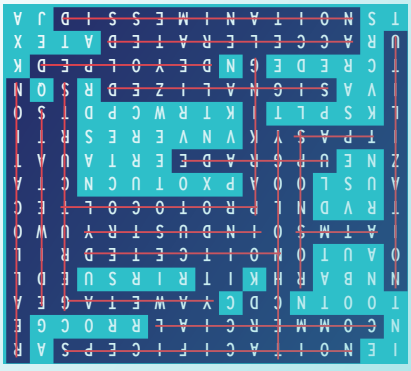


FDOT Updates SunGuide® Style Guide, and Develops New SunGuide Style Guide CBT Course

By Christine Shafik, State TSM&O Software Engineer, FDOT and Jay Hamburg, Global-5

By developing new protocols for naming parameters and managing traffic data within SunGuide software, the Florida Department of Transportation (FDOT) recently took several large steps toward ensuring the consistency of vital data that supports safety and mobility on highways and arterial roads.

The project was planned to take place over several phases with input from FDOT district representatives and industry partners, providing knowledge and suggestions. The major tasks of the project included completing the comprehensive Style Guide; planning and creating the computer-based training modules; and producing a certificate of completion for those taking the self-guided course.

Economic growth has resulted in greater FDOT responsibilities. These include an increasing number of roadway miles under its management and a growing number of vehicles and traffic-detection devices on those roads. The FDOT realized the urgent needs and has responded by upgrading the training and expanding it to cover new areas such as the Truck Parking Availability System (TPAS).

Adding to the complexity of FDOT's challenge was the profusion of new roadside detection devices. As the system has expanded, it has come to encompass units that include roadside radar devices, Bluetooth units, closed-circuit cameras, and truck parking detection devices.

Motorists see the benefits of accurate and timely traffic data via Florida 511, FDOT's advanced traveler information system. FL511 offers real-time estimates of arrival times and provides alternate routes for motorists trying to avoid crash sites and backups.

During the yearlong overhaul and expansion of the SunGuide Style Guide, FDOT also added a new 1.0 PDH credit computer-based module for self-directed learning. This convenient and user-friendly approach lets operators learn proper protocols for data management. These include conventions for labeling information types, abbreviating road names, describing incident locations, construction activities, and detours.

The Style Guide project also includes guidance on how data will be shared between connected vehicles or between autonomous vehicles and roadside equipment in the future.

For more information, please contact Christine Shafik at (850) 410-5615 or by email at Christine.Shafik@dot.state.fl.us.

FDOT Truck Parking Availability Systems (TPAS) Private Sponsorship

By Marie Tucker, Commercial Vehicle Operations Manager, FDOT and Pradeep Rao, HNTB Corporation

The Florida Department of Transportation (FDOT) is the first agency in the nation to have private sponsorship for its Truck Parking Availability System (TPAS). Private sponsorship at roadside truck parking facilities helps to offset the TPAS maintenance costs. The sponsorship allows the reallocation of public funds to other transportation system enhancement activities and provides a benefit to the sponsor by identifying them with the sponsored facility.

FDOT TPAS Sign with Sponsor's Sign

FDOT Truck Parking Availability Systems (TPAS) Private Sponsorship, *continued from page 4*

The Federal Motor Carrier Safety Administration (FMCSA) hours-of-service regulations require that commercial vehicle operators receive adequate rest. The rules were designed to prevent commercial vehicle related crashes and fatalities by prescribing on and off-duty rest periods for drivers. For Florida truck parking, the FDOT has conducted 15 studies at the statewide, district, and regional level since 2009, most focused on public truck parking facilities. The studies concluded Florida truck drivers face the following issues in meeting the hours of service requirements:

- **Lack of safe and convenient parking options**
- **Lack of real-time parking availability information**
- **Interruption in "just in time" delivery or arrival of shipments**
- **Inability to provide advance planning for freight operations**
- **Truck parking violations**

Each of these issues are addressed with TPAS.

FDOT TPAS is electronic monitoring and dissemination of truck parking information using the FDOT Statewide ITS Communication Network (SICN) and the internet.

In 2016 a commercial truck parking detection technology evaluation research funded by the FDOT was conducted by the University of Florida (UF) at two rest areas to test multiple in-ground sensors used for the detection of vehicles in parking spaces. The research project examined technology capabilities and integration with existing FDOT ITS infrastructure. This research tested the performance of available technology to further define the parameters of the new TPAS deployment. Four (4) vendors participated in the evaluation process. All vendor technologies supported wireless detection systems (WDS). Ground-truth of the in-ground sensor vendor data was verified by the researchers through video logs. Three (3) vendors were determined to meet the project criteria and are now included on the FDOT Innovative Product List (IPL) for use on projects. The research study resulted in the establishment of a Developmental Specification 660 outlining the requirements of the WDS for use in TPAS deployments.

The TPAS project used Accelerated Innovation Deployment (AID) demonstration federal funds to support deployment of TPAS in District 5. The FDOT then conceptualized a scalable statewide deployment and applied for the Federal Grant under the FAST Act in 2016. The FDOT was awarded the FAST Lane grant and received over $11 million in federal funds to complete the statewide deployment on public facilities along the interstates.

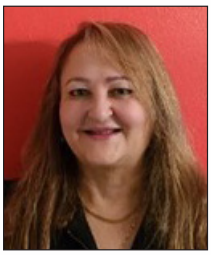
The TPAS project is envisioned to be divided into three stages for systemic deployment that includes private truck parking spaces and analytics. The three stages include:

- **Stage 1. Implementation of technology to accurately assess and disseminate the availability of truck parking**
- **Stage 2. Development of analysis for truck parking availability**
- **Stage 3. Incorporation of private parking locations for systemwide resource utilization**

The opportunity for private sponsorship was identified early in the project development. Constant communication between FDOT, the general consultant providing systems engineering support, and the marketing sub-consultant, supported the development of the opportunity. The private sponsorship for TPAS by means of signage was approved on February 20, 2018 by the Federal Highway Administration. This approval allows the FDOT to affix sponsorship acknowledgement plaques below TPAS signs in advance of the public truck parking locations within interstate right-of-ways throughout Florida. By coordinating early, provisions were made on the original sign structure designs to accommodate the additional sponsorship signs. Currently, sponsorship is provided for TPAS signs in Martin County, with on-going coordination occurring for the remaining signs throughout the state.

