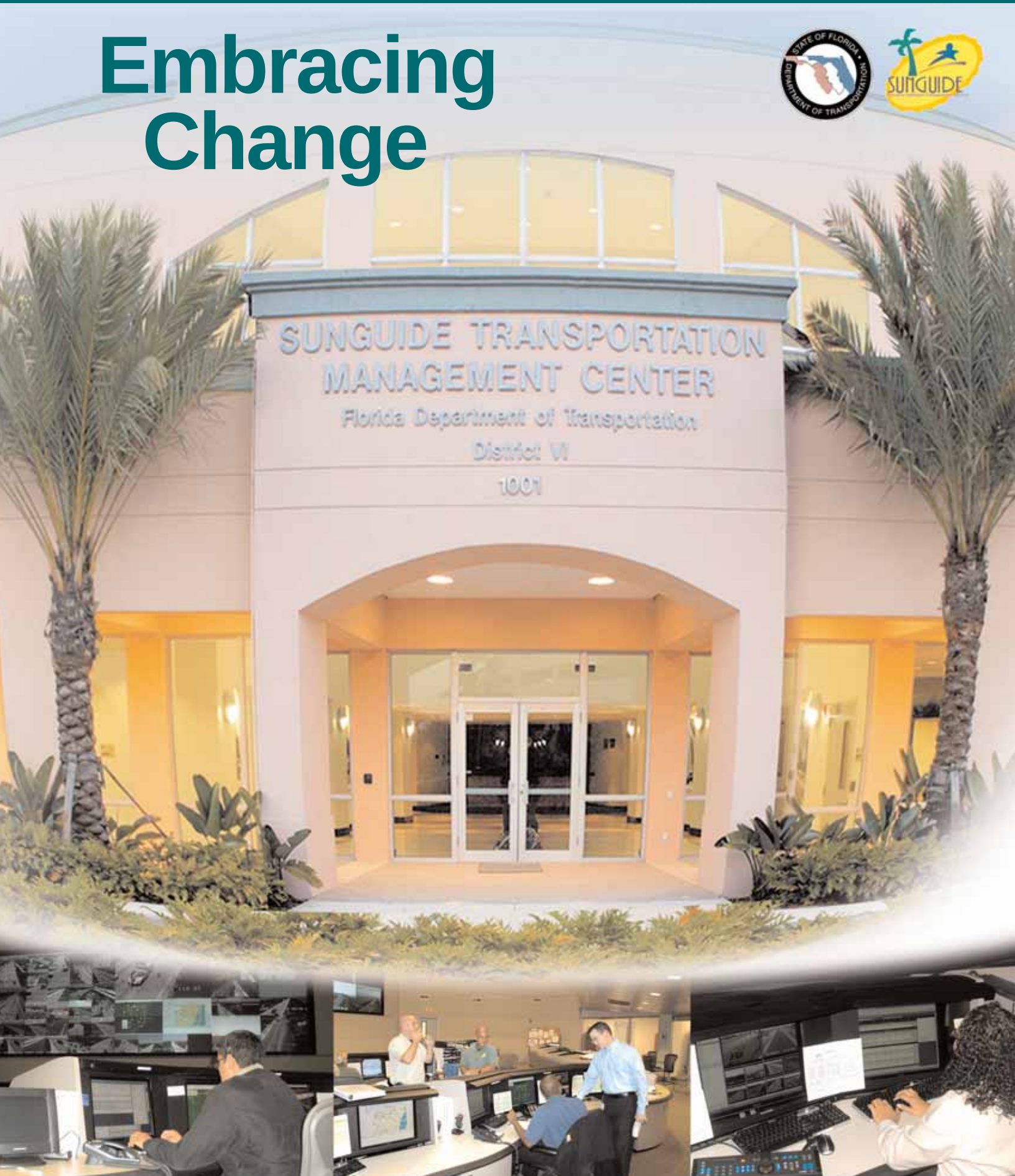
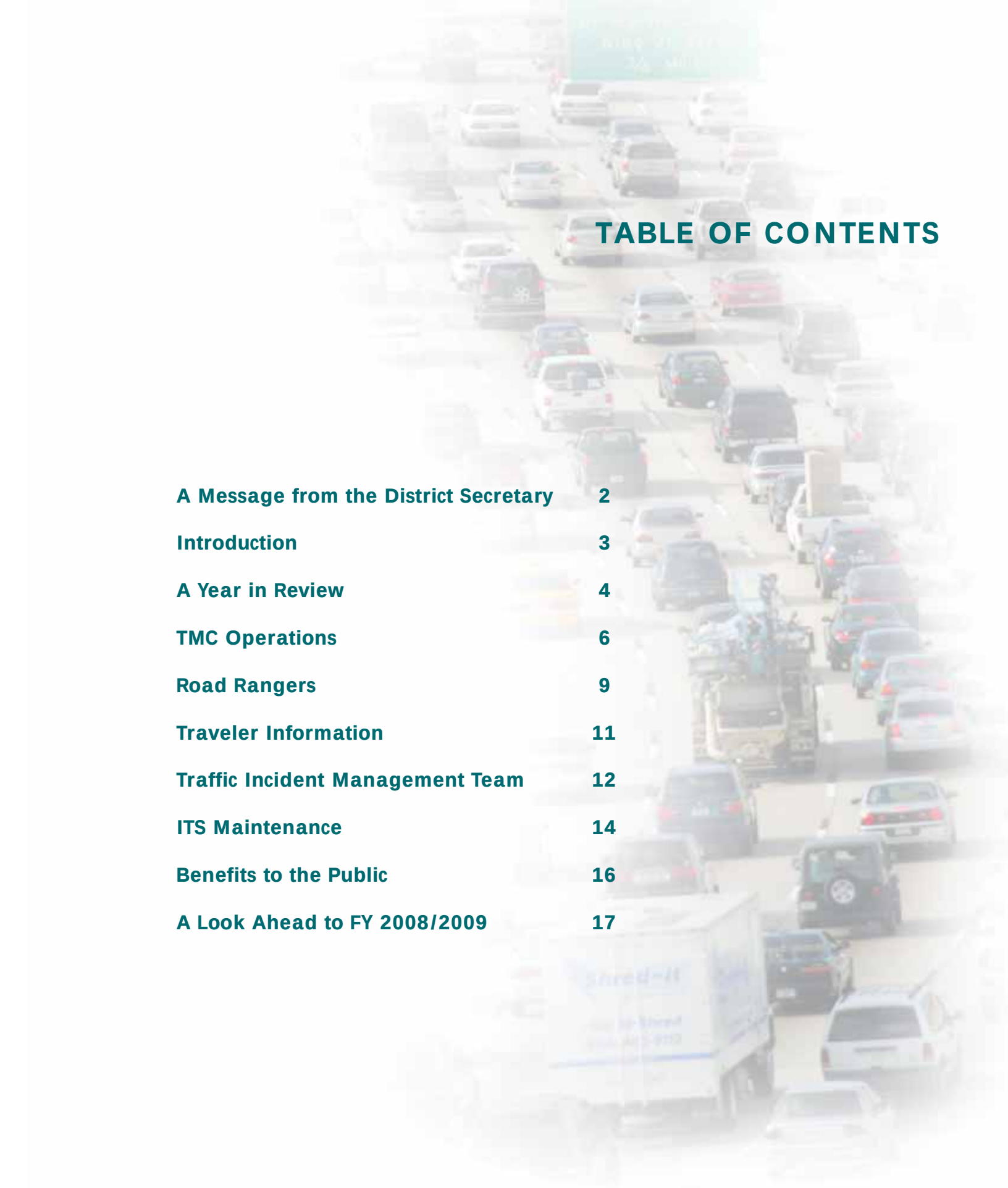
FDOT District Six ITS ANNUAL REPORT (Fiscal Year 2007/2008)

