



Intelligence at Work



A Message from the District Secretary



Intelligence at work. The phrase is what best describes our District Six Intelligent Transportation Systems (ITS) Office.

For one, it could sum up all the technology we have working around Miami-Dade and Monroe counties —the Closed Circuit Television (CCTV) cameras, Dynamic Message

Signs (DMS), roadway detectors, and innovative software we continue to add to our infrastructure, year after year. But the phrase means a lot more than that.

It's also about taking all of those components and making them work as an integrated system to deliver a safer, more reliable driving experience to South Florida's motorists.

This idea, after years of planning, designing, and implementing, resulted in a major milestone: the completion and launch of our ITS Program's biggest project ever – the 95 Express project, which includes the 95 Express Lanes, Ramp Signaling and enhanced transit support.

It wouldn't have been possible without all the CCTV, DMS, roadway detectors, Road Rangers, Transportation Management Center (TMC) Operators, maintenance crews, and the leadership behind it all. They haven't just launched a successful program. They've put our District's ITS program on a national stage as a leader in ITS by winning awards like the Best Innovative Product at the 2010 ITS America conference and America's Best Transportation Project

from the American Association of State Highway and Transportation Officials (AASHTO).

But 95 Express isn't the only thing our ITS program is about. We're setting and exceeding the standards for how traffic incidents should be handled. We're constantly enhancing, updating and maintaining our equipment and software. We're coordinating with other agencies and assisting with the dissemination of travel information through several media.

And we're not taking any of it for granted. Sure, this fiscal year was great. But that's another thing "intelligence at work" is about: not presuming success and continuing to work – to innovate, enhance and optimize. Our program is committed to doing everything it can to use technology in a way that will continue to benefit any and every person who uses one of our roadways.

As you go through this report, I am confident you'll be able to sense the hard work our team puts toward the ITS program as we continue to build on its accomplishments.

A handwritten signature in blue ink, appearing to read "Gus Pego".

Gus Pego, P.E.
District Six Secretary
Florida Department of Transportation



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Introduction

Like the previous fiscal year, 2009-2010 was another period of significant progress and growth for the Florida Department of Transportation (FDOT) Intelligent Transportation Systems (ITS) Program. The program, which serves to support and manage the transportation infrastructure through the applied use of integrated technologies, continues to be a viable alternative and/or supplement to traditional roadway enhancement projects. FDOT District Six, in its commitment to enhance system capacity and improve regional mobility, successfully led the charge in introducing a series of innovative transportation management initiatives that benefitted our motorists and served to mark a new chapter for the ITS Program in the State of Florida. The ITS Program, while integrated to maximize benefits, is comprised of five areas as described below:

- **ITS Deployment** – Providing planning, design, and procurement of ITS equipment, such as Closed-Circuit Television (CCTV) cameras, Dynamic Message Signs (DMS), Detectors and communications.
- **TMC Operations** - Providing a central location for data collection and dissemination, and command center for managing traffic and incidents.
- **Traffic Incident Management (TIM)** - Providing the Road Rangers - Florida's version of a safety service patrol – and additional incident management resources. Coordinating multi-agency meetings to identify issues and develop solutions to improve incident management.
- **Florida's Traveler Information System (FLATIS)** - Providing real-time traveler information services through various media, such as the telephone and the Internet.
- **IT/ITS Maintenance** - Managing the maintenance of ITS field and TMC equipment to ensure system availability, as well as software support.

Fiscal year 2009-2010 marks the fifth edition of District Six's ITS Annual Report. This year we continued putting all of the intelligent technologies we've implemented to work. Inside these pages we recognize the benefits derived from such projects as the 95 Express project (Phase 1 completed in

April 2010), which also includes the Ramp Signaling System. In this report, we highlight the enhancements made to our existing systems and their role in helping us achieve the goals we set during the previous fiscal year. We hope you find our Annual Report informative, and welcome you to join District Six as we continue to lead our community to a safer and more efficient fiscal year.



ITS MISSION:

Enhance the safety, security, and efficiency of Florida's transportation system through the implementation of interoperable ITS technology in support of local, regional, and statewide mobility.

ITS VISION:

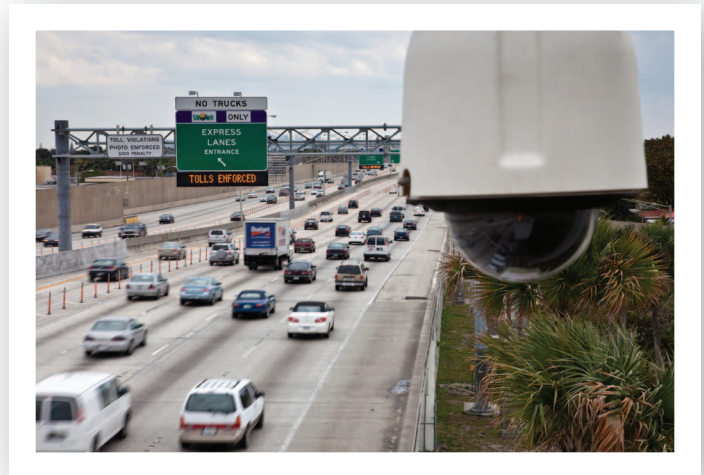
Be the national leader in ITS by promoting multijurisdictional coordination for the provision of an efficient, secure, reliable, and safe transportation system.

ITS Deployments

Without technology, ITS programs would not exist. For this reason, the FDOT District Six ITS Program is committed to continuous enhancement of the ITS infrastructure. The fiscal year 2009-2010 saw the completion and initiation of several projects that are aimed at further strengthening the program's reach and effectiveness.

A summary of FDOT District Six ITS projects completed during fiscal year 2009-2010 is presented below:

- SR 826 ITS Deployment (FIN: 414760-2-5201)** - The SR 826 ITS design-build deployment, between NW 25 Street and NW 122 Street, included the following components: six new CCTV cameras and the integration of four existing wireless CCTV cameras; three DMS; 37 detectors; and 72 strand fiber optic cable. This project is a key link in the overall communications network and enhances the traveler information disseminated along an important corridor (SR 826). The project was in the construction phase during fiscal year 2008-2009 and was completed in February 2010.
- I-395 ITS Deployment (FIN: 251686-1-52-01)** - The I-395 ITS design-build deployment had construction limits along I-395/MacArthur Causeway between I-95 and Alton Road; along Biscayne Boulevard between I-395 and Port Boulevard; and along Port Boulevard between Biscayne Boulevard and the Port of Miami Administration Building. The project added the following components: 10 CCTV cameras; 10 detectors; one DMS; and 72 strand fiber optic cables. The project area serves the Port of Miami, and the additional devices will provide future integration between the Transportation Management Center (TMC) and the Port of Miami operations. The project was in the construction phase during fiscal year 2008-2009 and was completed in February 2010.
- 95 Express** – The first of its kind in the state, the high occupancy toll (HOT) lanes project is part of an overall long-term strategy of initiatives designed to help improve the safety, throughput and reliability of mobility along the roadways within southeast Florida. While Phase 1A launched during fiscal year 2008/2009, Phase 1B, which includes several ITS



One of the many CCTV cameras on I-95.

devices such as, 12 CCTV cameras, 24 detectors, and 18 DMS, launched in January of fiscal year 2009-2010. Phase 1B added HOT lanes along I-95 southbound from just south of Miami Gardens Drive (NE 183 Street) to just before I-395 and extended I-95 northbound HOT lanes from SR 112 to just north of I-395. As Phase 1 came to completion, the FDOT began to prepare for Phase 2 concept development, design and construction that will extend the 95 Express into Broward County. For project updates, please visit www.95express.com.

