SUNGUIDE®

DISSEMINATOR

STATE OF FLORIDA · DEPARTMENT OF TRANSPORTATION

Inside This Issue
May 2009

City of Tallahassee Joins the SunGuide® Community

The Florida Department of Transportation (FDOT) received a grant from the America's Missing Broadcast Emergency Response (AMBER) Alert Implementation Assistance Program to install an AMBER Alert receiver and multiple dynamic message signs (DMSs) around the Tallahassee area. The DMSs display real-time information about AMBER and other vehicle alerts, incidents, congestion, and construction conditions that could affect traffic flow and safety.

In order to provide enhanced traveler information and traffic management capabilities to Tallahassee's motorists, FDOT embarked on the SunGuide® License Plate Reader (LPR) project. This project uses SunGuide Software and probe detection technology to allow travel time information to be disseminated via DMSs. License plate readers were chosen to collect traffic information because LPR field studies performed in the Orlando and Tallahassee areas indicated that the devices provide data adequate for calculating travel times. Based on those studies, the decision was made to install LPRs along I-10 in the Tallahassee area. The LPR project is funded by the FDOT Central Traffic Engineering and Operations Office Intelligent Transportation Systems (ITS) Program and the LPRs are being deployed within the FDOT District 3. There are five LPR sites with a total of 16 LPR cameras (one camera for each lane) deployed along I-10 between mile markers 192 and 202 that make up the three travel time segments for each direction.

The City of Tallahassee hosts and operates the AMBER Alert system and operates the DMSs from their traffic
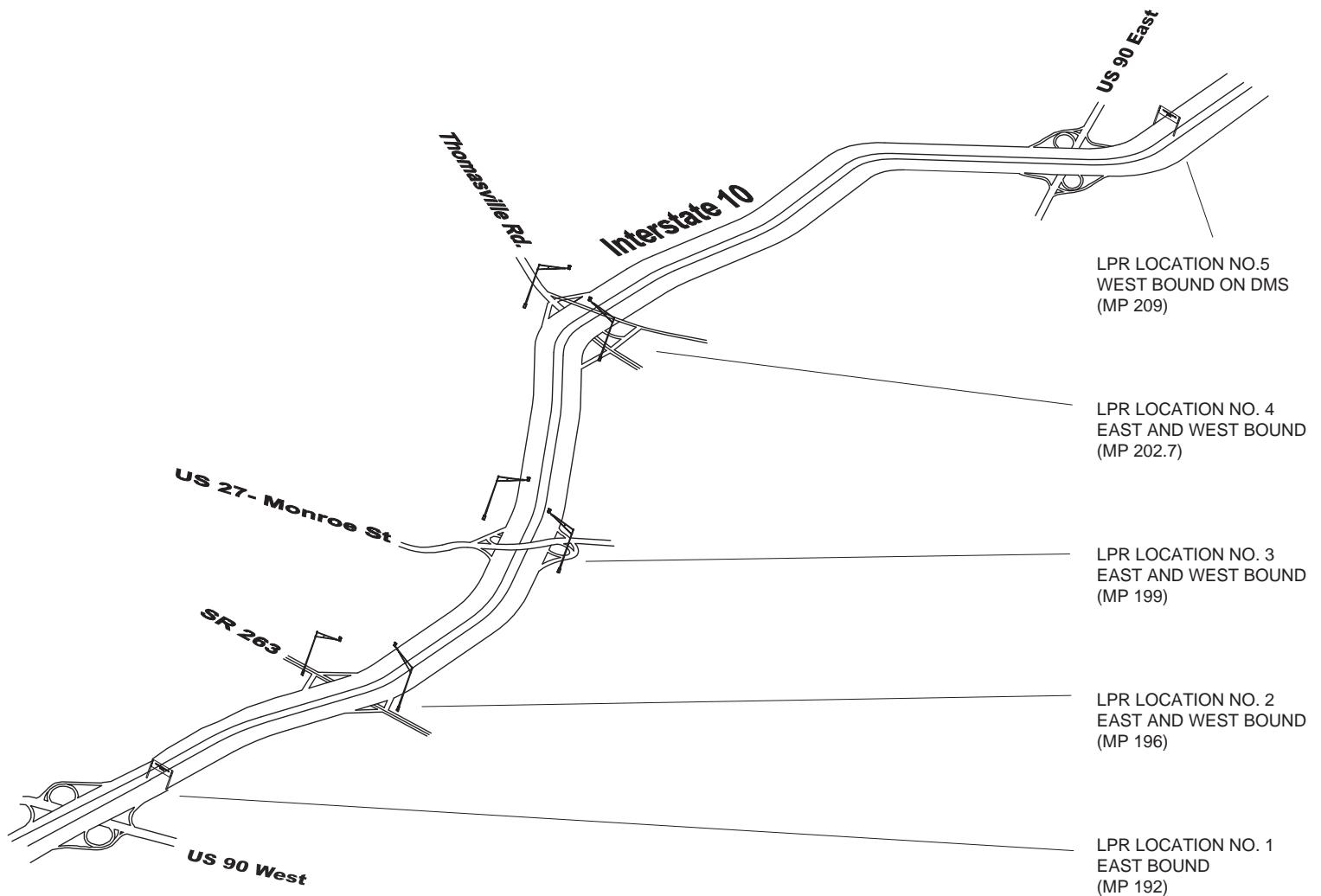
management center (TMC) located in City Hall using the current version of SunGuide Software. SunGuide Software Release 4.1.2 was installed at the city TMC on January 13-14, 2009. To date, the LPR project has been accepted and integrated with the city's SunGuide system. The accuracy of the travel time data will be verified using the floating car technique prior to beginning the dissemination of travel time information via DMSs.

