



SUNGUIDE®

DISSEMINATOR

Florida Department of Transportation's Traffic Engineering and Operations Newsletter

95 Express Phase 2 Brings HOT Lanes to District Four

By Sarah Stanley, FDOT District Four

95 Express is an innovative, lower-cost alternative to traditional highway construction that offers a variety of options for avoiding congestion. A variable-priced toll that adjusts to congestion levels encourages travel in less heavily traveled periods. It also offers a toll-free option for those who choose to travel in registered carpools. Both of these measures reduce the number of cars on the road during peak travel periods. Toll-free travel for motorcycles and registered hybrid vehicles encourages more environmentally conscious options. And, more reliable travel speeds enhance transit service between Broward and Miami-Dade Counties, which will offer more comfortable, high-quality hybrid buses.



95 Express Phase 2 will extend the existing express lanes north from the Golden Glades Interchange, in Miami-Dade County, to Broward Boulevard in Broward County, by converting the existing high-occupancy vehicle (HOV) lanes to two express lanes in each direction. Other work includes:

- Installing intelligent transportation system (ITS) components,
- Modifying the Ives Dairy Road interchange,
- Widening bridges at specific locations, and
- Installing new noise walls at locations between Hollywood Boulevard and Taft Street.

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Construction began on November 28, 2011, and will last approximately three years at an estimated cost of \$106 million. Construction will be completed in phases as follows (This schedule is tentative and subject to change due to weather or other unforeseen circumstances.):

- Phase 1 is expected to last through spring 2012 and includes work on the outside shoulder area, relocating existing utilities and ITS equipment as necessary, and removing or relocating existing landscaping. Work at the Ives Dairy Road Interchange should begin during this phase and continue into Phase 2.
- Phase 2 will last through spring 2013 and includes work on the inside shoulders, pavement reconstruction, and installing new sign structures and ITS. During this phase, the HOV designation on the inside lane will be removed.
- Phase 3 will last through summer 2014 and includes work on the outside shoulders, bridge widening, and continuing ITS work.
- Phase 4 will last until late 2014 and includes repaving the road, final test of all new ITS equipment, installation of plastic poles to separate the express lanes from the local lanes, and launching electronic tolling on the new facility.

The proposed ITS components for Phase 2 include the design and installation of dynamic message signs, non-intrusive vehicle detector sensors, closed-circuit television cameras, power subsystem, supporting infrastructure, and fiber optic communications system from proposed components to the I-95 ITS communications backbone within the project limits. The communications subsystem includes the installation of conduit, fiber optic cable, and communications equipment to integrate the proposed ITS and toll components with the existing ITS communications system. The power subsystem includes an underground power distribution and generator backup system.

Project details are available at www.95express.com. For information on the ITS component, please contact Mr. Daniel Smith, FDOT District Four at (954) 847-2785 or email to Daniel.Smith@dot.state.fl.us.

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BlueToad™ — A Success in District Two!

By Peter Vega, FDOT District Two

During the month of October 2010, the Florida Department of Transportation (FDOT) District Two (Jacksonville area) Intelligent Transportation Systems (ITS) Program made a decision that will forever change our management of the region's roadway system in the coming years. The North Florida Transportation Planning Organization (NFTPO) had uncommitted funds available that they wanted to utilize on an arterial road ITS deployment. The only problem was that we had to utilize these funds within the existing fiscal year, thus leaving us with only seven months to develop and execute a project. After some mad scrambling during the week an idea arose that seemed simple enough to achieve while providing some much-needed data to the NFTPO.

In 2007, local agencies within the NFTPO region made a commitment to assist in the expansion of ITS along arterial corridors. Keeping this in mind, I recommended that the NFTPO consider the deployment of Bluetooth® technology due to the ease of installation and low cost. A meeting was set up with TrafficCast to go over the capabilities of this technology. At that time, their BlueToad product was the first and only Bluetooth device approved for use in Florida by the Traffic Engineering Research Laboratory; thus we needed detailed information prior to making a commitment. Some key elements that were addressed included software features, filtering process, accuracy, and price.

