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Florida's Turnpike Enterprise Emphasizes the Role That ITS Can Play in Reduced Highway Visibility

As Florida's Turnpike Enterprise (FTE) continues to build out our ITS deployment across the 460 centerline miles of limited-access tollway, these ITS technologies cumulatively

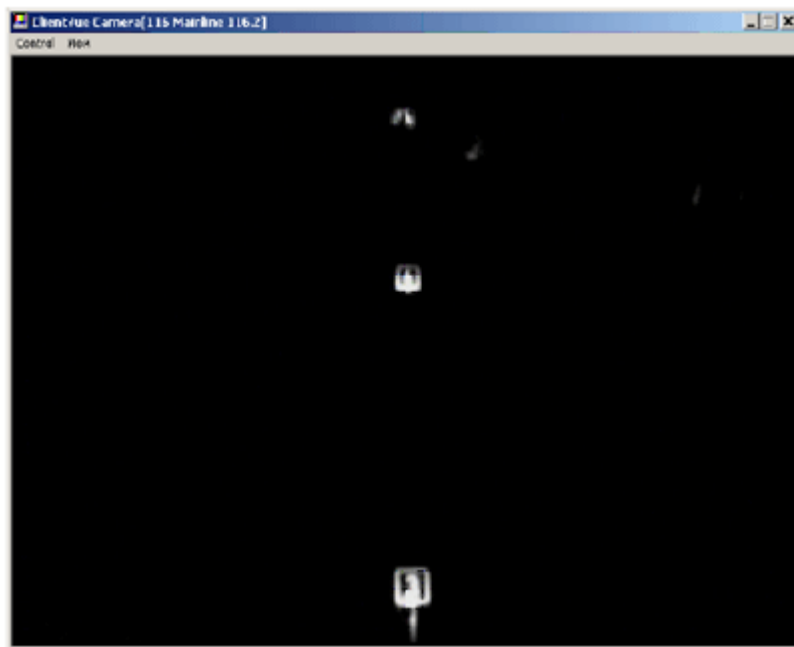
empower the transportation management center (TMC) staffs to greater levels of efficiency in everyday performance. We now have access to more than 300 closed-circuit television (CCTV) cameras bringing real-time roadway conditions back to the TMC. Additionally, we are preparing to receive real-time traffic flow data from radar-based vehicle detection devices and the automatic vehicle identification (AVI)-based travel time systems being constructed across our entire system. With these advances come not only added resources to help us manage traffic every day, but additional responsibilities to use the technologies we have been given to their fullest potential in serving our customers.

The FTE identifies five key areas in measuring its performance to its investors and the Florida Transportation Commission:

- Safety,
- Service,
- Speed,
- Soundness, and
- Staff.

The FTE's TMC focuses on all five and there is overlap in many of these goals relative to managing traffic and incidents. Any event that occurs along the turnpike system, whether it is a traffic crash, a motorist requiring assistance, or a construction/maintenance activity, can have an impact on the lives of our customers. Recently, Florida's Turnpike installed a canal protection system along much of the roadside in Miami-Dade, Palm Beach, and St. Lucie Counties. It consists of new guardrails and a cable barrier system. The project was the result of our traffic engineers' assessment that we had a growing pattern of canal entries along certain areas of the roadway, and an attempt to minimize the impact to those who leave the roadway. This new system follows the median guardrail project from a few years back, which is credited with saving an average of over 40 lives per year on Florida's Turnpike Mainline.

Not every project deployed by a transportation agency will save that many lives, but when FTE's highway operations managers saw the impact that a group of incidents had on I-4 between Orlando and Tampa on January 9, 2008, they decided to study and implement a system to better monitor and advise customers when roadway visibility is reduced by fog or smoke (brushfire) conditions on Florida's Turnpike system. The main constraint upon this effort was that whatever was implemented could be done low-cost and in a short amount of time.