LPR LOCATION NO.5
WEST BOUND ON DMS
(MP 209)

LPR LOCATION NO. 4
EAST AND WEST BOUND
(MP 202.7)

LPR LOCATION NO. 3
EAST AND WEST BOUND
(MP 199)

LPR LOCATION NO. 2
EAST AND WEST BOUND
(MP 196)

LPR LOCATION NO. 1
EAST BOUND
(MP 192)

The LPR captures the image of the vehicle's license plate, and the system's optical character recognition software converts the image to an alphanumeric string and truncates the first and the last characters to protect privacy. This data, along with the time, reader location, and an estimate of the accuracy of the read, is then sent to the City of Tallahassee TMC's SunGuide system. This process is repeated for data coming from all of the LPRs within the system. SunGuide Software Release 4.1.2 has the ability to match reads from different LPR stations, and then to calculate each vehicle's travel time between readers. At a regular, configurable interval, all of the individual travel times between two adjacent readers are used to calculate an average travel time. Once average travel times for each segment have been calculated, they can be combined to provide an estimated travel time for any contiguous combination of segments on one or more roadways. SunGuide Software then disseminates travel times to the two full matrix DMSs located on the west and east sides of I-10 in the Tallahassee area.

Drivers in and around Tallahassee will benefit from the increased traffic management and traveler information capabilities enabled by the SunGuide Software installation at the City of Tallahassee TMC. Travel time information allows FDOT's customers, the public, to make better informed travel decisions. This travel time data also provides FDOT with key information for performance monitoring, leading to smart investments for Florida's citizens.

This article was provided by Chad Williams, FDOT District 3. For more information, please contact Mr. Williams at (850) 415-9504 or email Chad.Williams@dot.state.fl.us.

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Q&A With Debora Rivera

Director of Transportation Operations, Florida Department of Transportation, District Six

Topic: Express Lanes on I-95 in South Florida

This article was reprinted with permission from the Center for Multimodal Solutions for Congestion Mitigation (CMS), a Tier-1 University Transportation Center (UTC) sponsored by the US DOT/Research & Innovative Technology Administration (RITA). This article appeared originally in the center's Fall 2008 newsletter (http://cms.ce.ufl.edu/publications/newsletter.php).