The objective with this project was to gather real-time data on roadway travel times and speeds along various corridors. This data could then be utilized by local agencies to detect and manage incidents while tracking the performance of traffic



signals along corridors in real-time. Likewise, the NFTPO could now gather information on the performance of various roadways that would be utilized with the new reports Texas Transportation Institute (TTI) had recommended to the Federal Highway Administration (FHWA). The goal stressed by TTI was to get away from giving corridors a letter grade and instead track actual system performance on an annual basis. Key elements were tracking travel times, corridor speeds, and travel time delay over a period of several years.

The initial analysis of BlueToad was sketchy since there were limited deployments or information on its performance anywhere in the country. A study provided by Atkins North America for the southwest Florida area was utilized during the decision making process. A critical selling point for our team was the origin/destination data that could be produced for use by modelers at the NFTPO. This was the turning point in our decision since the collection of this type data is usually quite expensive and time consuming. A determination was made that being able to fulfill daily needs, while generating valuable historical data, led to the commitment of \$1.1 million to purchase BlueToad devices.

Several meetings were held with the NFTPO to determine the best placement for the devices and the format of the database that would be provided by TrafficCast. We determined that the best cost saving measure was to utilize the existing traffic signal communications infrastructure to get the data back to a server. From this server, the data is sent to TrafficCast for collection, filtering, display, and archiving. So, once the decision was made, a contract was developed for the purchase of BlueToad equipment for District Two and other FDOT Districts.

We were very fortunate in meeting the deadline for fiscal year 2010/2011 or this additional funding may have been lost to FDOT's Work Program office. Orders were placed in May and delivery of the products began in June and July. The funding allowed us to purchase 140 BlueToad units for the NFTPO region and provided interlaced data for all four counties in northeast Florida. We developed a map showing the covered roads in yellow so that we could determine how much origin/destination data we could generate. When completed we realized that 85 percent of the map would have such information, thus sending the NFTPO modelers into a tizzy of excitement. I estimate that there will be over 300 miles of roadway data available to us with regard to travel times, speeds, and origin/destination information.

So, how simple is this product? In August 2011, we decided to perform a dry run with the assistance of TrafficCast staff to get a grip on what would be involved. We assembled the antenna, power unit, bracket, and cable for 20 units in about two hours. We decided to place 12 units on Interstate 95 and 8 units on US 1 with a total coverage of approximately 35 miles. The field installations to mount all the antennae to a structure, run the cables, and connect to the BlueToad data collectors placed within existing cabinets took about ten hours. Within two minutes of connecting to the ITS network we began to see data accumulating in the web site for future use. From lessons learned, we feel we can reduce the overall installation time by 40 percent through proper planning and experience.

Once we completed this installation, the next task was to determine the validity of the data. We compared the information generated from our existing vehicle detection units to the BlueToad devices. Ironically, the travel time and speed information was very accurate and has been consistently dependable over the past four months. Of course, we are only getting data from a percentage of the total volume; however, the