For more information, please contact Marie Tucker at (850) 410-5619 or by email at Marie.Tucker@dot.state.fl.us.

Welcome Aboard!



District Seven is pleased to announce the appointment of Megan Arasteh, P.E. to the position of District Transportation Systems Management and Operations (TSM&O) Program Engineer, effective September 11, 2020.

Megan is a Professional Engineer in Florida and Massachusetts, with a Master's degree in Civil Engineering from the University of Pennsylvania. Megan brings more than 30 years of experience in the transportation industry, working for both private firms and public agencies.

Since 2018 she has served as the District Construction Manager for the $220 million Selmon West Extension, a complex segmental bridge, from Gandy Bridge to the western terminus of the Selmon Expressway in Hillsborough County. As the Assistant District Construction Engineer for the last six years, she has led a collaborative team of 11 staff members to include Administrative Managers and Engineers.

Megan has been a member of the district team responsible for developing design build (D/B) proposals, concept plans, and evaluations for major projects including interstate managed lanes. Previously, Megan held the position as District Drainage Engineer from 2000 to 2013 where she was instrumental in the design, permitting, and letting of many challenging projects such as the Gateway Expressway and I-75 D/B projects. Megan is the recipient of several teamwork and Davis Productivity Awards, as well as the Dorothy Ryan Role Model of the Year.

Megan's passion is mentoring both high school students with interests in engineering and young engineers. On a personal note, Megan loves spending time with her family - especially her nephews, traveling, learning about history, art/painting, and architecture. Please help us welcome Megan Arasteh to her new role!

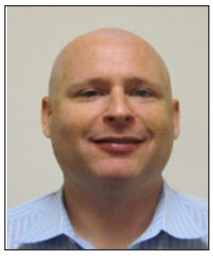
District Three is pleased to announce the appointment of Kerrie Harrell as the District Traffic Operations Engineer, effective July 31, 2020.

Kerrie started her career with the Department in 2013 as the District Three Design Build Program Manager.

Kerrie graduated from Florida State University with a B.S. in Civil Engineering in 2000 and began her engineering career working in the private sector while pursuing her college degree. She has over 20 years of experience in transportation engineering, including structures design, project management, and design build.

Kerrie currently lives in Marianna with her husband and two children. Please join us in welcoming Kerrie to her new role.

District Three would also like to thank Steve Benak for his leadership over the last 30+ years. Steve has served as the District Construction Engineer, the District Materials Engineer, and retired as the District Traffic Operations Engineer.



District One is pleased to announce the appointment of Mark Mathes, P.E. as the District Traffic Operations Engineer, effective September 29, 2020. This position was previously held by Trisha Hartzell.

Mark received his Bachelor's and Master's degrees in Civil Engineering from Wayne State University and is a Florida Registered Professional Engineer. He is currently pursuing his Certified Public Manager designation.

Mark has over 11 years of experience in the transportation engineering industry in both the private and public sectors. He began his career with the Department in 2014 in District Seven Design as a Traffic Design Engineer II and then to Traffic Operations in 2015 as their ITS Operations Engineer. In 2017, he came to District One Traffic Operations as the TSM&O Program Engineer. Prior to joining the Department, he worked in the private sector as a transportation engineer.

On a personal note, Mark enjoys spending time with family and friends, hiking with his dog, and cooking. Please join us in congratulating Mark on his new position! He can be reached at Mark.Mathes@dot.stat.fl.us and Mail Station 1-8.

District One would also like to thank Nik Patel for serving as the Interim District Traffic Operations Engineer and Randall James for serving as the Interim Heartland Operations Engineer. Effective Monday, October 5, Randall has agreed to serve as the Interim TSM&O Program Engineer for Traffic Operations while we search for Mark's replacement.

FDOT District Six Uses Business Intelligence Platform to Harness Operations Data

By Javier Rodriquez, District Six TSM&O Program Manager, FDOT

The Florida Department of Transportation District Six is using business intelligence (BI) technology to aggregate, analyze, and share the roadway data collected by the Transportation Systems Management and Operations (TSM&O) Office.

TSM&O staff took advantage of existing data integration and BI tools to harness its vast amount of historical and roadway data. The project started out of necessity: to produce a reliable inventory of intelligent transportation systems (ITS) devices, such as closed-circuit television cameras, traffic detectors, and dynamic message signs. TSM&O staff used data from the SunGuide® Advanced Traffic Management Systems (ATMS) software to pinpoint each device on a map. The inventory could now dynamically change as new devices were added and current devices were replaced, repaired, or removed. The data could also filter the devices by categories, such as roadway, operational status, and manufacturer. The power of this technology is allowing for multiple data sets to be combined and presented in more user-friendly and decision-oriented formats.

TSM&O staff built on the success of this report and leveraged the tool to support additional functions of its operations. Ideas for different BI reports came from other staff members and the tool now supports 10 different reports, from maintenance to incident management and public information. For example, the TMC staff was able to access traffic signal inventory information from a municipal database and created a map showing more than 1,300 signalized intersections on state roads that are owned by FDOT but operated and maintained by partner agencies.

The District's use of BI Technology and reports is also making sharing data with the public easier. The program website, https://sunguide.info/, has been updated with "TMC-At-A-Glance" and Traffic Incident Management dashboards that display relevant data for the public and its partner agencies. This lowers the barriers between the public, other stakeholders, and the FDOT, demonstrating the Department's accountability and transparency in how it operates.