Debora Rivera is a member of the CMS's (Center for Multimodal Solutions) External Advisory Board and was invited for a Q&A with the CMS on the I-95 Express Lanes project in South Florida.

There are many methods for mitigating congestion, so why did Florida Department of Transportation (FDOT) choose to use Express lanes?

Well, the decision to use express lanes was complex—there were so many factors which affected the decision to move forward with this type of project. To begin with, South Florida was and still is one of the most congested urban areas in the country, and I-95 had been plagued by severe congestion, increasingly longer travel times and reduced trip reliability.

Funding constraints, limited widening options along the corridor, and the astronomical costs of the elevated option required finding alternatives to the traditional, supply-side approaches to congestion relief. On top of that, the high occupancy vehicle (HOV) lanes were no longer providing the congestion relief benefits they were intended to offer. I-95 is also an important bus transit corridor in Miami-Dade County, but transit service which the region increasingly depends on for mobility was becoming less attractive because of the corridor's poor performance.

The express lane concept seemed like the best fit for our situation. Express lanes offered an effective demand-management solution, and could be implemented in a much shorter time frame with significantly lower financial, environmental, and social impacts; bringing congestion relief to the corridor's users years sooner than would otherwise be possible. Another reason why I-95 was a good fit for the concept was that the corridor had been improved with several intelligent transportation systems (ITS) elements, including a ramp metering effort nearing operational status and that was being aggressively managed

to reduce non-recurring congestion. The application of technology and management strategies to support tolling seemed like a logical and natural extension. Plus, South Florida has several toll roads and two premier toll agencies—Florida Turnpike Enterprise and Miami-Dade Expressway Authority; and South Floridians are not adverse to tolls. Also, public support for increasing hours of operation or occupancy requirements of the HOV lanes without a practical alternative for commuters unable to form carpools seemed very unlikely. By including transit elements in the scope of the 95 Express project, we were able to expand the choices that commuters have, and offer realistic and practical options that HOV lanes alone do not.

And then the United States Department of Transportation (USDOT) announced its Urban Partnership Agreement (UPA) and the pieces seemed to fall into place. We had a project concept that made sense for us and fit perfectly into the Tolling, Technology, Telecommuting and Transit criteria that USDOT wanted to see integrated into projects. We needed the funding to get the project off the ground, and USDOT wanted to select partnerships with innovative, practical, cost-effective ideas that could be implemented more quickly than traditional projects. We also had a strong partnership that was formed to pursue the UPA—the FDOT, the Miami-Dade Metropolitan Planning Organization, Broward Metropolitan Planning Organization, Miami-Dade Transit, Broward County Transit, the Miami-Dade Expressway Authority, and the Florida Turnpike Enterprise.

How was this project funded?

The project was funded in part by the USDOT UPA grant which provided approximately $62.9 million in discretionary federal funding of which about $19.5 was for transit. The Florida Legislature was also very supportive of the project, committing an additional $35 million in funding. The rest of the project funding will come from the project itself in the form of toll revenue. But without leaders, both within FDOT and the Florida Legislature, who were willing to see a new way of battling congestion and lend their support to trying something that had never been done in Florida, the project wouldn't have been funded at all. And then the planning, finance, and project concept folks who were involved in putting the UPA application together did an amazing job. As you can imagine, the competition for the grants was fierce with over 21 dozen applications submitted from around the country. We were very fortunate to be one of only five UPAs awarded.

What are some of the impacts you are expecting from the project?

The biggest near term impact is that once the project is complete, commuters will have new and better commute choices that offer improved trip reliability and reduced travel times. We feel that the key to project success will be the fact that drivers have options - they can choose to form a carpool, join a vanpool, pay a toll for a reliable and shorter commute,

use a transit alternative, or do nothing different at all and continue to use the general purpose lanes as they did before. We expect to see congestion relief with modal and peak shifts, and overall improvement for users of the corridor during all periods of the day.

Have you collected any traffic operational performance measures (delay, travel time, speeds, person/vehicle throughput) for the current conditions; and do you have plans to collect similar measures after the system is operational?