Speed Indicator	Type	Title	Origin	Destination	Last Match	Speed / Travel Time
+	 Bluetoad Pairings	i95 & University Blvd (u1183) to i95 & Emerson St (u1184) - North	i95 & University Blvd	i95 & Emerson St	2011-08-08 12:49:09	5.2 mph 20 min 54 sec
+	 Bluetoad Pairings	i95 & Emerson St (u1184) to i95 & Atlantic Blvd (u1185) - North	i95 & Emerson St	i95 & Atlantic Blvd	2011-08-08 13:48:22	55.4 mph 52 seconds
+	 Bluetoad Pairings	i95 & University Blvd (u1183) to i95 & Bowden Rd (u1182) - South	i95 & University Blvd	i95 & Bowden Rd	2011-08-08 12:49:12	68.9 mph 1 min 34 sec
+	 Bluetoad Pairings	i95 & Bowden Rd (u1182) to i95 & University Blvd (u1183) - North	i95 & Bowden Rd	i95 & University Blvd	2011-08-08 13:49:19	6.9 mph 15 min 34 sec
+	 Bluetoad Pairings	i95 & Emerson St (u1184) to i95 & University Blvd (u1183) - South	i95 & Emerson St	i95 & University Blvd	2011-08-08 13:49:08	64.2 mph 1 min 41 sec
+	 Bluetoad Pairings	i95 & Atlantic Blvd (u1185) to i95 & Emerson St (u1184) - South	i95 & Atlantic Blvd	i95 & Emerson St	2011-08-08 13:47:23	61.3 mph 47 seconds
+	 Bluetoad Pairings	i95 & Rt 1 (u1179) to i95 & i295 (u1178) - South	i95 & Rt 1	i95 & i295	2011-08-08 13:49:00	75.0 mph 48 seconds
+	 Bluetoad Pairings	i95 & St Augustine Rd (u1177) to i95 & i295 (u1178) - North	i95 & North of St Augustine Rd	i95 & i295	2011-08-08 13:49:15	74.0 mph 1 min 13 sec
+	 Bluetoad Pairings	i95 & i295 (u1178) to i95 & Rt 1 (u1179) - North	i95 & i295	i95 & Rt 1	2011-08-08 13:42:42	72.0 mph 50 seconds
+	 Bluetoad Pairings	i95 & St Augustine Rd (u1177) to i95 & Race Track Rd (u1176) - South	i95 & North of St Augustine Rd	i95 & South of Old St Augustine Rd	2011-08-08 13:49:03	75.8 mph 1 min 54 sec
+	 Bluetoad Pairings	i95 & i295 (u1178) to i95 & St Augustine Rd (u1177) - South	i95 & i295	i95 & North of St Augustine Rd	2011-08-08 13:47:58	73.0 mph 1 min 14 sec
+	 Bluetoad Pairings	i95 & Race Track Rd (u1176) to i95 & St Augustine Rd (u1177) - North	i95 & South of Old St Augustine Rd	i95 & North of St Augustine Rd	2011-08-08 13:48:17	75.8 mph 1 min 54 sec
+	 Bluetoad Pairings	i95 & South of St Augustine Rd (u1176) to i95 & Race Track Road (u1175) - South	i95 & South of Old St Augustine Rd	i95 & Race Track Rd	2011-08-08 13:48:50	73.3 mph 1 min 53 sec
+	 Bluetoad Pairings	i95 & Race Track Rd (u1175) to i95 & South of Old St Augustine (u1176) - North	i95 & Race Track Rd	i95 & South of Old St Augustine Rd	2011-08-08 13:48:34	70.8 mph 1 min 57 sec

accuracy of these devices raised our confidence level in the data. We are averaging approximately 75 hits per 15-minute interval for each device between early morning peak traffic to about 8:00 in the evening. This is considered an excellent sample size for a 15-minute period of data collection.

The simplicity, cost, and ease of installation for the BlueToad device are the greatest selling points (besides that valuable origin/destination data). Basically, the device reads media access control addresses from various Bluetooth devices, tracking the location and time of the “hit.” Simple math and a very stringent filtering system provide the data necessary to make calculations for travel time and speeds. With the tremendous increase in smartphone purchases by consumers, I can only see the amount of data increasing with each passing year, thereby allowing us to gather more data at a lower cost as we proceed with ITS in the future.

For information, please contact Mr. Peter Vega, FDOT District Two at (904) 360-5463 or email to Peter.Vega@dot.state.fl.us.

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Road Rangers Have Arrived in Florida's Panhandle

By Jeff Messer, TransCore ITS

The Florida Department of Transportation (FDOT) District Three has hit a home run with the new Road Ranger program, which began assisting motorists along Interstates 10 and 110 on July 1, 2011. These service patrols complement the existing freeway management system (FMS) that became operational in February 2011. This FMS is deployed along 32 miles of Interstate 10 beginning at the Florida/Alabama state line and ending in Santa Rosa County, approximately one mile east of the Interstate 10 and State Road 87 interchange (Mile Marker 33). The FMS also includes the six-mile stretch of Interstate 110 that extends into downtown Pensacola. Road Rangers normally patrol these roadways between 5:00 a.m. and 9:00 p.m., Monday through Friday. However, during those times, such as major holiday weekends, special events, peak travel times, and severe weather situations, when the Pensacola SunGuide® Center's operating hours are extended, the Road Rangers are also on patrol.

These specially trained personnel quickly deal with incidents and disabled vehicles to minimize their impact on traffic flow, and when not dealing with traffic emergencies, the units assist stranded motorists. The Road Rangers have performed more than 1,400 activities of service for the traveling public since setting out on the roadways and the top categories of service are shown in the below graph.