- Ramp Signaling** – Also the first of its kind in the state, the ramp signaling system's Phase 1B was completed in April 2010 with the activation of 14 more ramp signals along the entrance ramps of I-95. Two of the signals were added to the already existing northbound ramp signal system, while the remaining twelve were placed at various entrances to southbound I-95. The signals operate based on real-time traffic conditions and will turn on during hours of heavy freeway use, such as weekday rush-hour periods. Ramp Signaling was part of the 95 Express project.

ITS deployment projects that began construction during fiscal year 2009-2010 include:

- DMS Replacement (FIN 417740-2-92-01)** – During the last fiscal year, the District's first ITS device

replacement project was awarded. It was a design-build project for the replacement of thirteen (13) DMS on existing structures along I-95, SR 826, SR 9, US 441, and the Florida’s Turnpike Spur. Construction began in October 2009, and about half of the replacements have already passed the testing phase. The estimated completion date for the project is September 2010.

- **SR 826 Section V** – This project will add arterial DMS on several roads approaching SR 826 in west Miami-Dade County, including Kendall Drive, SW 8 Street, Flagler Street, NW 12 Street, NW 87 Avenue, Milam Dairy Road, NW 25 Street and NW 36 Street. Additionally, at least one more DMS will be added to SR 826. Enhancing the District’s CCTV network and data-gathering capabilities, the project conceptually involves the addition of up to 11 CCTV cameras and 34 detectors. The addition of these devices will provide the District with full coverage of the SR 826/ SR 836 interchange. Construction is expected to begin in fiscal 2010-2011.

Key planning and design achievements during fiscal year 2009-2010 included:

- **SR 826 Section II** – This project’s ITS-related components include the installation of a fiber optic backbone to replace the current wireless communications for the existing CCTVs on SR 826. It will also add a DMS on the northbound side of SR 826, between SW 72 Street and SW 56 Street and eight arterial DMS. Construction is expected to begin in July 2011 and last six to seven months.

These two projects’ ITS components are not just end-user products. In conjunction with construction, these ITS devices will be an active component of Maintenance of Traffic (MOT).

The table below summarizes the status of ITS deployment projects within FDOT District Six as of the end of Fiscal year 2009-2010.

FDOT District Six ITS Deployments

ITS Project	CCTV*		DMS		Detectors**		Ramp Metering	
	C	UC	C	UC	C	UC	C	UC
I-95	30		10		94		22	
I-95 Express	61		40		13			
SR 826	30	11	10	2	87	34		
I-75	7		3		30			
I-195	6		6		21			
I-395	10		2		10			
US 1 (SW 17 to 112 Ave)	22		5		6			
US 1 (South of Florida City)	44		11		2			
Card Sound Road	5							
SR 9	1		1					
US 441	2		2					
Florida’s Turnpike Spur	1		1					
Other Arterials			11	16				
Total	219	11	102	18	263	34	22	

C = Construction

UC = Under Construction

*Includes static CCTV for DMS verification

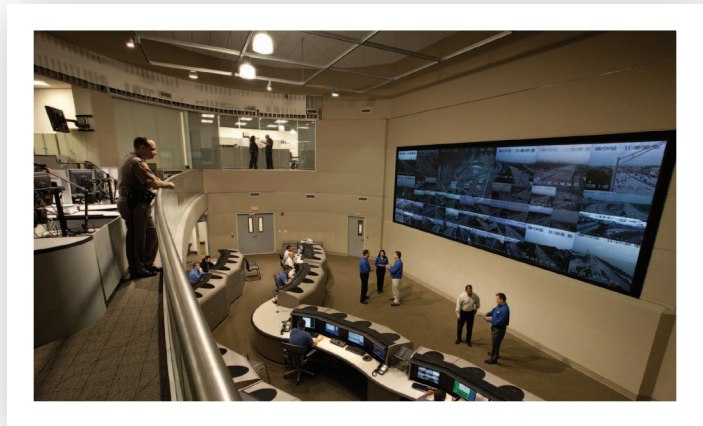
**I-95 Loop Detectors are reported as a detector station and not by loop.

TMC Operations

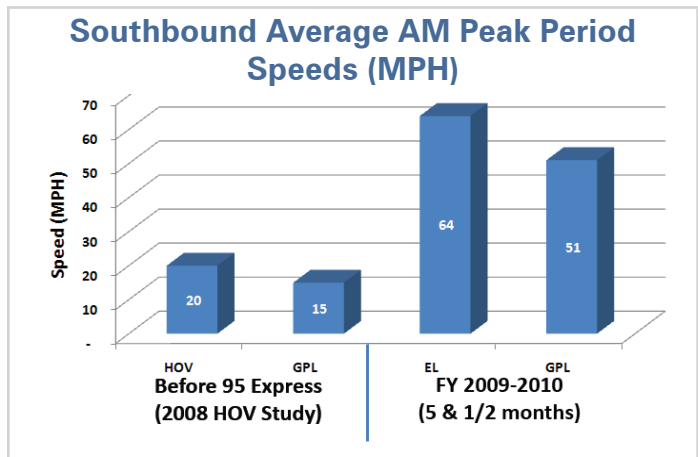
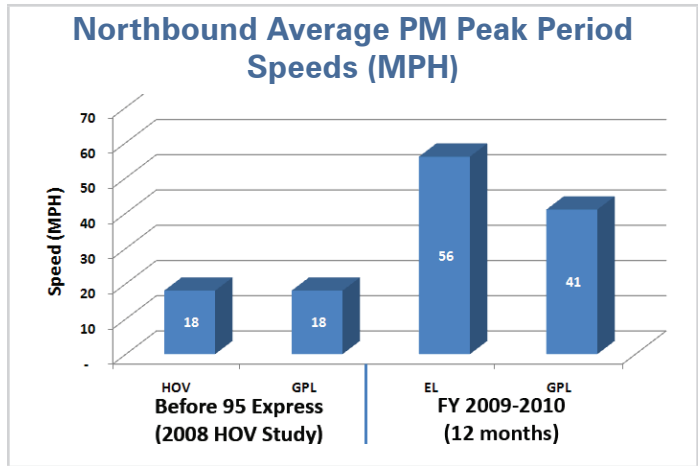
The Department's SunGuide Transportation Management Center (TMC) houses FDOT Operations Staff who monitors and manages traffic, disseminates information and dispatches incident management resources 24 hours per day, 7 days per week. In the event of a traffic incident, such as a crash or a hazardous materials spill, the operators coordinate with emergency responders and Road Rangers to attend to the incident and provide the emergency and rescue services needed, while clearing the incident as quickly and safely as possible. This coordination is enhanced by the co-location of the Miami-Dade Expressway Authority (MDX) TMC Operations Staff and the Florida Highway Patrol (FHP) Troop "E" dispatch within the TMC.