Embracing Change





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A MESSAGE FROM THE DISTRICT SECRETARY

Fiscal Year 2007/2008 was a year of change and our ITS team, comprised of FDOT leadership, consultants and contractors, have stepped up to the challenge in embracing the change. The focus of this year's Annual Report is on preparing for several major new initiatives, including the I-95 Express, ramp signaling, and posting travel time messages on our dynamic message signs. The timeframe of this annual report is consistent with FDOT's fiscal year (July 1, 2007 to June 30, 2008).

During FY 2006/2007, the Department made significant progress in improving Transportation Management Center (TMC) operations. During the past year, FDOT retained the services of a District Wide ITS Operations Consultant who will support the District to continuously improve on performance while preparing for the new initiatives coming on-line during the next year.

In terms of incident management (i.e., clearing blocked travel lanes as quickly as possible), the refinement and application of Standard Operating Guidelines, software enhancements and quality control procedures has enabled our TMC operations to improve the accuracy, timeliness and reliability of information. This resulted in an average incident duration that blocked lanes of 36.2 minutes compared to the 50-minute baseline established in 2005. Furthermore, our Traffic Incident Management team, comprised of 150 members representing emergency responders and local transportation agencies, has developed better methods to manage incidents based on post incident analyses conducted after major events.

Our Road Rangers have improved their efficiency by responding to 48,807 incidents and providing 96,983 motorist assists during FY 2007/2008. In terms of traveler information, our 511 service has received over 177,000 calls per month while our e-mail alert service averages over 77,000 alerts sent per month. Due to improvement in our ITS maintenance program, our system availability averages 97%. This is critical in leveraging the investments made in the District Six ITS program.

During the past year, the FDOT District Six ITS program yielded $17.63 of benefits for every dollar invested in the program.

I hope you find our FY 2007/2008 Annual Report to be informative. Please don't hesitate to provide suggestions on improving our ITS program to further reduce traffic delays and crashes while improving mobility.

Gus Pego, P.E.
District Secretary

EMBRACING CHANGE

INTRODUCTION

The State of Florida operates a statewide program, known as SunGuide, for planning, implementing, maintaining and operating Intelligent Transportation Systems (ITS). The Department has worked with federal, state, and local jurisdictions, regional authorities, and multiple interested stakeholders to implement ITS in Miami-Dade and Monroe Counties. This program comprises an array of measures that work in tandem to smooth traffic flow, minimize the effect of traffic incidents, expedite recovery from such incidents, and provide the traveling public with up-to-date information that helps them plan their trips and minimize their encounters with time-consuming delays that inevitably arise on busy highways.

Initially, the Department's ITS Program focused on deploying Advanced Traffic Management Systems (ATMS) on limited access facilities such as I-95, I-75, I-195, I-395 and State Road (SR) 826. These deployments have resulted in approximately 54 centerline miles of roadways in Miami-Dade County that contain ITS infrastructure. Once most of the limited access facilities were implemented with ITS technologies, the Department began implementing ATMS on controlled access roadways such as SR 5 (US 1) in both Miami-Dade (approximately 17 centerline miles) and Monroe Counties (approximately 127 centerline miles) and SR A1A/MacArthur Causeway (approximately 3 centerline miles). Additionally, a limited number of ITS devices such as Dynamic Message Signs (DMS) and Trailblazer Signs have been deployed on arterial roadways leading onto I-95.

The Department's SunGuide Transportation Management Center (TMC), located at 1001 NW 111th Avenue, Miami, Florida, serves as the 24 hour per day, 7 day per week regional command and control center for the ITS Program within District Six. Currently, the primary functions of the SunGuide TMC are: incident management; service patrol dispatching and operations; and traveler information dissemination.

This FY 2007/2008 Annual Report is the third annual report for the District Six ITS Program. In 2006, the FDOT District Six ITS Program produced its first annual report for calendar year 2005, which focused on providing background information and some statistics on the magnitude and effectiveness of the program. In 2007, the FDOT District Six adjusted the annual report effort to align the reporting period with the FDOT fiscal year (July 1st to June 30th). The FY 2007/2008 Annual Report is consistent in format and reporting period with the previous annual report. Its contents are intended to streamline the information as well as provide more emphasis on key milestones and performance measures.

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.

A YEAR IN REVIEW

The FDOT District Six ITS Program encompasses the following transportation solutions: incident management (primarily focusing on expediting the re-opening of travel lanes after crashes as well as minimizing secondary crashes), service patrol dispatching and operations, and traveler information dissemination through 511 and dynamic message signs. The FDOT District Six manages a number of ITS programs, including:

- TMC Operations - Providing a central location for data collection and dissemination, and for dispatching Road Rangers
- Road Rangers - Florida's version of a safety service patrol supporting agencies responding to incidents, keeping our roadways open to traffic and providing free assistance to motorists in need
- Advance Traveler Information System (ATIS) - Providing real-time traveler information services through various media, such as the telephone and the Internet
- Traffic Incident Management (TIM) Team - Coordinating multi-agency meetings to identify issues and develop solutions to improve incident management
- ITS Maintenance - Managing the maintenance of ITS field and TMC equipment to ensure system availability

The FDOT District Six ITS Program continued to expand the ITS infrastructure during FY 2007/2008. Overall, the FDOT District Six has $13.7 million of ITS deployment under construction.