Service patrol operators distribute a customer comment card to every stranded motorist that is assisted and this card is to be mailed back to FDOT's Central Office to ascertain how patrols are performing. Many satisfied customers have thus far taken the opportunity to provide feedback regarding their experience with the Pensacola area Road Rangers by completing and returning these cards. The service patrol operators have routinely been praised for their assistance and it is not uncommon to find descriptive terms, such as "Guardian Angel," "Extremely Helpful," and "Angel in Disguise," within the written public feedback. One such card was returned with the comment, "This is an outstanding service to the public. Thank you very much!"

A lengthy two-page letter was recently sent to FDOT, which detailed a very positive encounter that a lady had with one of the Road Rangers. Her particular situation involved a tire blowout on an extremely hot day after a trip to the airport while she traveled with two passengers and two large dogs. Not only did the Road Ranger repair the blown out tire, but he also provided some refreshing water for one of her elderly passengers in order to prevent him from getting over heated and comforted the frightened driver. She testified to the kindness and helpfulness of the assisting Road Ranger by saying, "He saved my life!"

As part of a separate disabled vehicle call, a Road Ranger assisted a father-to-be who was understandably rushing home to assist his expectant wife. Roadway conditions were dark and rainy when his vehicle experienced a blowout, causing him to fishtail off the roadway. Fortunately, the gentleman was not injured and a Road Ranger was soon on site to lend a hand with repairs. The Road Ranger assisted with the installation of the compact temporary spare tire and reminded the man that temporary spare tires are designed for short-term use only and are intended to get the vehicle to a trained tire service person as soon as possible. As a father himself, the service patrol operator could identify with the motorist's anxiousness and before parting ways, he suggested that the man proceed at a slower pace in order to arrive safely in Savannah for the birth of his child.

Another occasion allowed a Road Ranger to help a local business manager who was traveling between office locations in the Pensacola area. During the course of his busy day he had failed to accurately judge his fuel level and he was very grateful for the gas provided to get him to the next service station.

For information, please contact Mr. Jeff Messer at (850) 462-6035 or e-mail to Jeff.Messer@transcore.com.



This picture shows a crash that took place on Interstate 10 during morning rush hour and was printed in the Pensacola News Journal. The Road Ranger was first on scene and able to provide maintenance of traffic for the safety of the individuals involved in this two-vehicle collision.

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I-95 Corridor Coalition Quick Clearance Workshop

By Patrick Odom, FDOT Traffic Engineering and Operations

The I-95 Corridor Coalition has developed training materials for incident responders. These materials are provided to responders via the Quick Clearance Workshops, which are periodically conducted throughout the I-95 Corridor Coalition member states. The I-95 Corridor Coalition selected Florida's west coast to host this year's workshop. Responders assembled at the Morgan Family Community Center in Northport, Florida, on December 14, 2011, for training.



The Florida Department of Transportation District One began preparing for this workshop in October with announcements at each of the District's regional Traffic Incident Management (TIM) team meetings. District One mailed invitations to local response agencies in Polk, Manatee, Charlotte, Lee, Sarasota, and Collier Counties and also published the workshop announcements in the each of the TIM team newsletters. This multifaceted outreach effort enabled a number of responders in southwest and central Florida to attend.

A major benefit of these Quick Clearance Workshops is the interaction among the participants and the instructors. Attendees were given a DVD containing all of the training materials used in the workshop with additional training and reference materials for the responders to share with other agency personnel.

As the workshop began, the instructors, John O'Laughlin and Captain Tom Martin, asked participants to introduce themselves and briefly discuss any concerns or issues they have with TIM practices in their area. A number of participants expressed concerns about local agency participation in the local TIM meetings. The instructors discussed options for increasing attendance, such as highlighting an individual agency at each meeting so that other participants could gain insight on that agency's response challenges and discuss methods for other agencies to provide assistance. This strategy also correlates with the guidance provided in the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) Section 6I-01, paragraph 6, which states that all responders, including private vendors such as towing and recovery and hazardous materials contractors, should mutually plan for the occurrences of traffic incidents on the roadway and consider all incidents as temporary traffic control areas.