Our first challenge was to find a better way to quantify the reduced visibility when fog or smoke conditions occur across the lengthy system, when a Florida Highway Patrol (FHP) trooper or State Farm Safety Patrol cannot always be at every spot. FTE Traffic Operations plans to install road weather information systems (RWIS) sensors in large-scale across the road segment, but these projects are currently in the unfunded portion of the Work Program. The Turnpike Maintenance team developed a proposal to install roadside signs (markers) to be able to assess visibility remotely by using the TMC CCTV cameras. These signs would be accompanied by low-cost solar powered lighting to allow the TMC to initially rate visibility based on placement at 300, 600, and 1,000 feet. Meetings conducted with the FHP revealed that consideration would be given by field troopers to closing the Turnpike roadway when visibility was reduced to less than 300 feet. A pilot site of these markers was implemented in less than three weeks from concept, and testing with the FTE's TMC proved that the concept is useful to assisting in the nighttime hours. FTE plans to install more sites at 10-mile increments in areas prone to fog conditions, mostly between Fort Pierce and Orlando.

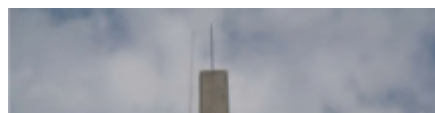


At the same time, FTE's ITS group was tasked to research how we could best make use of the citizens band (CB) radios used by truckers across the state. One commonality found by FTE's traffic engineers is that in several of the major crashes that occurred from limited visibility, oversized vehicles, many carrying freight and large loads, have been part of the secondary crashes that occur. If notice could get out quicker to truckers, since dynamic message signs are spaced 40 to 50 miles on the Turnpike mainline between interchanges in rural areas, these secondary

events could be averted. After Tim Bean and James Thomas of the FTE's ITS team researched options for implementing a CB-type system for the TMC, they realized that current commercial options did not provide the flexibility for remotely recording and downloading audio messages recorded by the TMC. Therefore, these two personnel were able to develop a low-cost solution to meet our needs. This solution consists of a power supply, an 'off the shelf' CB radio, and a radio controller, which are all loaded inside the existing ITS cabinet which serves a camera and detection device. Also, an 18 foot antenna is mounted at the top of the selected camera sites, to serve as transmitter. Highlights of the system include:

- Uses voice-over-IP (VoIP) technology to send audio messages recorded with TMC's application developed by systems team
- Connected from TMC to the test locations over Turnpike's ITS fiber network
- Broadcast range of 5 to 15 miles depending on conditions and antenna height
- Broadcasts emergency traffic information on CB Channel 19
- Remotely recorded and controlled from either Turnpike TMC
- Broadcasts can be sent to single transmitter or group of broadcast locations
- Messages can be played at varying time intervals

FTE currently has an experimental license from the Federal Communications Commission (FCC), and is in



the process of obtaining a permanent license for these sites. Traffic operations staff are currently defining protocols for which incidents this CB radio alert system may be best used for, but initially, major incidents, including those with reduced visibility and traffic diversions to other roadways, have been highlighted.

This mode of information media is intended to supplement—not replace—other existing dissemination modes, such as DMS, highway advisory radio, and 511. This CB radio alert system could advise truckers using those radio bands of the severe conditions or traffic incidents in such weather situations, hopefully, to preempt the potential secondary incidents, which many times are more impacting or tragic events when trucks are involved.



Floridians and visitors to our state are faced with tough decisions today on how to travel with gas prices being higher and the congestion that plagues many areas. FTE hopes to provide their choice for travel, returning the toll they pay to travel our system by providing a substantial return to the public, a premium level of safety, and time savings through a reliable trip. Our ITS group and TMC look to provide the innovations that keep Florida's Turnpike on the leading edge of the transportation field.

This article was provided by John Easterling, Florida's Turnpike Enterprise. For more information, please contact Mr. Easterling at (954) 934-1292 or email John.Easterling@dot.state.fl.us.

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ITS WAN Update

South Florida Deployment

The ITS wide area network (WAN) for center-to-center (C2C) communications is nearing completion in South Florida. Networking equipment for the South Florida Deployment (SFD), the first phase of the ITS WAN, has been installed at six ITS WAN SFD sites:

- Traffic Engineering Research Lab, Tallahassee.
- Florida Highway Patrol Microwave Site, Tallahassee.
- McArthur/Sunrise Microwave Site, Plantation.
- District 4 Regional Transportation Management Center (RTMC), Ft. Lauderdale.
- District 6 RTMC, Miami.



- Florida's Turnpike Enterprise (FTE) Pompano Plaza RTMC, Pompano Beach.