We have historical performance data that has been collected as part of various studies and monitoring efforts over the last few years within the limits of 95 Express. Most no-table and comprehensive of these would be the "2006 I-95 High-Occupancy Vehicle Lane Monitoring Report." As for whether we will be collecting data after the express lanes are operational, absolutely! We expect to gather or be able to calculate all sorts of performance measures including speeds, volumes, travel times, and throughput. Much of the data is essential not only for setting toll rates, but necessary for the ongoing monitoring and evaluation of the facility's performance which is a requirement of the UPA. The UPA evaluation will also look at the performance of the transit service.

What do you believe is the future of the HOT lanes in South Florida and Florida in general?

Well, 95 Express is the first express lane project, but right around the corner is 595 Express, which will build three express lanes running from I-75 to I-95, adding approximately 11 miles to the 21 miles being developed with Phase 1 and Phase 2 of 95 Express. These projects will form the backbone of a regional express lane network. Construction on 595 Express is expected to begin in 2009 and complete in 2014. Several other corridors in South Florida are under study for the possible incorporation of express lanes into the corridor concept. As far as the future of express lanes around the state, I think that the success of our South Florida projects will make the concept more attractive to other communities around the state battling congestion and its adverse affects on the environment, mobility and economic prosperity. I am aware of studies in both the Orlando and Tampa areas looking at express lane concepts.

Part two of the Q&A with Debora Rivera, can be viewed at http://cms.ce.ufl.edu/publications/Q&A_Debora_Rivera.php.

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# The *Ten-Year Intelligent Transportation Systems (ITS) Cost Feasible Plan*—Where Do We Go From Here?
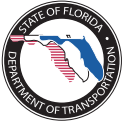
The *Ten-Year ITS Cost Feasible Plan (CFP)* was developed in 2002, and provided a plan to deploy ITS on the state's limited-access highway system. The charge from the Florida Department of Transportation (FDOT) management was to expend the $496 million allocated by the Executive Board on deployment of infrastructure only. The *CFP* was rooted in language from the ITS Strategic Plan which recommended that the FDOT set aside funds to deploy ITS. Those funds were granted to the newly formed ITS Program and so, in 2002, the ITS *CFP* was born. The *CFP*, when built out, would provide ITS coverage for about 60 percent of the state's limited-access facilities. The Florida's Turnpike Enterprise ITS deployments are independent of the *CFP* and, including their ITS deployments in the mix, brings the total ITS coverage to much greater than 60 percent.

Through the Districts, FDOT has done a good job of deploying ITS on the limited-access facilities to manage traffic flow in the urban areas. Some Districts are ahead of other Districts, but those Districts that are lagging have projects programmed to cover what they lack. Within the next five years, the FDOT will have all the major and most of the intermediate sized urban areas built out with ITS to better manage traffic on the limited-access facilities around the state. The Turnpike Mainline is one exception and has deployed ITS along the full length of the mainline in rural as well as urban areas.

Florida's rural areas remain as a gap in the FDOT's goal to fully deploy ITS statewide, particularly in north Florida and the Panhandle. This area is void of ITS along I-75 from Tampa north to the Georgia state line; and, with the exception of small deployments in Tallahassee and Pensacola, from Jacksonville west to the Alabama State line along I-10. Due to the lack of ITS deployments in rural areas of the state, collecting information to provide to the public is very cumbersome and inconsistent. Information cannot generally be used unless it is confirmed and verified by an independent source.

The primary means of acquiring information in the rural areas is through the use of the Florida Highway Patrol's (FHP) data distribution sources, such as their computer aided dispatch system and Web site, or from other law enforcement agency reports. Additionally, information is collected from FDOT maintenance personnel and private citizens who call in to report an incident. All good sources of data, but getting verification in a timely manner, poses a challenge.