Incorporating business intelligence software and consolidating the center's data has many more applications and can further improve transportation management efforts. Using this approach ensures that roadway managers have the best data available when making decisions and can be applied to a variety of data uses within District operations.

For more information, please contact Javier Rodriquez at (305) 640-7307 or by email at Javier.Rodriguez2@dot.state.fl.us.

Situational Awareness Dashboard During Hurricane Sally

Amy DiRusso, District Three TSM&O Program Engineer, FDOT; Rakesh Sharma, HNTB; and Janelle Versnick, HNTB

On Wednesday morning, September 16, 2020, Hurricane Sally made landfall as a Category 2 Hurricane and its devastating toll was visible across the southern states by nightfall. The slow moving hurricane caused Pensacola and other areas of the Florida panhandle to experience extensive flooding. Rivers were approaching dangerous levels and numerous counties were under curfews to keep residents safe.

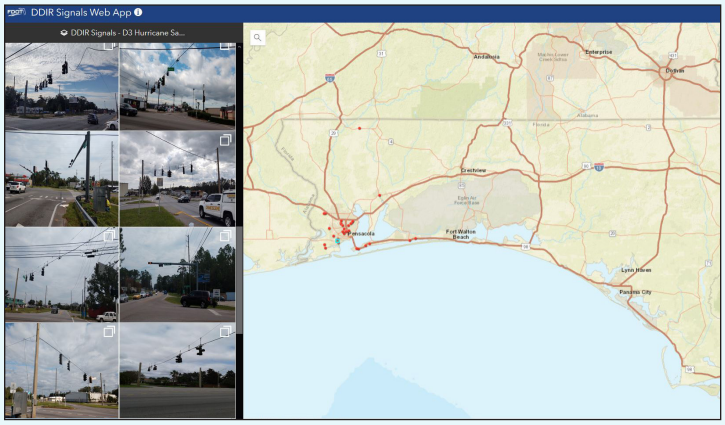
Signal damage from Hurricane Sally

District 3's robust planning for resiliency and applying lessons learned from Hurricane Michael shined through during Hurricane Sally. This article specifically focused on District 3's Traffic Operations Department's effort towards addressing the traffic and traffic signal issues:

- Trained and prepared the Damage Assessment Teams (DAT) focused on traffic signals
- Trained Situational Awareness Teams (SAT) focused on reporting the status of the traffic signals
- Planned regions for the Traffic Signal damage and repair support
- Developed a real-time field collector application for traffic signal repair and operational status

DAT/SAT for Traffic Signals: The trained DAT and SAT for traffic signals were assigned various regions to avoid team overlaps using GIS-based regional maps and routes that also worked offline. Three Pre-event Contracts were activated which included emergency traffic signal repair, generator deployment and CEI. While the traffic signal contractor teams were busy repairing the signals and dispatching repair personnel, the DAT and SAT teams were assigned to various regions to collect situational awareness and then the DAT followed up to collect and report any major damage to traffic signals that then would be utilized for the Detailed Damage Inspection Reports (DDIRs). The DAT and SAT teams and CEI were coordinated through one point of contact to keep GIS information backed up and updated real-time based on field crew needs.

The first day the DAT and SAT teams were required to report the status of traffic signals (operational/non-operational/flashing), the power supply to the signals (commercial power/no power/generator power), and to capture images of the intersection. Once the DAT and SAT teams updated the information in the collector application, the management dashboard was updated. The field notes were also provided to describe any significant damage to the signals that could impact the operation of the intersection.

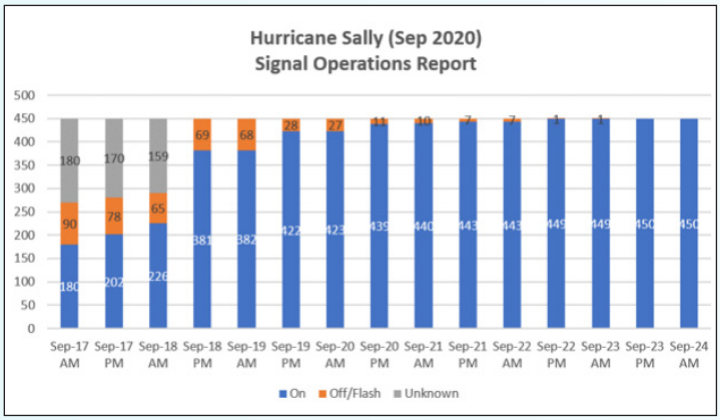


Device damage image viewer

Once locations with no commercial power had been identified, generators were deployed to those signals and the teams assessed the functionality and fuel status of generators. If the signal damage was extensive enough that it would not function properly under generator power, the signal was put into flash mode to avoid any operational traffic conflicts. In one and a half-days, the DAT and SAT teams were able to complete the situational awareness of all signals, over 450 locations. The graph below shows the daily progress of situational awareness and operational status.

Situational Awareness Dashboard During Hurricane Sally, *continued from page 8*

The core office team provided training, support to the field crew and emergency personnel, monitoring of data collection efforts and responded to on-the-fly requests throughout the entire damage assessment period. The team also managed the incoming data to confirm changes in device status.