Equipment configurations and final testing remain to be completed. We received excellent cooperation and coordination from Districts 4 and 6 and the FTE in the installation phase of the work. They each provided valuable insight and advice in various stages of the work. Final completion is projected for June 2008.

We were even able to assist the 95 Express project by providing a separate connection for the Tolls Data System, with connection between the Miami RTMC and the FTE Tolls Data Center in Boca Raton through the FTE Pompano RTMC. That was a very exciting last minute project element.

Central Florida Deployment

Design for the ITS WAN Central Florida Deployment (CFD) is nearing completion. The ITS WAN CFD will be the second phase of the ITS WAN and will connect the following RTMCs:

- District 2 RTMC, Jacksonville.
- District 5 RTMC, Orlando.
- FTE Turkey Lake Plaza RTMC, Ocoee.

This project will upgrade the existing C2C connection between Jacksonville and Orlando. The project will also utilize FTE installed fiber optic cable between the Pompano and Turkey Lake RTMCs. The CFD should be completed in early 2009.



Future Phases

The third phase of the ITS WAN will be the Southwest Florida Deployment (SWFD), connecting the District 7 RTMC in Tampa and the District 1 RTMC in Fort Myers. Connections to these RTMCs will be accomplished over District installed fiber optic cable along I-4 from Orlando to Tampa and I-75 from Fort Lauderdale to Fort Myers.

The fourth phase will be the Northwest Florida Deployment (NWFD), connecting the District 3 RTMCs planned for Pensacola and Tallahassee. Funding and Invitations to Bid for these phases are planned, but further work is dependent on RTMC construction and completion.

This article was provided by Randy Pierce, FDOT Traffic Engineering and Operations. For more information, please contact Mr. Pierce at (850) 410-5608 or email Randy.Pierce@dot.state.fl.us.

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Pilot Project—Internet Access for Travelers



The FDOT ITS Program has awarded a contract to ZOOM LBS to build and operate public Wi-Fi internet access networks at FDOT's four welcome centers and the Turkey Lake service plaza on Florida's Turnpike. With this pilot project travelers will be able to access the internet using their own laptops or personal digital assistants. After a few minutes of free access, travelers will be asked to pay a fee to continue using the internet. The associated access revenue will be shared between ZOOM LBS and FDOT.

During this pilot project, FDOT anticipates learning how best to deploy a statewide public Wi-Fi internet access network that would include rest areas, weigh-in-motion stations, and the service plazas on the Turnpike.



This pilot project is currently underway and ZOOM LBS is in the initial planning and design phase. Construction will take place during the spring of 2008. Part of this project includes the modification of an existing communications trailer as a mobile Wi-Fi hot-spot trailer. This trailer will allow FDOT to investigate by providing public Wi-Fi access at other locations. The trailer will also continue in its primary mission to support emergency FDOT communications needs. A focus for this pilot project is to investigate the use of satellite services to connect to the internet. The mobile Wi-Fi hot-spot trailer and four of the sites in the project will use satellite services to provide the internet connection public Wi-Fi access.

This article was provided by Randy Pierce, FDOT Traffic Engineering and Operations. For more information, please contact Mr. Pierce at (850) 410-5608 or email Randy.Pierce@dot.state.fl.us.

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Inside the TERL

The FDOT has a goal to assure that only a safe and uniform ITS and traffic control system is implemented in state of Florida. The Traffic Engineering Research Lab (TERL) plays a part in obtaining this goal by satisfying Florida Statute 316.0745 - Uniform Signals & Devices. Below is a look Inside the TERL at activities that help accomplish our goal.

Product Evaluation

Signalized Intersection & ITS Products

The TERL currently has 40 applications submitted for the Approved Product List (APL). Of these applications, 15 are in-house for evaluation and the remaining 25 applications are on hold for various reasons. In the last month, TERL has failed three products and passed three products. The three products approved will be the first ITS devices to pass the criteria needed for permanent APL inclusion. They are two closed-circuit television (CCTV) cameras and one microwave vehicle detection system.

Approved products can be viewed at the following Web pages:

- **Signalized intersection products:**
www3.dot.state.fl.us/trafficcontrolproducts
- **ITS products:**
www.dot.state.fl.us/TrafficOperations/Traf_Sys/ITS%20APL/TemporaryITSAPL.htm.