Expanded TMC Operator Roles – TMC Operators saw their roles begin to transform during fiscal year 2008-2009, and it continued through fiscal year 2009-2010. Instead of thinking of themselves as dispatchers or data collectors, SunGuide TMC management have trained operators to think like traffic managers. As traffic managers, they monitor demand and capacity of the roadway, then utilize the tools available (DMS and 511) to inform the public so they can make better travel choices. In addition, the operators continued to utilize demand management tools (ramp signals and dynamic pricing) to further assist with balancing demand across the roadway network to make travel safer and more efficient for the motorists, transit users, and commercial vehicle operators by increasing travel speeds as shown in the charts to the right. This resulted in a reduction of nearly 1.5 million vehicle-hours of delay along the I-95 corridor during the AM and PM peak periods in fiscal year 2009-2010 compared to before the 95 Express project.

- 95 Express Operations** - With the completion of Phase 1 of the 95 Express project, TMC Operations expanded its agency outreach to support the new regional transit service from Broward County Transit, as well as incident response and enforcement for the expanded project limits. This required updating the existing procedures and protocols for 95 Express operations. This effort, along with expanded incident management efforts, resulted in the 95 Express being closed due to incidents about one percent of the time, which translated to a more reliable trip for motorists. In addition, the dynamic pricing software (Express Lane Watcher) was enhanced and renamed to Express



The District Six SunGuide Transportation Management Center.

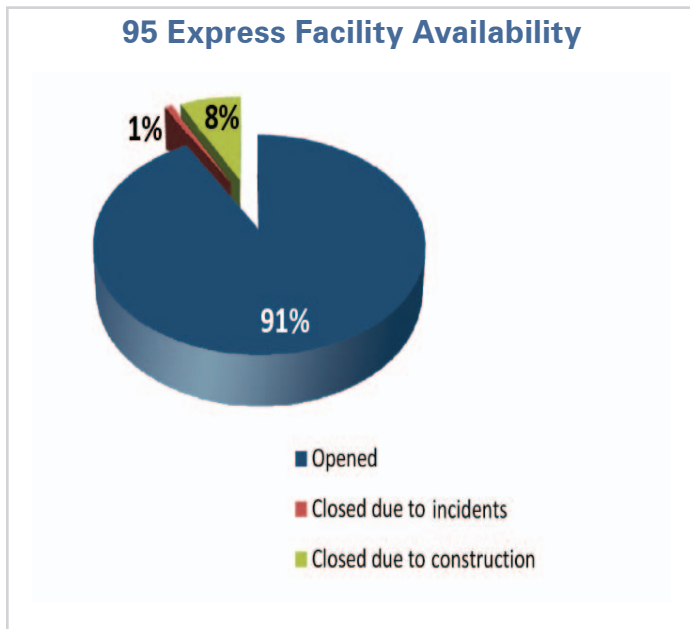


- HOV= High Occupancy Vehicle Lane
- GPL= General Purpose Lanes
- EL= Express Lanes

Lane Manager (ELM). The enhancements included integrating ELM with SunGuide (the state’s base ITS software) to automate many of the manual processes that existed with Express Lane Watcher. ELM (the primary graphical user interface for the 95 Express operators) was also enhanced to provide more reporting capabilities, as well as provide more configurable elements both in the graphical user interface and back office functions. ELM can now be configured to view traffic conditions for both express lanes segments and non express lane segments. Overall, the 95 Express project provides a more reliable travel option to motorists and transit users. This is evident as the average travel speeds along the express lanes were greater than 45 MPH for 100 percent of the time and 93 percent of the time during the AM and PM peak periods, respectively. From the launch of the southbound express lanes in January 2010 to June 2010, the express lanes averaged nearly 1.4 million users a month.



One of the ramp signals located on an I-95 entrance ramp.



Ramp Signaling Operations – While the most visible component of the 95 Express project is undoubtedly the express lanes, ramp signaling (also a first-in-the-state) is also a component of the project to enhance corridor operations. The Department completed it in April 2010 with the activation of 12 ramp signals on southbound I-95 (at entrance points from Ives Dairy Road to NW 62 Street) and two additional ramp signals on northbound I-95 (at Miami Gardens Drive and Ives Dairy Road). Southbound

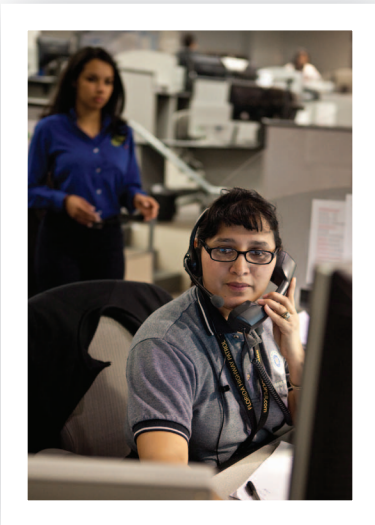
ramp signals are typically activated from 6 a.m. to 9 a.m., and northbound ramp signals are typically activated from 4 p.m. to 7 p.m., Monday through Friday. The signals are also activated in the case a traffic incident or special event impacts regular highway conditions. TMC Operators ensure the proper operation of the ramp signal system on a daily basis and are responsible for monitoring traffic backups onto the local roadways. The system has increased average travel speeds and enhanced the overall trip reliability for motorists using I-95 during the morning and afternoon peak periods. TMC Staff also submits a weekly report to Miami-Dade County Public Works regarding the Ramp Signaling System which details the times each signal was operational and if there were any spillbacks. By keeping the county informed on the Ramp Signaling System’s performance, the timing of the traffic signals on arterial roads can be adjusted if need be.

511 Operations – In fiscal year 2009-2010, TMC Operators also became responsible for disseminating, managing and performing QA/QC on all 511 information disseminated to the public via the 511 phone service and FL511.com in District Six. These operators also post pre-event floodgate and congestion messages on 511 (voice) and FL511.com (text). All TMC Operators responsible for 511 Operations are bilingual and assist other regional TMCs with recording floodgate messages for the 511 phone service in Spanish, as well as the corresponding Spanish text on the FL511.com home page. For more information on 511, please refer to the Traveler Information subsection in this report.

Planned Events – During fiscal year 2009-2010, the TMC continued its coordination efforts with other agencies to continue improving the mobility and safety of South Florida’s roadways during planned events.