To build out these sections of roadways with sensors and cameras in order to acquire reliable traffic data would be very
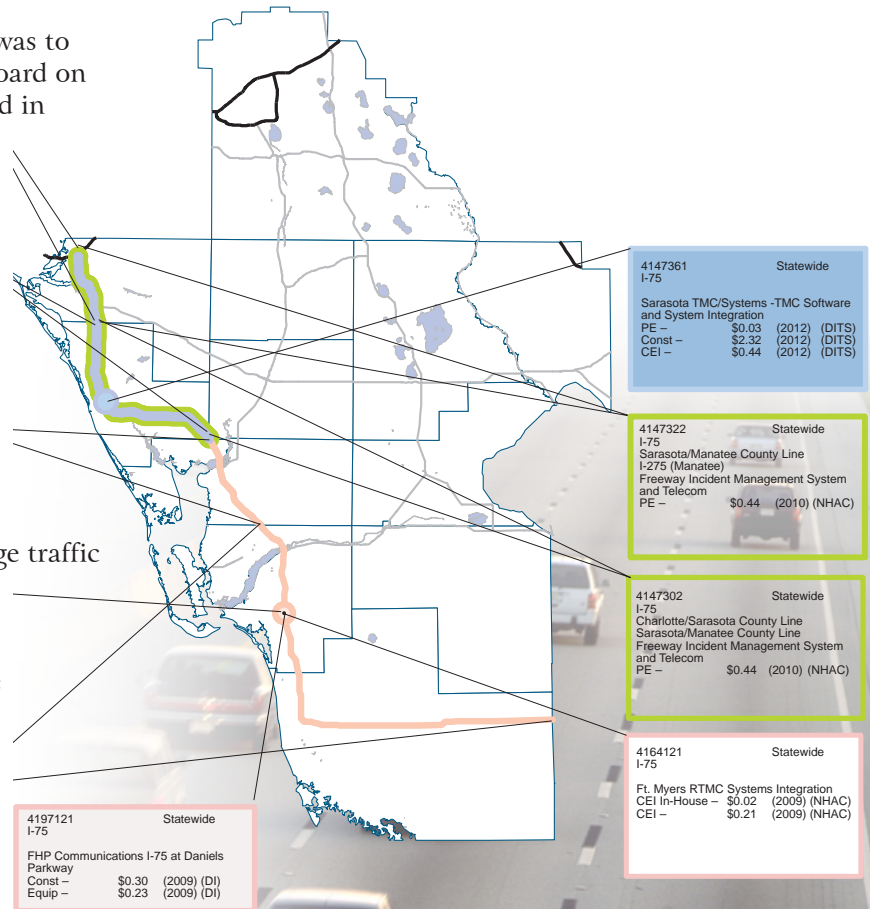
Portion of the District 1 CFP - 2009

costly. The cost to deploy cameras and sensors would not only include the equipment cost, but would also need to include the cost to deploy a fiber optic system to transport the information and camera images back to a transportation management center (TMC), which could be a tremendous amount. FDOT has looked at a number of potential solutions to get traffic flow data on long stretches of highway without having to sink large amounts of money to deploy infrastructure. This traffic flow data could be utilized as a primary source of data to be validated by other sources, or could be utilized to validate data derived from other sources.

One potential solution that FDOT has looked at is license plate readers and the use of toll transponders to collect traffic flow information. These systems have been tested and deployed on a limited basis. They show promise in delivering travel times to the public and provide another tool to TMC operators to manage the traffic on limited-access facilities as well as arterials. These systems have been deployed in urban areas; however, they also require the deployment of equipment. Due to their deployment cost, there may be little or no cost advantage in using these types of systems over traditional data collection systems. Other than a limited use of these types of systems in rural areas, at spot locations, license plate and toll transponder readers are not practical for lengthy deployments, such as would be needed in rural areas.

FDOT initiated and completed a pilot project to review the use of global positioning system (GPS) technology in determining travel times. The benefit of GPS-based systems is that FDOT does not need to pay for any infrastructure deployment in order to operate these systems. The infrastructure is deployed by the private sector and is needed for their business purposes. Companies can utilize the data coming from this private sector deployment to obtain traffic flow information. A combination of privately collected information and information collected by public agencies provides a more robust data flow.