Product Specifications

The following product specifications are currently under development:

- Uninterruptible power supply (UPS)
- Generator panel for traffic and ITS cabinets
- Dynamic message signs for arterial and toll roads,
- In-pavement crosswalk lights,
- 24/7 Flashing beacons,
- Countdown pedestrian signals, and
- Trailer-mounted camera/detector systems.

For Your Information

The TERL supports FDOT District Offices, and Florida signal maintaining agencies with the technical evaluation of transportation devices, standards, specifications, and research. One way the TERL accomplishes this is by maintaining the FDOT's APL.

The APL contains equipment used during the construction and/or maintenance of a signalized intersection or ITS traffic network. All contractors, manufacturers, or suppliers who intend to sell or install a transportation device (as described in Florida Statute 316.0745) within the state of Florida must follow the FDOT's approval process and be listed on the

APL prior to its sale or installation.

How does a manufacturer get on the APL?

Step 1: Become a Qualified Vendor: All prospective APL vendors must be qualified before a device can be evaluated for listing on the APL. To obtain vendor qualification, the manufacturer completes and submits the FDOT Quality Assurance Evaluation Survey. This survey is then evaluated to FDOT minimum quality assurance standards and, if successful, the vendor will be added to the Vendor Qualification List. The manufacturer is notified within 45 days of the results of the evaluation and when to proceed to Step 2.

Step 2: Submit an APL Application: To begin the APL device evaluation process, the manufacturer first makes sure that their device is required to be listed on the APL. If the device requires approval, the manufacturer submits a completed APL application to the TERL. The application is reviewed by the Equipment Evaluation Committee and the manufacturer is notified within two weeks if the application has been rejected or if they can proceed to Step 3.

Step 3: Device Certification Testing to FDOT Specifications: Once the manufacturer has passed Step 1 and a completed APL application (Step 2) has been approved, the vendor will be notified to submit the device for evaluation and verification to FDOT standards. The device will be tested against current FDOT specifications. The manufacturer is notified within 45 days of the results of the evaluation. Upon successful completion of the device testing, the product is listed on the APL for a period of two years.

The APL may be viewed at www3.dot.state.fl.us/trafficcontrolproducts.

This article was provided by Jeffrey Morgan, FDOT Traffic Engineering and Operations Office. For more information, please contact Mr. Morgan at (850) 921-7354 or email Jeffrey.Morgan@dot.state.fl.us.

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Reduce Global Warming: Get Your City on Google Transit by Earth Day 2008

The Earth Day challenge posed to all attendees of the American Public Transportation Association's (APTA) TransITech conference in February 2008 was to get cities and transit agencies to participate on Google Transit by April 22, 2008.

Google Transit is a great tool providing a free transit trip planner. Transit information shows up as an option for every “driving direction” trip put into Google Maps, if the data is provided to Google. This encourages the use of public transit, reduces global warming, and makes it easy to access transit schedules and routes online.

The first challenge from Google Labs was issued December 2005, when Google was looking for transit agencies to volunteer for a new project. Hillsborough Area Regional Transit (HART) was selected and received the honor of being one of the first of five transit agencies in the initial launch of Google Transit in mid-2006. This was accomplished through the dedication of HART’s Information Systems and Technology Team working as partners with the development staff of Google Transit. This development was completed without an expensive capital expenditure for proprietary software. The Google Transit system is free, producing a win-win-win result. It was a win for Google, HART, and HART’s customers.

Google Transit expanded coverage from nine agencies in the United States to more than 30 agencies spanning three continents during 2007. Google Transit is able to provide transit information by:

- Integrating transit information directly into Google Maps by making stations and stops visible and clickable
- Promoting transit as an alternative each time driving directions are shown in an area where there is transit data available.

“Google Transit relies on transit agencies to share their data so that everyone—residents, tourists, and lifetime riders—can benefit from having the information at their fingertips.” The specifications for becoming part of Google Transit are available at http://code.google.com/transit/spec/transit_feed_specification.html.

This Earth Day challenge was posted by Tom Sly, New Business Development Manager, Google Transit on March 11, 2008.