- **Super Bowl XLIV and Sun Life Stadium**

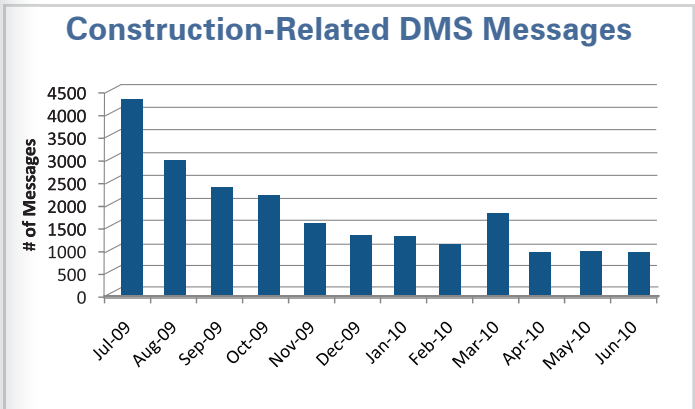
– TMC Staff was on-site for the National Football League’s Super Bowl XLIV in February 2010 (as well as the Pro Bowl in January 2010) at Sun Life Stadium’s traffic command post. While on-site, Staff utilized TMC resources and provided real-time travel information to law enforcement agencies and the escort services bringing the teams to the stadium. The ramp signaling system was also put into use when northbound I-95 experienced congestion. But coordination efforts were not limited to the Super Bowl; TMC Operators also posted pre-event messages and monitored congestion levels whenever a major event was held at Sun Life Stadium.



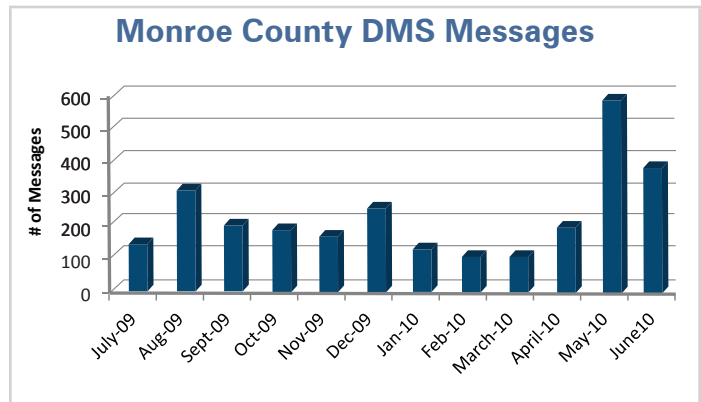
An FHP Duty Officer dispatches a Trooper to an event.

- **Construction Support** – While construction for Phase 1B of the 95 Express project moved along, the TMC continued posting pre-event DMS message, as well as floodgate messages on 511 and FL511.com, every time a construction event related to 95 Express occurred. Once construction for Phase 1 of the 95 Express project was completed, there were still several construction projects the TMC supported in a similar way (the Port of Miami Tunnel & SR 826/ SR 836 Interchange Reconstruction projects). The TMC continued to play a critical role in helping the Department disseminate construction updates by coordinating signage plans with the District Six Construction Office and Monroe County, utilizing appropriate tools, such as DMS, 511, FL511.com and the Highway Advisory Radio (HAR). The number of construction related messages increased throughout the year to 21,528 in fiscal year 2009-2010 (see chart to the top right for monthly construction DMS message numbers). Also, in support of roadway construction activation, the HAR was utilized for supporting diversions due to

highway closures. HAR proved to be very useful for these scenarios because HAR messages contain more information than a DMS. In addition, HAR played an important role in providing the public with information on the launch of 95 Express southbound and the updated ramp signaling system.



Monroe County Support – As FDOT continues its improvements to US-1 in Monroe County, the TMC has been instrumental in disseminating construction information to motorists traveling to and from the Keys. TMC Operators post pre-event messages on DMS, 511 and FL511.com, as well as messages during construction. TMC Staff also adjusted the messaging structure in Monroe County, and DMS messages now include how many miles away an incident begins, which is helpful to motorists traveling into the county who are unfamiliar with the Mile Markers. In fiscal year 2009-2010, the TMC posted 2,758 messages supporting Monroe County events – about a 73 percent increase from last year.



Performance Measures – In December 2007, District Six set targets for key operational performance measures that have the greatest impact to the public. During fiscal year 2009-2010, District Six was once again able to exceed those targets (see table below). The quality control procedures include daily reviews of all travel lane blocking events to address procedural errors and/or potential ways to improve the efficiency of the operations, which helps improve overall service. TMC Staff also enhanced the TMC Operator Error Database for more efficient data entry and error tracking. It now collects information directly from the SunGuide software in real-time and grades events automatically, thus reducing the labor for grading by approximately 50 percent.

Performance Measures	FY 2009-2010 Average	Target
DMS Efficiency – The percent of times DMS were used when DMS were available	99.72%	>95%
TMC Operator Error Rate – The percent of errors for all possible errors for travel lane blocking events	0.43%	<0.69%
Time* to Dispatch Road Rangers From TMC awareness to Road Ranger notification	1:05	<2:00
Time* to Confirm an Event From TMC awareness to TMC Operator confirming the event for travel lane blocking events	0:23	<2:00
Time* to Post DMS from confirmation of travel lane blocking to the first DMS displayed to the public	3:17	<5:00
Time* to Notify Other Agencies – From TMC awareness to notifying FHP	1:19	<7:00

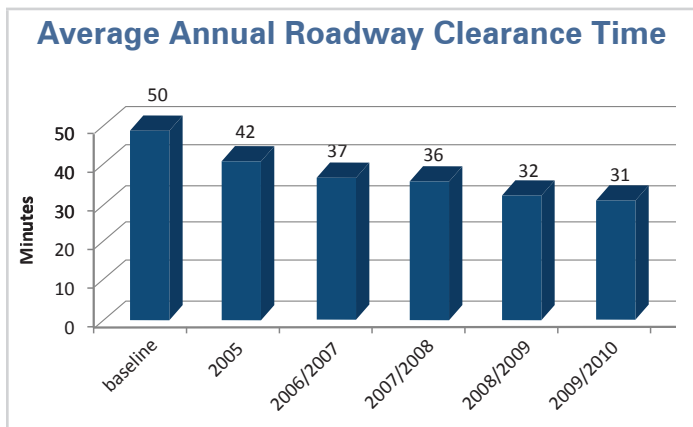
*Time = Minutes:seconds.

TMC Operators also detected 37% of events via CCTV during fiscal year 2009-2010, an increase from last fiscal year’s 35%. Early detection of events also contributes to the overall reduction of time travel lanes are blocked for an event, reducing delays to motorists.