A summary of FDOT District Six ITS projects deployed during FY 2007/2008 is presented below:

- SR-5/US-1 ITS Deployment (FIN: 414754-1-52-01) - The US 1 ITS design-build deployment, between SW 17th Avenue and SW 112th Avenue (approximately 17 miles), includes the following components: 17 Pan/Tilt/Zoom (PTZ) Closed Circuit Television (CCTV) cameras and four static CCTV cameras; four dynamic message signs (DMS); six detectors; 96 strand fiber-optic cable (installed 36 strand fiber optic cable for Miami-Dade Transit); and two communications hub buildings. During FY 2007/2008, the system installation was approaching completion with system testing underway.

Dynamic Message Sign along US-1

- SR-826 ITS Deployment (FIN: 414760-2-52-01) - The SR-826 ITS design-build deployment, between NW 25th Street and NW 122nd Street, includes the following components: six new PTZ CCTV cameras and the integration of four existing wireless PTZ CCTV cameras; three DMS; 38 detectors; and 72 strand fiber optic cable. The project was in the design phase during FY 2007/2008.
- I-395 ITS Deployment (FIN: 251686-1-52-01) - The I-395 ITS design-build deployment has construction limits along I-395 between I-95 and Alton Road; along Biscayne Boulevard between I-395 and Port Boulevard; and along Port Boulevard between Biscayne Boulevard and the east side of the Port Bridge. The system includes the following components: 10 PTZ CCTV cameras; 11 detectors; one DMS; and 72 strand fiber optic cable. The project was in the design phase during FY 2007/2008.
- I-95 Express - The I-95 Express includes ITS infrastructure in addition to the electronic toll collection system. The ITS infrastructure includes the following components for Phase

1A construction (i.e., I-95 northbound between SR 112 and the Golden Glades Interchange): 12 CCTV cameras, 29 detectors, two DMS, one lane status sign and 14 electronic toll rate signs. The design-build contract began in February 2008 and is estimated to be completed by the latter part of 2008. Phase 1B (i.e., I-95 southbound between the Golden Glades Interchange and SR 112) is estimated to be complete by the fall of 2009.

Other ITS deployments include roadway and bridge projects that have ITS components included within the project (e.g., Jewfish Creek Bridge, under construction; SR-826 Widening at Coral Way, completed). The table below summarizes the status of ITS deployment projects within FDOT District Six as of the end of FY 2007/2008.

FDOT District Six ITS Deployment

ITS Project	CCTV		DMS		Detectors		Ramp Metering	
	C	UC	C	UC	C	UC	C	UC
I-95	30		10		80		22	
I-95 Express		12		17*		29		
SR-826	24	6	6	3	50	38		
I-75	7		3		30			
I-195	6		6		21			
I-395 & McArthur Cswy		10	1	1	—	11		
US 1 (SW 17 to 112 Ave)	1	17	1	4	1	6		
US 1 (South of Florida City)	44		11		2			
Card Sound Road	5							
SR 9	1		1					
US 441	2		1					
Florida's Turnpike Spur	1		1					
Other Arterials			12					
Totals	**121**	**45**	**53**	**25**	**184**	**84**	**22**	**0**

C = Completed
UC= Under Construction
*** Includes 14 electronic toll rate signs; one lane status sign; and two DMS.**