The instructors discussed the importance of TIM to ensure the safety of the traveling public and emergency responders. They highlighted several statistics, including that traffic incidents are the leading cause of death for law enforcement officers, transportation workers, and towing operators and are the second leading cause of death for firefighters and emergency medical services workers. The instructors also discussed the importance of all responders being active in traffic control and wearing the reflective vest when working incidents to ensure proper visibility.

The participants discussed the hazards of abandoned vehicles on the highway, which present issues for motorists as well as emergency responders. These hazards are even greater in bad weather, low visibility conditions, and especially at night as abandoned vehicles are typically unmarked and sometimes very close to the travel lanes. Efforts should be made to remove these vehicles within the designated time frames permitted by policy. The instructors highlighted areas in other states where unattended vehicles are removed as they are located.

The workshop closed with a discussion on new interactive training technologies that have been developed for TIM. An online training module, available through the I-95 Corridor Coalition, provides core competency training for responders in an interactive format. The basic training takes approximately one hour to complete and is prerequisite for interactive virtual training that can be provided on site by the I-95 Corridor Coalition.

For information, please contact Mr. Patrick Odom at (850) 410-5631 or e-mail to Patrick.Odom@dot.state.fl.us. More information on Quick Clearance Workshops is available at <http://www.i95coalition.org/i95/Training/QuickClearanceWorkshop/tabid/188/Default.aspx>. Core Competencies for Incident Management are located at <http://www.i95coalition.org/i95/Training/IMCoreCompetencies/tabid/218/Default.aspx>.

FDOT District Six Optimizes Ramp Metering System

By Javier Rodriguez, FDOT District Six

The Florida Department of Transportation (FDOT) District Six Intelligent Transportation Systems (ITS) Office recently transitioned its ramp metering system from operating on a fixed rate basis to a rate that utilizes a fuzzy logic algorithm to dynamically meter traffic flow based on real-time highway and ramp conditions. The new metering algorithm has dramatically improved the system's overall efficiency and reduced associated traffic spillbacks by up to 100 percent at most ramps while sustaining improved highway travel speeds.

District Six introduced Florida's first ramp metering system in 2009 and 2010 along the north and southbound lanes of Interstate 95, respectively. The system was initially launched with a fixed metering rate that pre-determined the number of vehicles that could enter the mainline per minute. After drivers became familiar with its operations, the District began planning the metering rate migration to increase ramp traffic throughput and mitigate arterial spillbacks and queuing. Traffic spillbacks onto city streets are often a by-product of these types of systems.



In order to begin migration, District Six identified a minimum metering rate to be applied at each ramp. This was completed through a test process in which the team gradually reduced the previous metering rate from a maximum rate of 20 or 24 vehicles per minute (vpm) by one or two vpm every day. Team members observed the results of the metering rate reduction from the transportation management center through closed-circuit television cameras placed alongside each ramp. The minimum rate, which is different for each ramp, was established once the ramp began to reach capacity and could not sustain traffic. After the minimum rate was determined, the team initialized a three-week step-down plan to implement the new algorithm. Each week, the rate was progressively reduced until the minimum rate was reached. By doing this, the team provided the public with a smooth transition process that allowed them to gradually get used to the new rate as well as avoid creating driver confusion or operational issues typically associated with metering changes. With the minimum rate implemented at each ramp, the fuzzy logic can calculate metering rates between the maximum setting of 20 or 24 vpm and the newly identified minimum setting.

After metering operations transitioned from fixed rate to fuzzy, average ramp queues have been reduced from 33 percent to 20 percent during the morning rush hour period. Spillbacks have also been reduced from an average of almost three vehicles to less than one vehicle. The benefits to both the ramp and the arterial streets, in combination with improved travel speeds on the mainline, show District Six successfully implemented a ramp metering system that is benefiting all motorists along the project limits. District Six was the first in Florida to implement and optimize this system, and thus it's shown the public how ITS technologies can improve traffic flow in a low-impact, but high-efficient manner.

For information, please contact Mr. Rodriguez at (305) 407-5341 or e-mail to Javier.Rodriguez2@dot.state.fl.us.

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ITS Florida: Mark Your Calendars Now!

Transpo **2012** TM

October 28 - 31, 2012
Hyatt Regency Coconut Point
Bonita Springs, FL

Transpo2012 will be here before you know it. We're excited to invite you to Transpo2012 at the Bonita Springs Hyatt Regency Coconut Point. Program and planning committees are already busy organizing an outstanding lineup of exhibits, demonstrations, and technical sessions that will build on topics that are driving your industry. Please plan to attend this premier conference October 28 - 31, 2012.