Incident Management

The FDOT District Six ITS Program made strides in enhancing its Incident Management services during fiscal year 2009-2010. The Traffic Incident Management (TIM) team the District leads continued to meet and work to expedite incident clearance times to provide a safe and reliable transportation network. The Road Ranger program was enhanced as well with a new contract, a new fleet, new standards and expanded operations. As evidenced by the results of the FDOT's first-ever Road Ranger survey, the enhancement of the District's Incident Management component has resulted in better trained, better equipped and knowledgeable incident managers, leading to better incident handling and a safer driving experience for Miami-Dade County's motorists.

TIM Team – The TIM Team not only develops procedures to expedite clearance times, but also implements them. A key measure of performance is how long it takes to open travel lanes closed due to incidents (commonly known as roadway clearance). As indicated in the chart below, the TIM Team has had continued success by reducing the average roadway clearance time to 31 minutes (compared to last year's 32 minutes) from the baseline of 50 minutes.



The following are key achievements contributing to these benefits for fiscal year 2009-2010:

During fiscal year 2009-2010, the District moved forward with a new approach by conducting more frequent, smaller, agency-to-agency outreach visits, which were valuable assets in facilitating open discussions and identifying areas of improvement. The District also continued implementing last



An Incident Response Vehicle (IRV) Operator prepares to respond to an event.

year's TIM procedural plan, which included the quarterly release of the TIM Newsletter and the development of the TMC Activities database (TMCAT). The first formal TIM meeting in Monroe County also took place during fiscal year 2009-2010. The meeting established the TIM team program in Monroe County and was well-attended by members of the emergency response community.

- TIM Newsletter** – The District continued to publish “The District Six TIM Quarterly Review” every quarter. It serves as an ongoing communication for the District to keep its partner agencies informed of key developments, training events and performance measures.
- Transportation Management Center Activity Database (TMCAT)** –The TMCAT was created to facilitate the records storage, tracking and reporting of the TIM Team’s public outreach and interagency coordination efforts. The database tracks and reports on agency meetings, action items, lessons learned and performance measures based on the guidelines defined within the TIM Procedural Plan. In fiscal 2009-2010, the TMCAT helped TMC Staff schedule and keep track of about 90 TIM-related events. The TMCAT is integrated with the SunGuide.org’s calendar, which helps keep the public informed of the TMC’s meeting activities.

95 Express Updated Incident Management Plan –

Last fiscal year, the TMC developed a successful incident management plan that included additional resources, specific multi-agency protocols and quick clearance policies for the northbound launch of the 95 Express lanes. The TMC applied similar incident management strategies to the southbound express lanes. This included extending the Incident Response Vehicle (IRV) hours (from noon to 8 p.m.) to 6 a.m. to 10 p.m. IRV responded to about 1,000 events during fiscal year 2009-2010.

Road Rangers -- The District Six TMC serves as the control center for dispatching and coordinating field operations. A large part of the field operations are the Road Rangers: They are the most visible incident management service the District provides. Their services are provided on I-95, I-75, SR 826, I-195 and I-395/ Macarthur Causeway. Unfortunately, the Road Ranger program suffered nearly a 50 percent reduction in funding during fiscal year 2008-2009. But an enhanced Road Ranger contract, put into effect in January 2010, allowed the program to provide more coverage and better, more efficient incident management services to Miami-Dade County. The new contract adds flat bed tow-trucks to the traditional Road Ranger vehicle fleet for faster incident clearance times. The new contract also added (at no extra cost to the Department) a service patrol vehicle support van to replenish fleet vehicles with onboard consumables while on patrol. The new fleet is made up of 22 vehicles: seven flatbed tow trucks, five regular tow trucks and 10 pick-up trucks. Other major component of the new contract includes shift change enhancements that decrease Road Ranger downtime and the implementation of Road Ranger exams: written and practical tests that potential Road Ranger Operators must take and pass before becoming certified to be Road Rangers.

The new contract also standardized incident management procedures for easy adoption into construction projects, like the SR 826/SR 836 Interchange Reconstruction project, which provides an additional flatbed and an additional tow truck within the project's limits, bringing the total number of Road Rangers on SR 826 (during weekdays) to five. While these trucks are under a separate contract, they are managed by the TMC and are held to the same incident management standards, ensuring the public receive the same level of service. Weekend service patrol hours for Road Rangers were also increased from 12 to 24 hours thanks to the new contract.

- **Road Ranger Driver Information System (RRDIS)** – The RRDIS was upgraded to Version 2.0 during fiscal year 2009-2010. With the new contract, all Incident Management Road Rangers are required

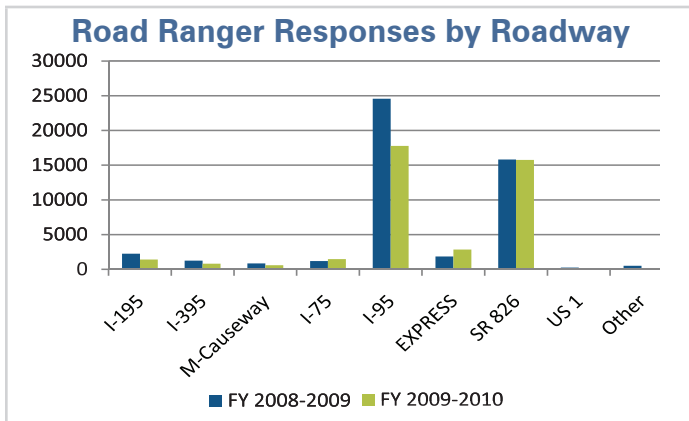
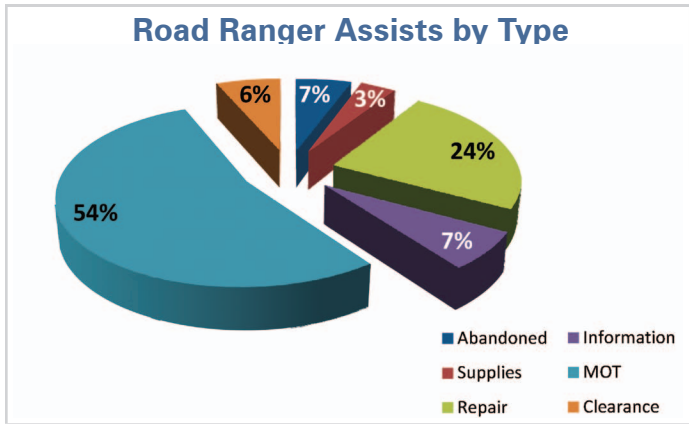


A Road Ranger responds to a 95 Express event.

to have Class A driver's licenses, and the RRDIS does not allow the contractor to schedule Rangers who do not have that license. TMC Operators can also create custom Road Ranger schedules, and management can more easily view Road Ranger procedural errors through the RRDIS, which pulls the error information directly from the SunGuide® software. The RRDIS is also now used to administer the written portion of the previously mentioned Road Ranger exam.