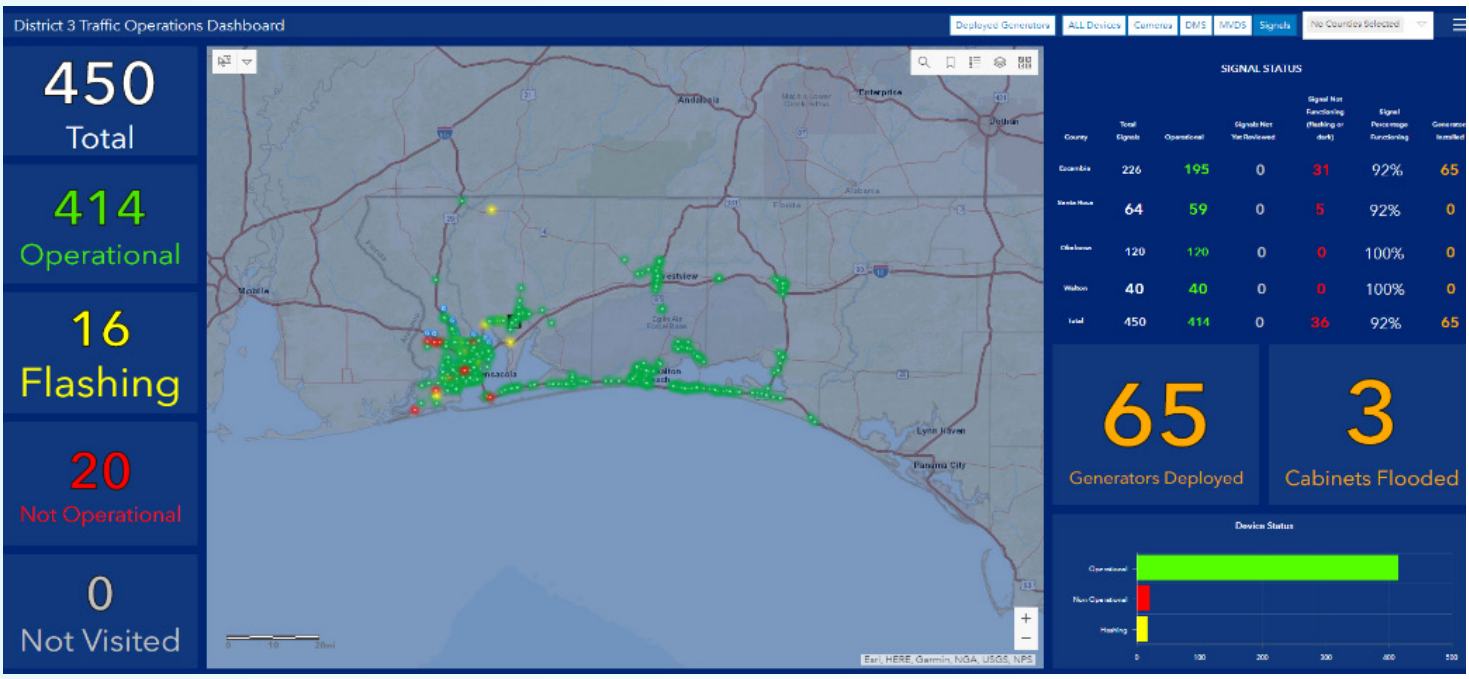


Real-Time Field Operational Dashboard: The mobile data collection application used by the DAT and SAT teams was built on the Esri ArcGIS Cloud platform in ArcGIS Online and was connected to a companion Operations Dashboard, which was used by team members in emergency management offices. The application was easy to use and provided the capability of capturing data offline, which could then be synced once the field crew traveled into an area with cell phone service or WiFi. The data was captured and displayed in real-time, which allowed everyone to be aware of the situation on the ground, and the damage was assessed efficiently, with no confusion or duplicity. A color scheme was implemented with all traffic signal displays that was grayed out at the onset indicating the unknown status right after the storm. The signals then changed from gray to red, yellow, or green depending on the status information entered by the field crew in real-time.

A Traffic Operations Dashboard was built to help team members located in the Emergency Operations Centers and Transportation Management Centers to track the status of the traffic device, as well as the progress of the team. The data provided in the dashboard was a combination of real-time changes by field crew through the mobile application and frequent reports received from other damage assessment teams. The site was continuously updated to suit the needs of a rapidly evolving situation, narrowing the focus of the assessment area and collection efforts when needed, and providing technical support to ensure access and availability were stable.

The Dashboard consisted of a large map, with the device status symbolized in red (dark or non-operational), green (operational), and yellow (flashing). Three selectors were available in the header of the application to filter the data by Deployed Generators, Device Type, and County. A summary table was included that provided real-time data aggregates of signal status, percentage of operational signals, and the number of generators deployed. A bar chart was also included that visualized the breakdown of device status. The elements in the dashboard were interactive and driven by the map extent and the selectors.

For additional information, please contact Amy DiRusso at (850) 330-1241 or by email at Amy.DiRusso@dot.state.fl.us.