The use of cell phones to generate traffic flow information was another technology that FDOT wanted to test. However, this required a contract with a cellular provider to gain access to their information. FDOT selected a company to test this technology, but this company was not able to contract with a cellular company for use of their equipment and data. Consequently, FDOT had to forgo testing this type of technology.

The preliminary results of the GPS pilot project are promising—potentially giving FDOT the option to utilize GPS technology to determine travel times on limited-access facilities. Although not proven through this pilot project, the GPS-generated data may be able to provide an acceptable level of verification of incidents that affect traffic flow by indicating when and where travel times begin to increase. This can be a powerful tool for rural traffic management by providing operators with the ability to verify and/or detect incidents, relatively quickly, in our rural areas.

Funding Opportunities

Additional funds have become available taking the ITS Program out beyond the original plan horizon of 2012. However, those funds included in the *CFP* for fiscal years (FY) 2013, 2014, and 2015 have been committed to projects and no further funding is available for additional commitments in those years. There are, however, some funding opportunities to deploy ITS in the rural areas starting in July 2015 (FY 2016). The FDOT will need to take a look at the rural areas and determine which areas have the greatest need; then develop potential projects that blend the traditional traffic management infrastructure for niche applications deployments with new technology, such as the GPS-based probe and the cellular phone-based systems. The traditional traffic management infrastructure would include the license plate reader and the toll tag reader systems, since they are presently deployed in the Tallahassee and Orlando areas.

The GPS-based probe system shows promise as previously noted, but the cellular phone-based system still needs to be tested and proven before utilizing for data collection.

FDOT will continue to research the use of new technologies for utilization in the state's rural areas as a means of collecting data at a minimum cost and to provide operators with information about conditions on rural stretches of limited-access highways.

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

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Inside the TERL

The FDOT has a goal to assure that only a safe and uniform traffic control system and ITS are implemented in the 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.

Request for Product Consideration

Two Request for Product Consideration applications were received during the month of April. The Request for Product Consideration process was initiated recently to give the TERL a first look at technical information, such as specifications, proposed application, etc., regarding products being considered for listing on the Approved Products List (APL). This up-front step helps the TERL staff determine what approval process the manufacturer should follow. The two applications received were:

- Motorola's Point-to-Point Wireless Bridge
- MsSedco's Microwave Pedestrian Detector

Both applications are under review to determine if the product would be beneficial to the FDOT.

APL Vendor Quality Assurance System Evaluation

(Qualification of the manufacturer is required before a device can be evaluated for listing on the APL)
Six new product manufacturers submitted their quality system documentation for evaluation in the month of April. The submitting companies were:

- Pelco, Inc. (closed-circuit television [CCTV] cameras),
- Bosch Security Systems (CCTV cameras),
- Intelligent Transportation Video (software decoders),
- Draka Communications (fiber optic cable),
- Pencell Plastics (pull box), and
- National Sign and Signal (LED signs).

Product Evaluation - Signalized Intersection & ITS Products

During the month of April, the following three manufacturers, new to Florida, submitted applications to list their product on the APL:

- Campbell Company, out of Garden City, Idaho, manufactures accessible pedestrian pushbuttons. Accessible meaning that the device communicates information about pedestrian timing in a nonvisual format, such as audible tones, verbal messages, and/or vibrating surfaces.
- Comtrol Corporation, out of Coon Rapids, Minnesota, manufactures ITS network devices, such as device servers and media converters.
- VideoLarm, out of Decatur Georgia, submitted an APL application to have their CCTV camera approved.