TMC OPERATIONS

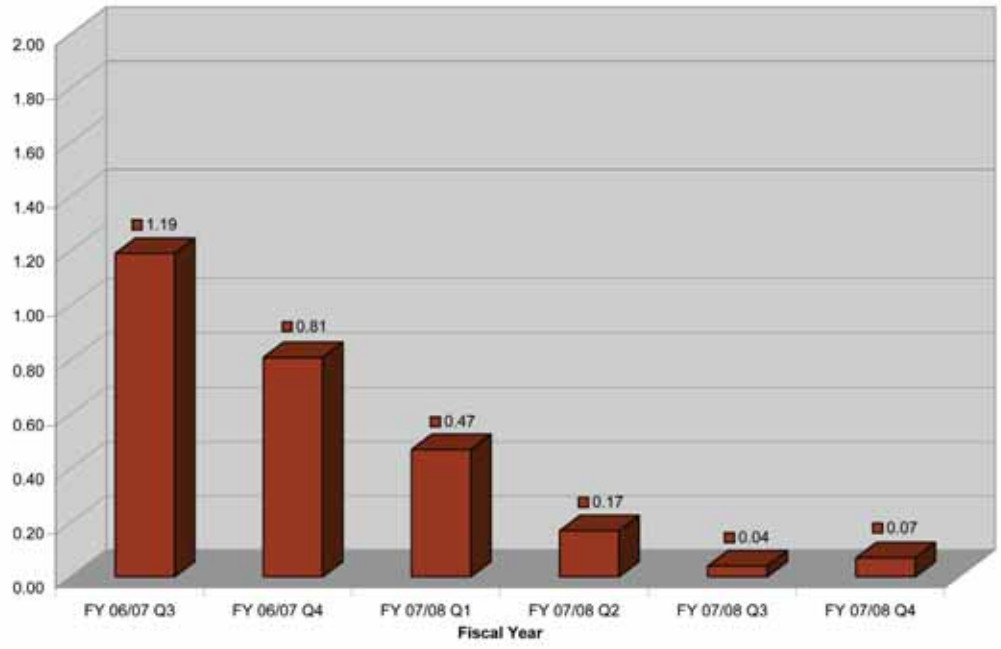
The Department's SunGuide Transportation Management Center (TMC) houses the FDOT Operations staff who monitor traffic, disseminate information and dispatch Road Rangers 24 hours per day, 7 days per week (24/7). In the event of a traffic incident, such as a crash or a hazardous materials spill, the operators coordinate with emergency responders and the Road Rangers to attend to the incident in order to 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 TMC Operations staff and the Florida Highway Patrol (FHP) Troop "E" dispatch in the TMC. The TMC also provides control room space for the 511 service provider that disseminates travel information to the public throughout the Southeast Florida region.

TMC Control Room

The SunGuide TMC in District Six works closely with other control centers within the region, sharing video images, data, and other real-time information to provide a seamless approach to traffic management. The regional coordination is facilitated through a committee of TMC managers known as the Southeast Florida Regional TMC Operations Committee (SEFRTOC). The SEFRTOC membership includes representatives from Broward and Palm Beach Counties, Florida's Turnpike Enterprise (FTE) and the Miami-Dade Expressway Authority (MDX). In FY 2007/2008, the SEFRTOC was successful in coordinating with FHP in developing policies and guidelines regarding DMS messaging for situations reducing visibility (e.g., wildfires, smoke, fog, etc.).

The implementation of TMC Standard Operating Guidelines, in conjunction with regularly scheduled TMC Operator training and meetings, has improved overall TMC Operator performance. TMC operator quality control performance (i.e., errors-to-events ratio) has been reduced from an average of 1.19 during the 3rd Quarter of FY 2006/2007 to 0.07 during the 4th Quarter of FY 2007/2008 (see exhibit below). This trend is an extrapolation of the structured processes implemented by FDOT District Six prior to the implementation of the District Wide ITS Operations contract.

TMC Operations Performance
(Errors to Events ratio)



The true measure of performance is how these improvements impact motorists. The table below summarizes the timeline of key incident management performance measures occurring within District Six during FY 2007/2008.

Based on the information provided in this table, it is noted that the incident detection / verification time has been reduced during the past year by over three minutes. This reduction can be attributed to more efficient TMC operations in accordance with contract requirements. This is significant as for every minute saved in a traffic lane being blocked, there is a corresponding 3-5 minute savings per vehicle in delay congestion behind the incident. The most notable TMC Operations achievements during FY 2007/2008 are the following:

- District Wide ITS Operations - A consultant was retained to support the Department in the following areas: control room staffing 24 hours per day, 7 days per week; control room staff training and certification; standard reporting services; management of Road Ranger, ITS maintenance and 511 contractors; information technology services; traffic incident management team coordination; public outreach; ITS utility locate services; and miscellaneous ITS and traffic engineering services. This is a performance based contract with specific targets that need to be achieved.

Intranet for Control Room Operations

- Control Room Operations - Intranet was developed and is operational. This provides critical operational documents, such as maps, schedules and guidelines, at the finger tips of the TMC Operators.

- SunGuide℠ software - The SunGuide℠ software was upgraded from version 2.2 to version 3.1.1. This version of the software includes new modules to support operations of the express lanes, ramp signaling and posting travel time messages on dynamic message signs.