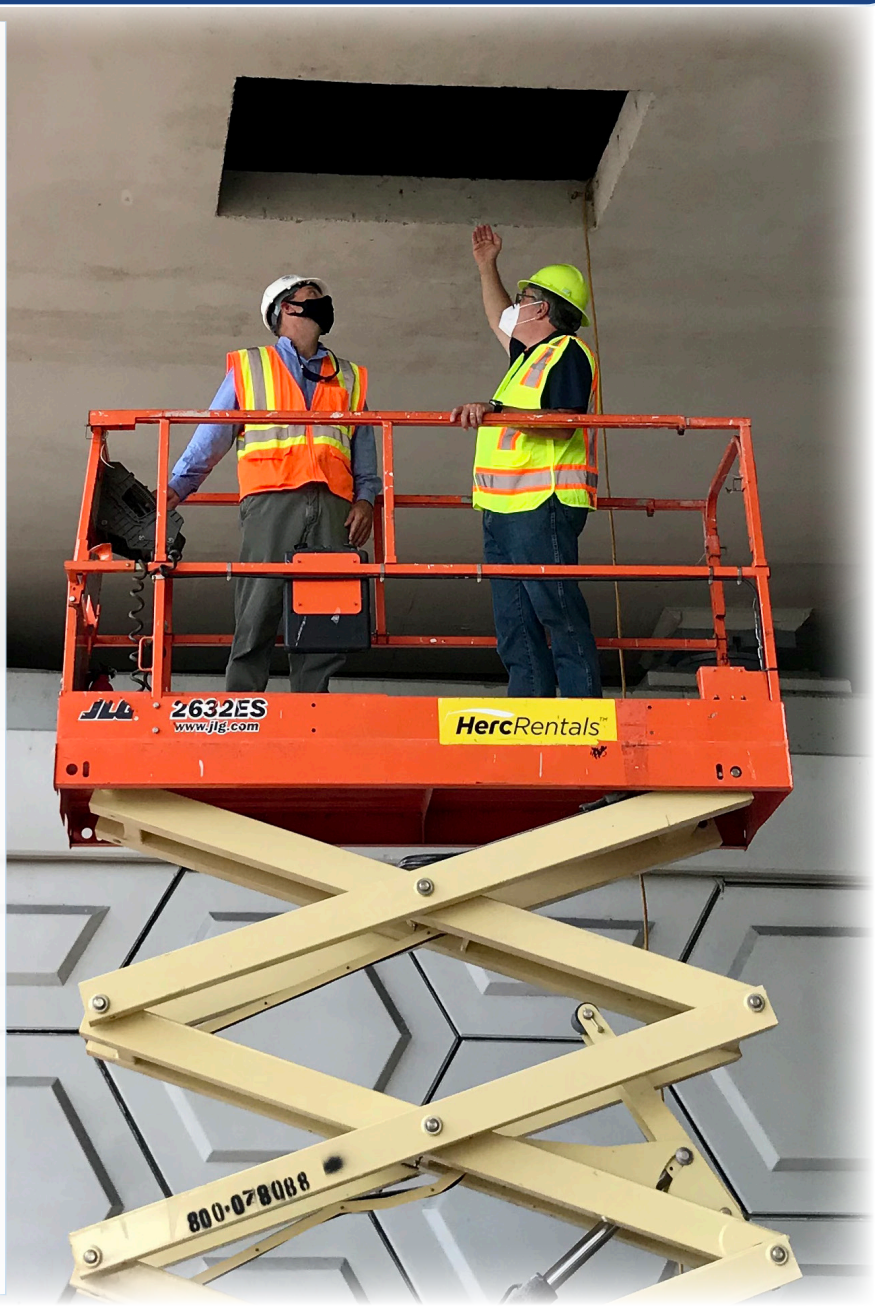
Map of traffic devices symbolized by device status - red (dark or non-operational), green (operational), and yellow (flashing)

Roosevelt Bridge Closure: District Four TSM&O in Action

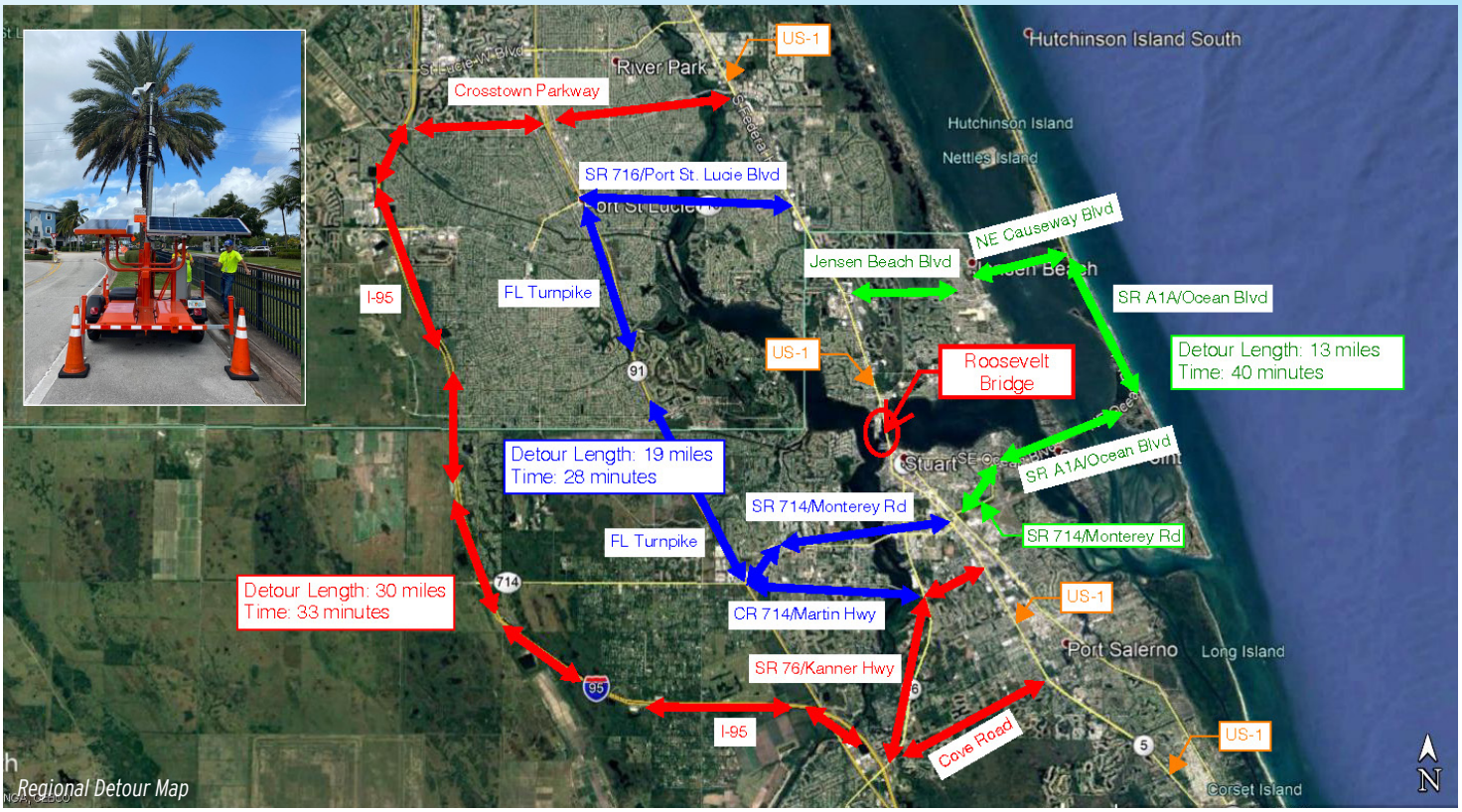
By Alexandra Lopez, TSM&O Program Engineer, FDOT