This article was provided by Sandy Beck, ITS Florida. For more information on ITS Florida, please check the ITS Florida Web site at www.itsflorida.org or contact Sandy Beck, Chapter Administrator, at email itsflorida@itsflorida.org.

If you wish to contribute an article to the *SunGuide Disseminator* on behalf of ITS Florida, please email Mary Hamill at MaryKHamill@global-5.com.

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Editorial Corner—Probe Pilot Project to Provide Data

The FDOT is well on its way to deploying ITS in all the Districts in the state. Within the next five years the FDOT should have ITS deployed to help manage traffic on limited-access facilities in almost all of the state’s urban areas and the Florida Turnpike Enterprise facilities.

These systems will be fully deployed in those urban areas that have the worst traffic congestion in the state. Traffic data will be collected through the use of traffic sensors and closed-circuit television cameras; and information will be provided back to the public through the use of dynamic message signs and the 511 traveler information phone number, along with an associated Web site.

With the exception of the Florida Turnpike Enterprise, traffic data is only being collected and disseminated as appropriate in the urban areas of the state. Very little, if any, data is available for the rural areas of the state. Because of the many miles of rural limited-access facilities and the lower traffic volumes, equipping these facilities with the standard traffic sensors on the market today, other than at spot locations where problems exist, is not cost-effective.

However, there may be a low cost solution(s) on the horizon that can provide data regarding travel times on rural segments of the state's limited-access facilities, without deploying expensive infrastructure. These solutions are beginning to gain momentum around the country. Some of these solutions have been deployed overseas for a number of years. These solutions have been categorized as probe data collection systems. The two more prominent



technologies found in probe data collection systems utilize cellular phones and global positioning system (GPS) units. The cellular phone systems utilize at least two different methods for determining travel times. The first method, in simplest terms, utilizes the information associated with the handoff between tower sites to establish a cellular phone's location and the other method is based on pattern matching. For the latter, test drives are necessary over the required roadways to establish a unique signature for each roadway. Cellular phone patterns are compared with the road signature, establishing the location of the cellular phone. GPS-based probe data collection methods tap into fleet vehicle location systems to extract vehicle locations and calculate travel times.

Should these low cost data collection systems prove reliable and accurate, they would be a great benefit to the FDOT in monitoring the state's rural mileage as well as providing additional data in urban areas. Information from a probe-based system would fill in the data collection gaps and provide for a more robust 511 traveler information system in the state. Florida does not have first-hand knowledge of the ability of these systems to accurately collect data at this juncture. However, a pilot project to test both cellular phone and GPS data collection methods is under way here. This pilot project will test the ability of each technology to collect travel times along I-10 in the Florida Panhandle and on a number of arterials in the Tallahassee area. The pilot test is for a three month period with an option to renew for another three months, to adequately test the technologies. Depending on the length of time the pilot test runs, information on how each technology performs will be available sometime at the end of this year or the beginning of next year.

The FDOT is keeping its collective fingers crossed regarding this pilot project. This pilot project should help determine whether these types of probe data collection systems are ready for prime time or not. The FDOT certainly hopes these systems are ready—many problems can be resolved by implementing these types of data collection systems.

This editorial was provided by Gene Glotzbach, FDOT Traffic Engineering and Operations Office. For more information, please contact Mr. Gene Glotzbach at (850) 410-5616 or email Gene.Glotzbach@dot.state.fl.us.

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Announcements

MDX Uses FDOT's SunGuide™ Software

On January 28, 2008, the FDOT and the Miami-Dade Expressway Authority (MDX) entered into an agreement for MDX to use FDOT's SunGuide™ Software, FDOT's statewide advanced traffic management system software. This agreement allows MDX to accelerate ITS deployment and save money by leveraging FDOT's significant investment in the SunGuide Software. This agreement provides FDOT with a strong partner that provides resources to assist in the enhancement and support of the SunGuide Software. This is another accomplishment resulting from the strong partnership between FDOT and MDX that also includes the collocation of MDX with FDOT District 6 in the Miami regional transportation management center. We look forward to the traffic management efficiencies and benefits that this achievement provides to Florida's traveling public.

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Don't Miss Transpo 2008™

Be sure to save the dates September 22-25, 2008, in Orlando!