Coming soon!

The Call for Papers, Sponsorships, and Exhibitor Opportunities will be requested the first of the New Year!
Don't miss out on participating in this well-known and attended ITS conference!

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Editorial Corner: Change Management Board

By *Arun Krishnamurthy, FDOT Traffic Engineering and Operations*

When the Florida Department of Transportation's (FDOT) Intelligent Transportation Systems (ITS) Program was created in 2000, FDOT undertook projects and initiatives that were bold and big, helping to accelerate the program and provide solutions to the state's growing transportation problems. Some of these initiatives were deployed statewide, including:

- Development of statewide specifications and standards for ITS devices,
- Development of a statewide ITS architecture,
- Deployment of a statewide fiber communications network between regional transportation management centers (TMC), and
- Development of a statewide advanced traffic management system (ATMS) software.



As these statewide initiatives started to develop, FDOT wanted to ensure that the changes being proposed in these initiatives were consistent with their long-term goals along with the user's needs. If you think of it, change is inevitable and has to be accounted for in complex systems such as FDOT's ITS Program. Also, it was important to have a process to manage change and ensure that the process accounted for the user's needs and did not negatively impact any one. This was FDOT's inspiration for creating the change management board (CMB) in 2004.

The CMB members meet quarterly to discuss items/changes that need CMB approval prior to implementation or deployment; each change is vetted at the meeting. After a topic is discussed, each CMB member is asked to vote if they approve the change or not. If the majority of the members vote in favor of the change, FDOT moves forward with it. The CMB board consists of voting members and non-voting members. The voting members include representatives from each FDOT District, Florida's Turnpike Enterprise, and Central Office. It also includes a representative from the Miami-Dade Expressway Authority (MDX). Non-voting members include any agency within Florida that is partnered with FDOT on any initiative or project being discussed at the meeting.

FDOT's ITS Program is a fast-paced program in which several new initiatives, or changes to existing implementations, are constantly being performed in an effort to improve the transportation system. The CMB members understand the need to make decisions in a timely manner. CMB members are provided with material two weeks in advance, so they have an opportunity to review and prepare for each meeting. This process has worked well through the years as the CMB members actively participate in the meeting and offer their perspective. Also, CMB members have been instrumental in bringing new ideas as FDOT adapts to changing situations.

Since 2004, FDOT has met regularly and discussed several changes. The CMB process has most benefited the SunGuide® software. SunGuide software is the statewide ATMS software. Initially, SunGuide was used by a few Districts and had limited functionality. The CMB meetings provided a forum for existing and future users within Florida to discuss the changes needed in the software. This allowed the software users to determine the software's future direction.

In summary, the CMB has been instrumental in ensuring that FDOT makes collective decisions. It has helped bring stakeholders together and has accelerated FDOT's ability to identify and implement changes. SunGuide software has been its greatest beneficiary as changes to the software and, ultimately, the direction of the software have been determined in this statewide forum. All in all, the CMB has been successful and is serving the purpose for which it was created.

For information, please contact Mr. Arun Krishnamurthy at (850) 410-5615 or e-mail to Arun.Krishnamurthy@dot.state.fl.us.

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Announcements

Congratulations Armelle and Marie!

We are happy to announce that **Armelle Burleson** is now a Certified Quality Auditor by the American Society for Quality (ASQ). The Certified Quality Auditor is a professional who understands the standards and principles of auditing and the auditing techniques of examining, questioning, evaluating, and reporting to determine a quality system's adequacy and deficiencies. The Certified Quality Auditor analyzes all elements of a quality system and judges its degree of adherence to the criteria of industrial management and quality evaluation and control systems.

This certification is directly job-related as the Traffic Engineering Research Laboratory (TERL) will conduct internal audits against requirements defined in the *International Organization for Standardization/International Electrotechnical Commission Guide 65* and the TERL's quality manual and quality procedures.

We are also happy to announce that **Marie Tucker** passed the Certified Administrative Professional exam from International Association of Administrative Professionals. Congratulations Marie!

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FDOT Traffic Engineering and Operations Mission and Vision Statements



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