- Information Technology (IT) - IT coverage has been expanded within the TMC to provide on-site service Monday - Friday, between 6am -

FDOT District Six Incident Management Performance Measures FY 2007/2008

(Time expressed in Minutes and Seconds)

Month	Detection/Verification	Response	Roadway Clearance	Open Roads Policy
July-07	03:44	04:27	37:24	32:57
August-07	02:54	03:14	35:55	32:41
September-07	02:48	02:38	33:43	31:05
October-07	02:09	03:03	37:00	33:56
November-07	02:09	03:04	37:42	34:38
December-07	01:39	03:01	35:45	32:43
January-08	01:34	05:23	37:37	32:14
February-08	01:42	05:06	33:45	28:39
March-08	00:36	05:21	33:01	27:39
April-08	00:40	05:14	38:42	33:28
May-08	00:37	04:30	39:52	35:22
June-08	00:26	04:00	35:18	31:18
Annual Average	**01:47**	**04:12**	**36:12**	**32:00**

Notes:
- **Time expressed in minutes and seconds. For example, 03:44 is 3 minutes and 44 seconds.**
- **Detection / Verification: From Event Creation to Verification.**
- **Response: From Event Creation to Road Ranger / FHP Arrival**
- **Roadway Clearance: From Event Creation to All Travel Lanes Cleared**
- **Open Roads Policy: From Road Ranger / FHP Arrival to All Travel Lanes Cleared**

8pm, Saturday between 8am - 5pm, and on-call during other times. This is essential within a TMC environment to ensure that system availability is optimized at all times.

- MDX Operations - The Miami-Dade Expressway Authority (MDX) began TMC and Road Ranger operations along their facilities as a co-located partner with FDOT District Six within the SunGuide TMC.

- Customized TMC Reports - The TMC operations reports, generated by the SunGuide℠ software, were augmented by customized reports (e.g., incident timeline data, DMS usage) to better manage the District Wide ITS Operations Consultant contract. A monthly summary report consolidates the key statistics to provide management and operations support staff with sufficient information to gauge the status of the operations and to detect areas needing improvement.

- The Standard Operating Guidelines (SOGs) - SOGs have been updated to reflect the performance based requirements of the District Wide ITS Operations Consultant contract. This has resulted in a more business style approach to ITS operations where performance measures are used for tracking operator errors as well as response times for incident tracking, DMS messaging and notifications to other stakeholder agencies.

- Standard Employee Guidelines - Standard Employee Guidelines were developed to provide standardized rules that governs all contract employees within the SunGuide℠ TMC. These rules will provide guidance and oversight to all TMC staff.

- Detectors – The development and testing of the roadway detectors began during 2008. Detectors will provide real time data that populates the SunGuide Operator Map, thereby assisting with calculation of travel times and incident detection.

- Travel Time - Limited testing began during 2008 along I-75, I-195 and SR 826 DMSs to test the implementation of travel times within District Six. The testing helped refine the process for development of a standardized travel time message. In addition, travel times were validated by performing a floating car study. Travel time deployment along I-75, I-195, and SR 826 is planned for early FY 2008 / 2009.

- Quality Control – To help ensure contract performance measures are being met, the staff implemented and refined the quality control process. The quality control process includes: real time review of all lane blockage events by shift supervisors, development of performance standard reports, and implementing several levels of review.

- Staffing - The TMC control room is now staffed on a more consistent basis with uniformly trained operators. Structured quality control processes are being used to identify additional training needs and to hold the operators accountable.

- Professional Development - Career path development is being implemented to provide TMC staff with opportunities to grow. This will result in higher levels of staff retention as well as more qualified operations staff working within a more pleasing workplace.

In summary, TMC operations are now performance based using specific targets included in the District Wide ITS Operations contract. A summary, of the average monthly performance measures during FY 2007/2008 is shown in the table below.

TMC Operations Performance During FY 2007/2008

Performance Measure	Monthly Average*	Target
DMS Efficiency	99%	> 95%
TMC Operator Error Rate	0.19%	< 0.69%
Average Road Ranger Dispatching Time	0.85 min	< 2.00 min
Average Event Confirmation Time	0.98 min	< 2.00 min
Average Time to Post DMS Message	2.25 min	< 5.00 min
Average Agency Notification Time	2.06 min	< 7.00 min

* Based on monthly averages during the 4th Quarter of FY 2007/2008.