- **Road Ranger Survey** – FDOT's Central Office in Tallahassee conducted its first ever Road Ranger Survey in fiscal year 2009-2010 to gather more information on what incident responders around the state thought about the Road Rangers' ability to assist them. District Six surveyed 125 incident responders and received strong scores in all categories. Here are the results of District Six's survey:
 - 87 percent said Road Rangers arrived in 30 minutes or less.
 - 75 percent said Road Ranger arrival times were acceptable.
 - 81 percent said Road Rangers were adequately equipped.
 - 71 percent said Road Rangers were thoroughly trained.
 - 93 percent said Road Rangers were helpful in resolving events.
 - 75 percent said Road Rangers made it easier to perform their duties.

Road Rangers had 40,913 responses in fiscal year 2009-2010, with the majority of assists being related to Maintenance of Traffic (MOT) (see Assists by Type chart below), and, as indicated in the Road Ranger Responses by Roadway graph, Road Ranger responses continued to be mostly on I-95 and SR 826.



Rapid Incident Scene Clearance (RISC) Launch – RISC is a highly innovative program – several years in the making – that supports Florida’s Open Roads Policy. RISC supports this policy by creating an incentive-based program for the rapid removal of the more complex scenarios that would require additional time for clearance. The program launched in July 2009 after District Six completed the vendor selection and award process during fiscal year 2008-2009. It is most commonly used for major incidents requiring heavy-duty wreckers to clear travel lanes. The RISC Contractors are required to respond (within 60 minutes) and clear the travel lanes (within 90 minutes) with specific time limits to receive the incentive. But with an incentive-based contract, it is critical to accurately recreate the event timeline to avoid conflicts and expedite the invoicing process. That’s why the TMC developed a software application, the RISC Watcher, to do just that. The RISC Watcher provides an easy-to-use

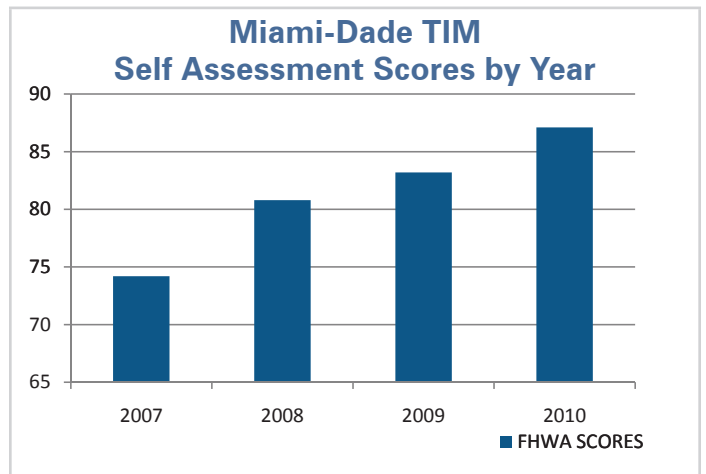
Incident Management



The RISC heavy duty tow truck helps flip over a tractor trailer that rolled over.

interface for the TMC to track rotation lists, official requests for RISC activation, RISC Contractor notification and resource activation, RISC Contractor/resource arrival and official travel lane clearance times. It also provides a quality control and audit function that ensures the data accurately stored and reported in the contract required format. This provides efficiency in the District’s invoicing process, as does the training conducted with FHP to ensure RISC coordination. RISC achieved an average response time of 50 minutes and a travel lane clearance time of 76 minutes while responding to 10 events during fiscal year 2009-2010.

Federal Highway Administration (FHWA) Self Assessment – The advancements of the FDOT District Six Incident Management efforts are also documented in the FHWA TIM Self-Assessment. The FHWA TIM self assessment for the Miami-Dade TIM Program has been conducted annually since 2005 and has shown continuous improvements since then. The overall TIM Program score for 2010 was calculated at 86.9 percent, which is an improvement over the 2009 score of 83.2 percent.



Traveler Information



A DMS on I-75 displays travel time information.

Traveler information is an important tool in congestion management. Disseminating real-time traffic information that is accurate and reliable empowers motorists to make informed

decisions along their routes of travel, helping them avoid delays that contribute to roadway congestion. The Department’s new system – Florida’s Advanced Traveler Information System (FLATIS) – launched at the end of fiscal year 2008-2009 and provides statewide traveler information to the public via the 511 phone service and FL511.com.

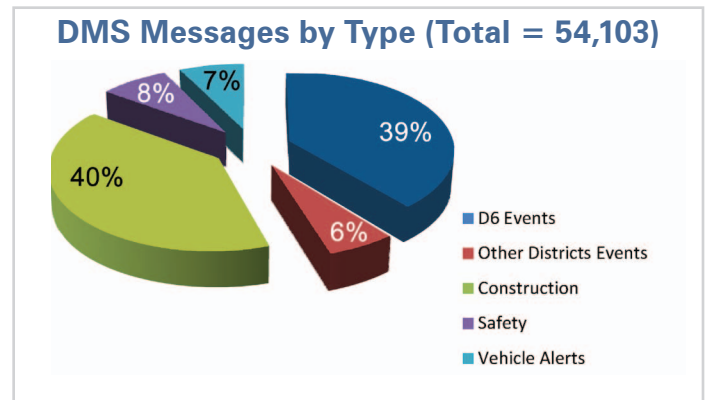
511 Updates – In fiscal year 2009-2010, the 511 phone service was upgraded to allow the TMC to gain a new source for incident detection: the motorists themselves. The 511 phone system now allows its users to provide traffic reports, which are left via a voice recording on 511. Once a traffic report is received the system sends the recorded message to TMC Operators’ e-mail accounts. Then, the TMC Operators can verify the event. District Six also began posting messages to 511 for recurring and non-recurring congestion on all limited-access roadways.

FL511.com – FDOT also launched the new statewide FL511.com web site, replacing regional 511 websites. FL511.com features the same detailed traffic and travel information as the 511 phone system in addition to camera views and links to airports, seaports and transit agencies. Users can register for My Florida 511 personalized services to receive traffic alerts via a phone call, e-mail and/or text message. Travelers can customize their alerts by choosing the time of day, day of week and type or severity of incidents. Users can also program customized routes to hear travel information on their routes first when calling 511.

511 Watcher – The 511 Watcher automates the tracking of information posted on to the FLATIS, such as lane blocking events, congestion events, floodgate messages, travel times, and CCTV images. It guides the operators in the process of confirming accuracy of data to be published, documents their findings, and generates performance measure reports.

In fiscal year 2009-2010, it was updated to prompt TMC Operators when they received a traffic report voice message from a motorist. From February 2010 (when the TMC began reporting this statistic in detail) to June 2010, District Six TMC Operators confirmed 88 events reported by motorists through the 511 phone system. A total of 696 events were reported from motorists in District Six during this time period, but nearly 87 percent were either false alarms or already previously confirmed.