On June 16, during a routine biannual inspection and based upon feedback from local partners, Florida Department of Transportation (FDOT) inspectors found cracks due to corrosion on the southernmost span of a bridge in Martin County. In an abundance of caution, the Department first closed the southbound bridge until a thorough safety inspection could be completed.

Known as the Roosevelt Bridge, the one-mile long overpass, contains two separate bridges (three lanes each) spanning the St. Lucie River and connects several neighboring areas into the historic downtown area of the city of Stuart. On June 17, after a more thorough inspection was completed, the Department decided, with public safety as their foremost priority, to halt all bridge traffic and close all remaining adjoining bridges.



Roosevelt Bridge Closure: District Four TSM&O in Action, *continued from page 10*



Upon announcing the closure, the District Four Transportation Systems and Operations (TSM&O) program staff reacted immediately and began coordination with managers of nearby interstates, I-95 and Florida's Turnpike, to facilitate long-term detours for motorists. The team utilized all available resources to inform the public including dynamic message signs, highway advisory radio, Florida 511, and social media.

Collaboration on an effort this large involved several agencies including Martin County, the Town of Sewall's Point, the City of St. Lucie, and the FDOT. Each agency had their own distinct ways of monitoring their traffic systems. Thus, to create a unified approach, the District Four TSM&O program staff integrated divergent monitoring systems and enhanced them. This decision helped in communicating an event response plan between multiple agencies about the problems and solutions arising from the bridge closures.

The success of this real-time collaborative approach to managing traffic in a large geographical area was in part due to Martin County's existing TSM&O infrastructure. This infrastructure included a robust intelligent transportation system (ITS) including fiber communication, advanced traffic management system (ATMS) traffic signal control, and an intersection video observation system. Utilizing their ITS system, the District Four TSM&O program staff was able to monitor the traffic patterns along US 1 and the surrounding areas impacted by the closure of the Roosevelt Bridge. Also, real-time traffic performance measures such as travel time and travel speed collected through Bluetooth AVI devices helped keep the congestion levels in perspective near the bridge. Using closed circuit television video monitoring, any incident or anomaly near the bridge causing congestion would be quickly identified for potential solutions.

Once TSM&O staff established communication procedures, the District Four TSM&O Arterial Management team collaborated with Martin County to deploy signal timing changes for the US 1 corridor. This included the primary route crossing Roosevelt Bridge along US 1, which was now closed. Traffic engineers observed a sudden increase in travel flow at SR A1A at Sewall's Point Road, since this was the only bridge crossing eastwardly and a primary detour route for the northbound traffic. The sudden increase in traffic created noticeable congestion, highlighting the need to change the signal phasing in that location. Local law enforcement was onsite at this intersection for manual control of the traffic signal.

After the initial period of the detour route deployment, the intersection was monitored continuously and turning movement counts in the location were collected for analysis of travel patterns. Based on the data collected, an updated signal re-phasing plan was generated and implemented. For further traffic analysis and performance, vehicular volumes were also analyzed on a weekly basis, providing the District Four TSM&O program a critical perspective of the ongoing demand throughout the system.

Roosevelt Bridge Closure: District Four TSM&O in Action, *continued from page 11*

The signals near off-ramps for the Florida Turnpike were adjusted by the City of Port St. Lucie and Martin County to accommodate the increase in detour traffic. In coordination, the Florida Turnpike Traffic Management Center monitored real-time flows for potential backups at the affected interchanges on the Turnpike in the Martin County and St. Lucie County system.

During this time, the FDOT also suspended tolls for traffic entering and exiting Florida's Turnpike between milepost 133 (Monterey Road) and milepost 142 (Port St. Lucie Boulevard) to aid in the detour of traffic in and around the city of Stuart.

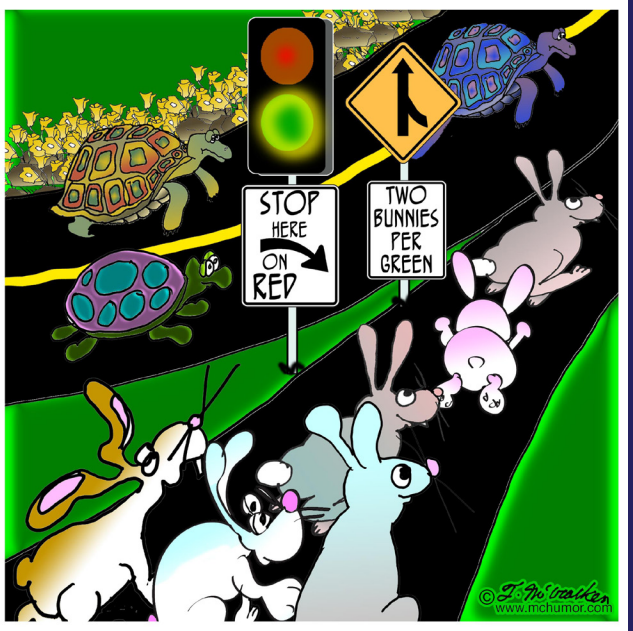
While detours were underway, the FDOT began placing asphalt and reconfiguring Dixie Highway/US 1 for future traffic patterns. After 10 days of subsequent repairs and reconfiguring, Roosevelt Bridge partially reopened to four lanes of travel, two northbound and two southbound. Upon re-opening, a five-ton weight restriction against trucks was implemented. Emergency service vehicles were exempt from the restriction. This coordinated effort involved local law enforcement to impose the restrictions at both bridge entrances and exits.