All three manufacturers are still in the APL application phase of the approval process. Once the APL application is approved the product evaluation can take place.
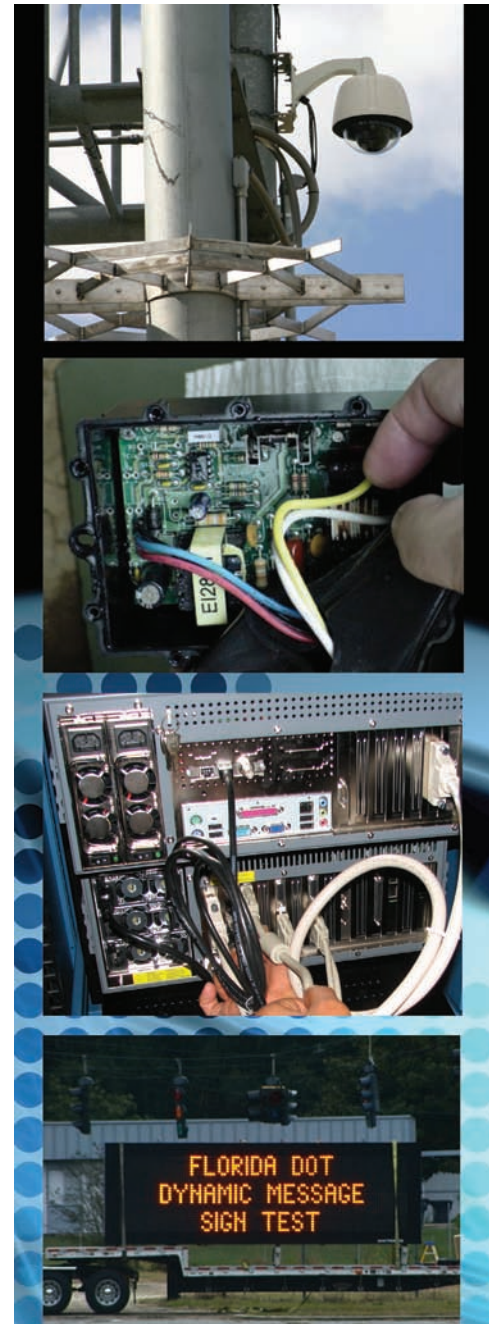
Product evaluation events during April included the following:

- A Daktronics 18-inch dynamic message sign evaluation was finalized in March and the TERL is awaiting a response from the manufacturer regarding minor issues.
- The Teleste encoder and decoder evaluation was finalized and lab staff are awaiting a response from the manufacturer regarding minor issues.
- Network devices from EtherWAN were integrated into the TERL test network for evaluation purposes.
- A 660 traffic controller cabinet (with articulated rack) manufactured by Temple was undergoing evaluation
- An LED traffic signals from Dialight was under evaluation.

The following products were approved for placement on the APL during April:

- Two Control Technologies Wired 170 Cabinets (Model MD 660X & MD 552X)
- McCain Unwired 170 Cabinet (Model 552)
- Horizon Signal Technologies Portable Traffic Signal (Model SQ2 - for work zone use only)
- Iteris Video Vehicle Detection System (Model VersiCam-SM with ICC Module – CAMBRKT4)

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.shtm**

The following Web page lists each product that is required to be listed on the APL - www.dot.state.fl.us/TrafficOperations/Traf_Sys/terl/apl4.shtm.

How to Get on the FDOT Approved Product List

1) Vendor Qualification = review of the vendor's quality control and assurance program
2) Device Evaluation = review of the device to verify conformance to FDOT's standards

   Vendor Qualification + Device Evaluation = APL listing

This article was provided by Jeff 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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ITS Florida—Professional Capacity Building Committee Offering Training Opportunities

ITS Florida's Professional Capacity Building (PCB) Committee has taken an active approach in promoting training opportunities in 2009. Two Lunch and Learn sessions were held in the Orlando and Miami areas in March 2009. The title of the first session was "Dummy's Guide to Common Application Protocols Used in ITS." PBS&J graciously hosted and provided the free session to our members and made a WebEx connection available to remote participants. The second Lunch and Learn session was hosted by the ITE Student Chapter at Florida International University. The title of this session was "Decision Support Tools for Intelligent Transportation Systems," and was presented by Dr. Mohammed Hadi, Assistant Professor.