DMS Messaging – DMS are an important part in traveler information and event notification. Posting messages that provide motorists with critical information can help reduce congestion that improves the mobility and safety of the surface transportation systems. Of the 54,103 DMS messages deployed during fiscal year 2009-2010, the majority of them were for incidents (45 percent) and construction (40 percent). The breakdown is seen in the DMS Messages by Type chart below.



Travel Time Messaging – The District continued to augment its travel time messaging system in fiscal year 2009-2010 with the addition of more travel time messaging on I-75 and SR 826. A DMS on I-75 northbound now provides cross-county travel times: from I-75’s Miami Gardens Drive exit (Miami-Dade) to Griffin Road (Broward). Additionally, four more DMS are now displaying estimated travel time information along SR 826. The four signs are located at strategic points along the highway, offering motorists estimated travel times to other highways within Miami-Dade County. All four DMS are located in advance of a major exit ramp to give drivers enough time to make smarter, more informed decisions when traveling through decision points that connect SR 826 to I-75, I-95, and SR 836.

IT/ITS Maintenance

The FDOT District Six ITS Program is highly interactive and dependent on state of the art technology that efficiently manages roadway operations. The IT/ITS Maintenance Staff manage and maintain the equipment in the TMC and out in the field. The entire network of equipment – the roadway detectors, CCTV cameras, DMS, communication infrastructure, server/computers, video wall and software applications – must remain operational 24/7. These systems, in turn, call for an aggressive maintenance program that ensures ITS equipment is operating adequately to support the goals of the District.

The TMC has deployed a database application that assists with tracking the early detection, reporting and troubleshooting, and ultimately the repair of IT and ITS field equipment. The table below compares annual average system availability year over year. As indicated in the table, the expansion of ITS spare parts inventory last year positively affected systems reliability for the ITS field equipment. Starting in fiscal year 2008-2009 the District procured and installed SunGuide Software on the latest generation blade server technology configured in a clustered environment providing a high level of system reliability. Additionally, the District increased the number of IT Staff, as well as their onsite working hours to mitigate system failures and enhance recovery times. As a result, the average ticket duration time decreased during fiscal year 2009-2010 to 2.04 days (compared to 2008-2009's 2.98 days).



ITS Maintenance staff working in the TMC's server room.

The slight increase/decrease in TMC Systems reliability can be attributed to the TMC operator workstations nearing the end of their life cycle. The District is also planning to upgrade them with the latest generation of workstation technology in fiscal year 2010-2011. Additionally, the table below does not include 95 Express Lanes field equipment failure rates because the equipment is still covered under the construction contractor warranty period.

Subsystem	Annual Average System Availability 2009/2010	Annual Average System Availability 2008/2009	Year over Year Difference
TMC Systems (critical) ¹	99.98 %	99.97 %	+0.01
Video Wall	99.96 %	99.99 %	-0.03
SunGuide™ Software ²	99.01 %	98.88 %	+0.13
CCTV	97.48 %	96.79 %	+0.69
DMS	96.10 %	89.46%	+6.64
Detectors	98.73 %	92.80 %	+5.93
Workstations (non-critical) ³	98.47 %	98.91 %	-0.44

¹ Critical is defined as SunGuide Software related servers, operator workstations, fax machines, network servers, network switches, SAN, firewall, and VPN.

² This number does not reflect SunGuide software subsystem failures and resets, but instead captures complete system outages.

³ Non critical is defined as laptops, staff workstations, network printers, and other ancillary equipment.

IT/ITS Maintenance for 95 Express project – With the completion of the 95 Express project, which includes the Ramp Signaling System, the IT/ITS Maintenance Staff is now in charge of an additional 14 ramp signaling sites on I-95. Like previously existing ramp signaling sites, ramp verification cameras were added to support operations at seven of those sites. Staff developed a critical parts list for procurement to support 95 Express, participated in the final acceptance and punchlist reviews for the project and completed the integration of loop detector sites north of the Golden Glades Interchange, which now provides better data for the Ramp Signaling System.

ITS Infrastructure – IT/ITS Maintenance Staff was also busy enhancing several ITS infrastructures during fiscal year 2009-2010.

- Monroe County's wireless network was reconfigured into three separate networks, resulting in significantly increased CCTV reliability.
- Deployed a new detector technology – SenSys® – at ramp signal site one, which has improved failure performance by 35 percent.
- A pilot project was launched consisting of two speed check signs along Killian Drive and SR 874.
- Nine of the 11 existing communication hub sites were improved with, alarms, fencing, and CCTV security cameras. Additionally, the appearance to the public was enhanced with new gravel and paint.
- IT/ITS Maintenance Staff assumed maintenance responsibilities for the Advanced Warning System on Brickell Avenue/Miami River.
- The Highway Advisory Radio (HAR) system was installed at the Golden Glades Interchange, which supported the Phase 1 of the 95 Express project and will continue to support Phase 2.
- Staff installed 44 manual transfer switches at all ITS critical device locations to facilitate power generator connections, which supports emergency operations.
- Staff also coordinated with FDOT's South Dade Maintenance Yard and obtained secure storage space for ITS field devices to support ongoing ITS maintenance activities.



ITS Maintenance Staff works at a Ramp Signal location.

Sister Agency Partnering and Media Sharing – IT/ITS Maintenance Staff was integral in establishing partnerships with the TMC's sister agencies and other organizations. A dedicated media circuit between FDOT D4 and D6 was installed to facilitate the sharing of regional video with local media organizations, and Staff negotiated a back-feed circuit of video images with those local media organizations (at no additional cost to the Department). This resulted in reduced costs and decreased the deployment time for the District's video sharing project websites. And with the facilitation of the regional video sharing agreement, the District became the regional hub collection point for video distribution for District 4, the Turnpike and MDX. Also finalized were fiber-sharing agreements with the Turnpike, MDX, Miami-Dade County and the Port of Miami, resulting in reduced communication costs and enhanced system reliability.

Vandalism/Theft of ITS Field Devices – The District has been a victim of vandalism and theft of its ITS equipment and devices in the past, so in fiscal year 2009-2010, IT/ITS Maintenance Staff continued infrastructure hardening at high risk areas south of the Golden Glades Interchange on I-95 and along SR 112 and I-195. Security locks were implemented for cabinets along I-75 and I-95, and Staff continued coordinating with law enforcement agencies and the State District Attorney's office to reduce damages and losses.

Public Outreach

Public outreach was an essential component in the overall growth of the District Six ITS Program in fiscal year 2009-2010. The TMC's Public Information (PI) Staff led several important process improvement initiatives, participated in various local and national outreach events and supported the launch of Phase 1B of the 95 Express project and the Ramp Signaling System. These efforts, coupled with the Staff's strong commitment to public service, helped position the TMC as an emerging leader in the national ITS field as well as an established beacon in our local community.