Join us for "ITS: Piecing It All Together" being held at the Rosen Centre Hotel in Orlando. Your hosts, ITS Florida, the Florida Section of Institute of Transportation Engineers (ITE), FDOT, and the Florida Division of the Federal Highway Administration (FHWA), are planning an informative and engaging event. Come for the speaks, exhibits, and on-site tours.

Plan: Finding the Right Pieces
Implement: Making the Pieces Fit
Manage: Keeping the Pieces Together
Innovate: Building a Better Puzzle

For details, visit the Transpo2008 Web site at www.itstranspo.org
Or contact: Karen Crawford
at CMC & Associates
1-888-320-6129 for details on how to register early and save



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Registration Now Open for the 15th World Congress on ITS

With the theme of “ITS Connections: Saving Time, Saving Lives.” the 15th World Congress on Intelligent Transport Systems & ITS America’s 2008 Annual Meeting and Exposition will be the largest event in the world for ITS leaders, policy makers, and other industry professionals. An expected 10,000 transport executives and ITS professionals from around the globe will come together at the Jacob K. Javits Convention Center in New York City from November 16-20, 2008.

This combined event will feature the largest fully-integrated demonstration of deployed and marketable ITS technologies ever. Vehicle-to-vehicle and vehicle-to-roadside communication technologies and applications will be highlighted. This demonstration will include innovative mobility solutions operating on the streets and highways of New York and will build upon the success of the Innovative Mobility Showcase that proved to be of enormous interest at the 2005 San Francisco World Congress. Live demonstrations will showcase advanced ITS technologies that provide effective management of public facilities, protect public investment in transport infrastructure, and enhance and expand mobility options.

For the latest information on the 15th World Congress on ITS, visit www.itsworldcongress.org.

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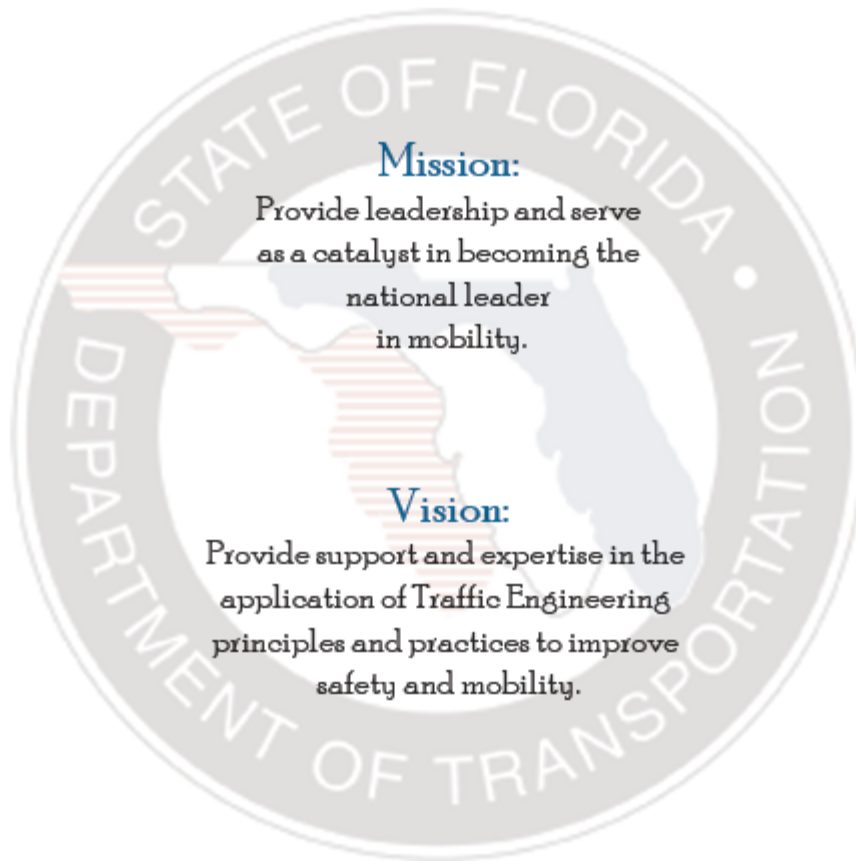
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FDOT Traffic Engineering and Operations Mission and Vision Statements



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