With any crisis, there are lessons learned. The Roosevelt Bridge closure revealed to the District Four TSM&O program the importance of strong relationships with local agencies. Most importantly, it reinforced an understanding of the importance of existing integrated systems and the additional ITS equipment required to supplement traffic systems during major events. This redundancy mitigated the subsequent ripple effects of road closures. If state or county agencies have an integrated traffic system of performance measures, surveillance systems, etc., then it becomes less arduous to identify the problem and easier to find solutions.

According to Daniel Smith, TSM&O Arterial Program Manager, "The ability of the TSM&O program and our partner agencies to immediately form a working group to manage the bridge closure's traffic impact was the key to our success. Our team continues to work closely in real-time to create and execute a traffic management plan. Each agency shared resources, installed new devices, and managed the traffic impacts with great success as shown by the TSM&O program's real time traffic monitoring abilities. This was truly a shining example of a new multi-jurisdictional team forming, creating, and then executing an emergency traffic management plan."

For more information on the District Four TSM&O program's response to the Roosevelt Bridge closure, please contact Daniel Smith, TSM&O Arterial Program Manager at Daniel.Smith@dot.state.fl.us.

Break Time



"THESE LANES ARE MOVING RIGHT ALONG!"

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COMMERCIAL
TECHNOLOGY
STATEWIDE
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ATMS
SIGNALIZED
PARKING
DEPLOYED
TPAS
REALLOCATION
DETECTION
UPGRADE
PROTOCOL
GATEWAY
STRUCTURE
ACCELERATED
SPECIFICATION
DISSEMINATION
INDUSTRY

Statewide ITS Communication Network (SICN) Phase I & II Milestones Accomplishment

Kenny Shiver, ITS Communications Administrator, FDOT; Terry Posey, Communications GC Deputy Program Manager, Atkins

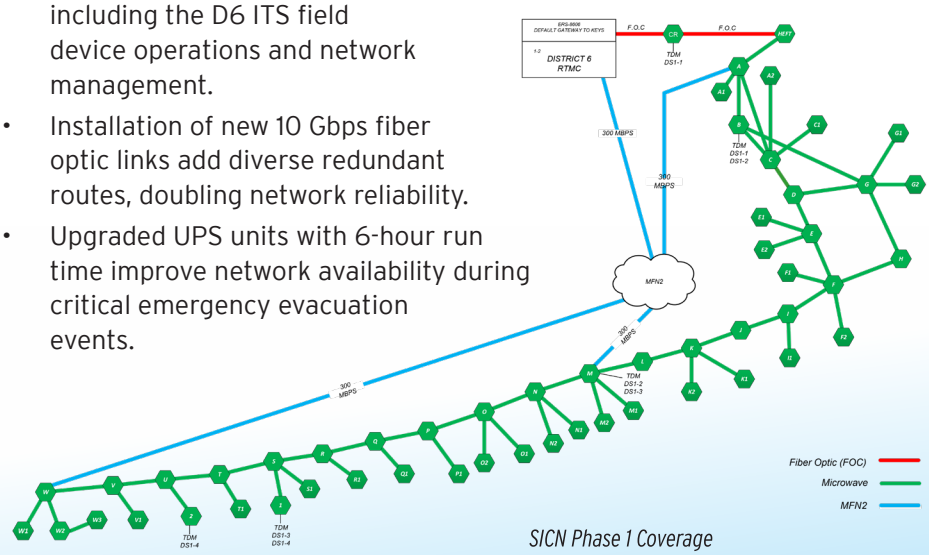
The ITS Communications team under the Central Office (CO) Transportation Systems Management and Operations (TSM&O) section has recently completed the SICN Phase I and II upgrade projects. These significant upgrades expanded the SICN coverage to the Florida Keys and enhanced the communications efficiencies.

Phase 1 – Florida Keys ITS Microwave Network Upgrade Project

District 6 operates remote closed-circuit television (CCTV) cameras and dynamic message signs (DMS) along the Coastal Highway US-1 in the Florida Keys to support critical storm evacuations. The video feeds and DMS control were transmitted from the field devices to the D6 regional transportation management center (RTMC) via an aging microwave system that was manufacture unsupported and was experiencing degraded operational reliability. The CO ITS Communications team developed the Phase 1 Keys ITS Microwave System Upgrade project to replace the obsolete infrastructure with licensed microwave radios and multiprotocol label switching (MPLS) enhanced service routers.

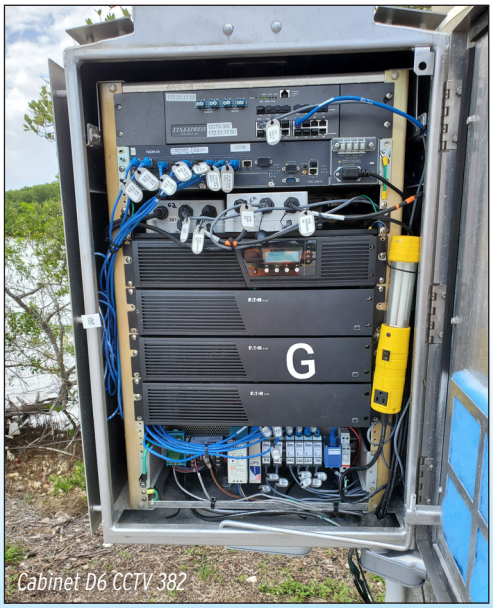
Benefits:

- FCC licensed microwave links ensure interference-free, high-bandwidth, high-reliability microwave connections.
- Ethernet packet microwave radios provide direct connection and integration with MPLS service routers.
- MPLS service routers provide multiple isolated network services including the D6 ITS field device operations and network management.
- Installation of new 10 Gbps fiber optic links add diverse redundant routes, doubling network reliability.
- Upgraded UPS units with 6-hour run time improve network availability during critical emergency evacuation events.