Enhanced Public Information – In light of the recent accomplishments connected to the 95 Express project and other program milestones, the TMC experienced a tremendous surge in interest from all members of the public, including local stakeholders, industry professionals and the media. To maximize this interest and support future growth, the PI Staff redesigned the ITS website, www.SunGuide.org, to make it a more comprehensive source of accurate and timely information. The site boasts a series of new features that helps the public learn more about District initiatives, access project information and communicate with ITS. The site was also enhanced to include live traffic videos and has become an important link for other transportation-related projects and agency websites. Additionally, the site was created on an open-source web platform that permits the Staff to directly update content without the need of a programmer and reduce costs. The website has received more than 10,000 hits since its re-launch in October 2009. In addition to the program website, the PI Staff has also kept the public and its partner agencies informed through other various public involvement efforts. The PI Staff helped coordinate a total of 42 public tours and outreach events and answered 39 general ITS customer service inquiries. In addition, the PI Staff published 12 industry-related articles, 4 newsletters and 2 project press releases.

Role in 95 Express – The TMC's Public Information staff was critical during the launch of 95 Express Phase 1B, which included the southbound Ramp Signaling System. Staff worked closely with the operations team to provide accurate and timely information to the public, the media and industry professionals. Their close involvement ultimately resulted in the public's acceptance and in the overall success of these two systems. The Public Information Staff directly responded to more than 150 project-related public inquiries since assuming customer service operations in March 2010.

Public Outreach



Public Information Staff helped spread the word about the 511 Traveler Information System.

Recognition and Awareness - The ITS program also attained several awards during fiscal year 2009-2010 for its operational achievements in the areas of incident management, traveler information and congestion mitigation. These awards helped the ITS Program become more recognized nationally and internationally:

- **September 2009** – America's Best Transportation Project from AASHTO (for 95 Express project).
- **October 2009** – People's Choice Award: America's Best Transportation Project (for 95 Express project).
- **December 2009** – ITS Florida's Organizational Member of the Year (for 95 Express project).
- **March 2010** – Three (3) Davis Productivity Awards (for 95 Express, RRDIS and 511 Watcher).
- **May 2010** – ITS America's Best Innovative Product (for 95 Express project).
- **June 2010** – FSITE's John W. Barr District 10 Transportation Achievement Award (for 95 Express project).

Benefits to the Public

The FDOT District Six ITS Program budgets for Fiscal year 2009-2010 include capital improvement, operating and maintenance costs. The total costs shown are considerably less than the normal capital costs associated with expanding highways and facilities.

Reducing incident duration has both a direct and financial benefit for South Florida motorists as well, substantially trimming the costs they must absorb. When the delays associated with incidents are reduced, motorists save time - which can be directly translated to dollars. In 2005, FDOT District Six established a baseline average duration of incidents that blocked travel lanes of 50 minutes. During Fiscal year 2009-2010, the average duration was reduced to 31 minutes. In addition to the reduced delays due to incidents, the 95 Express and Ramp Signaling projects have also contributed to reduced delays during peak periods. The Road Ranger program not only contributes to reduced delays due to incidents, it also provides a direct benefit to the public. Using published, widely accepted statistical methods for estimating the cost implications of traffic delays, the reduced delay translates into savings of over \$863 million. This estimate only includes motorists' time saved; it does not address road user cost savings.

When this estimate is weighed against the total capital investments (annualized over 10 years at 7 percent) and annual operating expenses, the ITS program is shown to be yielding a benefit cost ratio of 19.25. For every dollar

invested, about \$19.25 in economic benefit is valued for the motoring public.

Fiscal Year 2009-2010 Costs	
ITS Operations Contracts	\$4,913,000
ITS Maintenance Contract*	\$2,456,000
Road Ranger Contracts	\$2,492,000
ATIS Contract	\$484,000
FDOT Cost Center Operating Budget*	\$2,062,000
Other (Consultants, FTE and FIU)*	\$3,800,000
Total Annual Operating Costs	\$16,207,000
ITS Field Deployment Projects Completed Through Fiscal Year 2009-2010	\$201,084,000
Total Annualized Capital Costs	\$28,630,000
Total Annual Costs:	\$44,837,000

Fiscal Year 2009-2010 Benefits	
Incident Management **	\$835,599,000
Express Lanes / Ramp Signals ***	\$27,612,000
Total Benefits	\$863,211,000

*Portion includes estimated operations and maintenance costs of 95 Express during construction.

**District-wide.

***Time savings for peak periods along 95 Express project.



A Road Ranger tows a broken down vehicle out of the 95 Express facility.

A Look Ahead to Fiscal Year 2010-2011

The District Six ITS Program has identified milestones for fiscal year 2010-2011 that will continue to lead the way in providing innovative solutions to address future transportation needs. Key activities include:

Phase 2 - 95 Express – Funding for Phase 2 of the 95 Express project, which is planned to extend the express lanes into Ft. Lauderdale in Broward County, has been identified, and the project is set to begin during fiscal year 2010-2011. District Six will be partnering with District Four on the project, which has a tentative completion date of 2013.

SR 826/SR 836 Interchange Reconstruction Project – The SR 826/SR 836 project began during fiscal year 2009-2010 and will continue progressing for several years. It involves the construction of a system-to-system interchange between SR 826/Palmetto Expressway and SR 836/Dolphin Expressway. Capacity improvements include the reconstruction and widening of approximately one mile of both SR 826 and SR 836, and the construction of 34 bridges. The project will provide new direct ramps for major movements and collector-distributor (CD) ramps to eliminate existing geometric and operational deficiencies. The District Six TMC will play a critical role during the construction phase – which is set to last about six years – by assisting with its incident management resources along the interchange as well as providing traveler information. The TMC manages these resources, as well as the temporary and permanent ITS field devices deployed as part of the reconstruction. The TMC will utilize the new TIM Team approach to facilitate the development of new protocols with the responding agencies to ensure incidents are managed as efficiently as possible throughout the construction work zone.

Port of Miami Tunnel Project – The TMC will also be supporting the District's Port of Miami Tunnel project with incident management and traveler information. The project launched during fiscal year 2009-2010 and is also scheduled to continue for several years. It will provide direct access between Miami's seaport, I-395 and I-95 and facilitate the ongoing and future development plans in and around downtown Miami.

Software Tools – The District has had great success with the development of software tools to meet the challenges of new initiatives (95 Express, Ramp Signaling, FLATIS, RISC). For fiscal year 2010-2011, the TMC will upgrade its SunGuide Software to Release 5.0, which will introduce a significantly improved Graphical User Interface (GUI) using NAVTEQ technology. The new GUI will have a more modern look and work more efficiently. SunGuide Software Release 5.0 will also introduce a rewritten Response Plan Generator that will be integrated into the event management subsystem, making creating a response plan much more efficient.

"Filling the Gaps" – The Department began planning and preparing for a design-build project to be let during fiscal year 2010-2011 that will replace ITS devices like CCTVs, DMS and roadway detectors that are reaching the end of their life cycles, as well as fill any remaining gaps of ITS coverage along its limited-access facilities with the aforementioned devices.



One of the flatbed Road Ranger vehicles travels up the 95 Express facility.



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