At least three more Lunch and Learn sessions are planned in 2009, and will be advertised to ITS Florida members. The Technical Solutions Subcommittee led by Peter Vega, FDOT District 2 ITS Engineer, will be hosting at least one of these sessions in the Jacksonville area. This committee is looking at technological advancements and creative solutions using intelligent transporation systems (ITS). This committee is also assisting in recommending the technologies to be showcased as part of the 2001 ITS World Congress being held in Orlando.

In addition to these Lunch and Learn sessions, the PCB Committee is looking at other approaches to addressing training needs in the current economic market. To evaluate the training needs of its members, a survey was prepared. This survey will be used to identify training topics and methods of instruction. For the first time, ITS Florida is considering Web-based training in addition to the traditional instructor-led courses offered in the past. These Web-based courses will be offered at a very low cost and will provide training opportunities without the travel expenses. A possible topic for the first webinar would cover tools and methods for evaluating ITS traffic management center operations and corresponding benefits and costs.

An instructor-led course is planned in conjunction with the ITS Florida Annual Meeting in December in Orlando. The topic for this course and the other webinars will be gathered from the input received on the survey. Members with suggestions for ITS training are encouraged to respond to the survey or contact Jesus Martinez at JAMartinez@swri.org. ITS Florida looks forward to providing interesting and timely ITS training opportunities for its members.

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—511 Reacts to Flooding in Florida

April 2009 will be long remembered in Georgia for the record flooding of many rivers in the central and southern areas. During the early part of April, Georgia's abundant rainfall slowly made its way down rivers to the state of Florida, adding to flooding caused by rainfall in Florida. Two major tributaries of the Suwannee River—the Withlacoochee and the Alapaha—set new flood records causing road closures. As an essential part of providing real-time information to the travelling public, our 511 regional systems and the statewide 511 system were extremely valuable tools.

The Northeast Florida 511 system provided constant and real-time information on road closures in District 2 through the interactive voice recognition system and the Web site. A floodgate message on all road closures greeted callers as soon as they dialed the 511 number. With many area roads being closed, callers could drill down to individual counties to hear a floodgate message about road closures in any particular county.

The Statewide Florida 511 system was also instrumental in providing information. During the first day of the flooding event, road closure information was posted on the scrolling banner on the 511 Web site. As in the case of the regional Northeast Florida 511 system, a floodgate message on all road closures greeted callers as soon as they dialed the 511 number. Additional road closures forced FDOT to modify the Web site, adding a link to a separate page with much more information on the road closures. For the first time, we also embedded geographic information system-based maps indicating the road closures and alternate routes around the closures.

With Easter weekend on the horizon as the floodwaters rose, the information provided by the 511 system was critical as many travelers made plans to reach their weekend destination. This flood event for I-10 ranked as the fourth highest recorded historical crest (68.10 ft in 1948; 64.97 ft in 1973; 64.32 ft in 1928; and 63.83 ft in 2009).

The State Emergency Operations Center was very pleased with the final outcome. 511 fulfilled its mission of providing valuable and timely information to the travelling public.

This editorial was provided by Elizabeth Birriel, FDOT Traffic Engineering and Operations Office. For information, please contact Ms. Birriel at (850) 410-5606 or email to Elizabeth. Birriel@dot.state.fl.us.

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Aerial view of north Florida flooding (provided by USGS)

Suwannee River bridge west bound I-10, looking west under structure (provided by FDOT)

Old US 90 Bridge, Ellaville (provided by FDOT)

Announcements

ITS America's 2009 Annual Meeting and Exposition—Moving America Forward

When: June 1-3, 2009
Where: Gaylord National Resort and Convention Center (National Harbor, Maryland)

ITS America's 2009 Annual Meeting & Exposition is a three-day learning and networking event which will attract the most diverse transportation audience from across the country in one place. This event will feature panel sessions, poster sessions, interactive seminars, renowned industry speakers, informative exhibits and hands-on technology demonstrations, technical tours, and receptions.

Further information is available at www.itsa.org/annualmeeting.html

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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.

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