SICN Phase 1 Coverage

Phase 1 Photos: Pole G at US 1



Cabinet D6 CCTV 382

Statewide ITS Communication Network (SICN) Phase I & II Milestones Accomplishment,

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Phase 2 – Statewide ITS Communications Network Upgrade Project

The Statewide ITS Communications Network (SICN) transports Data Integration Video Aggregation System (DIVAS) and FL511 for all Districts and to the State Emergency Operations Center in Tallahassee, supports transport of District to District SunGuide® Software data, supports Managed Lanes and Tolls, and provides statewide Land Mobile Radio (LMR) coverage. The SICN's IP network traffic was transmitted over an aging microwave network using aging manufacture-unsupported IP routing and switching equipment; and was experiencing degraded operational reliability. The ITS Communications team developed the Phase 2 SICN Upgrade project to replace the antiquated IP routing and switching equipment at all communications sites with enhanced service routers.

Benefits:

- MPLS enhanced service routers provide isolated network services for District Wide Area Network operations, land mobile radio systems, and network management.
- MPLS enhanced service routers provide direct connection and integration with the existing SICN microwave radios.
- MPLS enhanced service routers provide compatibility and integration with the future statewide Ethernet packet microwave radio upgrade project.
- Phase 2 network is seamlessly integrated with the Phase 1 network, providing statewide SICN network management and single vendor technical support.
- Phase 2 network upgrade provides improved transport reliability for all Districts' ITS CCTV cameras feeds to the State Emergency Operations Center in Tallahassee.

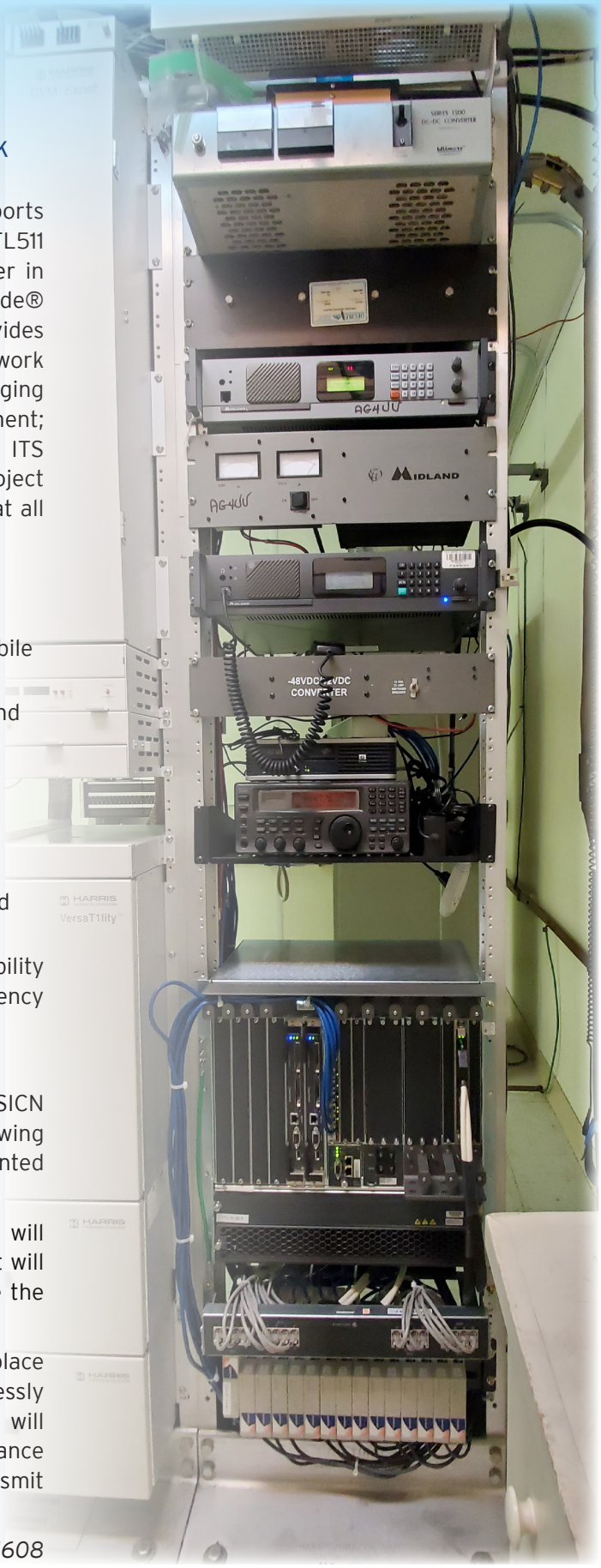
Planned Future Upgrades

The ITS Communications Team continues to plan the future SICN systems with Districts' inputs for upgrades. Currently the following phases are under planning stages and plan to be implemented starting in FY 22.

Phase 3: Microwave Radio Infrastructure Upgrade: Phase 3 will replace all of the microwave radios with high capacity links that will integrate with the routers installed in Phase 2 and will replace the antennas and transmission lines on each tower.

Phase 4: ITS Wide Area Network Upgrade: Phase 4 will replace the current ITS WAN routers with new routers that will seamlessly integrate the fiber network with the SICN. The new routers will leverage the upgraded, high capacity microwave system to enhance the microwave and fiber ring redundancy and increase fiber transmit speed.

For more information, please contact Kenny Shiver at (850) 410-5608 or by email at Kenneth.Shiver@dot.state.fl.us.



Phase 2 Photo: Milton MPLS Enhanced Service Router Installation

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