ROAD RANGERS

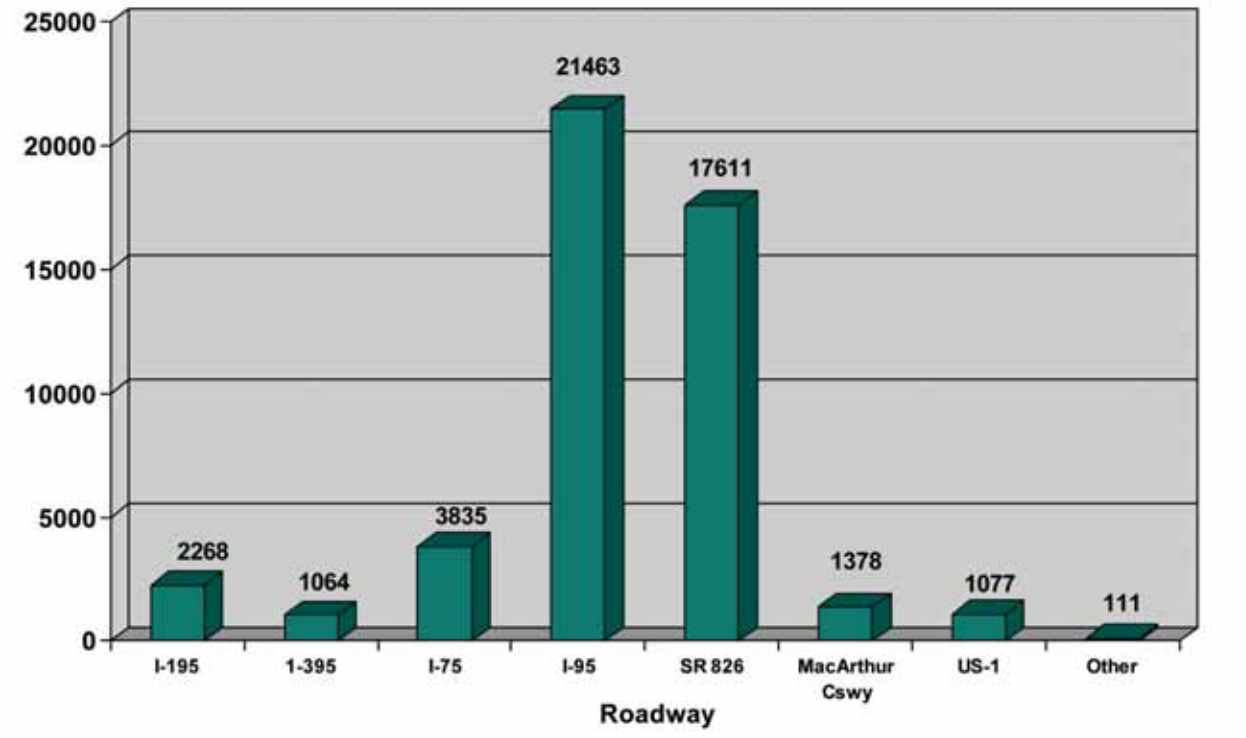
The Road Ranger service patrol is a free service of the FDOT and MDX. Road Rangers currently patrol I-95, I-395, I-75, I-195, SR 826 and the MDX toll roads. MDX Road Ranger operations—along SR 836, SR 874, SR 924, SR 878 and SR 112—were transferred over to MDX during FY 2007/2008. FDOT District Six was the first in Florida to expand Road Ranger coverage to an arterial (SR 5/US 1 from SW 112 Street to SW 17 Avenue). This expansion has not only benefited the motorists along US 1, but has also strengthened the relationships among the FDOT and the local agencies supported by the expanded Road Ranger coverage. As one might expect, two major roadways - I-95 and SR 826 - consume the lion's share of Road Ranger time and attention.

During FY 2007 / 2008, Road Rangers in District Six responded to 48,807 incidents and provided 96,983 motorist assists. Road Rangers detect and report road conditions and incidents; secure the scene of a crash and set up maintenance-of-traffic measures so commuters know how to avoid an incident; pick up road debris; and patrol during hurricane evacuations to assist stranded motorists. In addition, Road Rangers change flat tires; provide stranded motorists with enough fuel to drive to the nearest gas station if they run out of gas; tow stranded cars to the nearest safe location; spend up to 30 minutes to try to fix a disabled vehicle; as well as provide other free services.

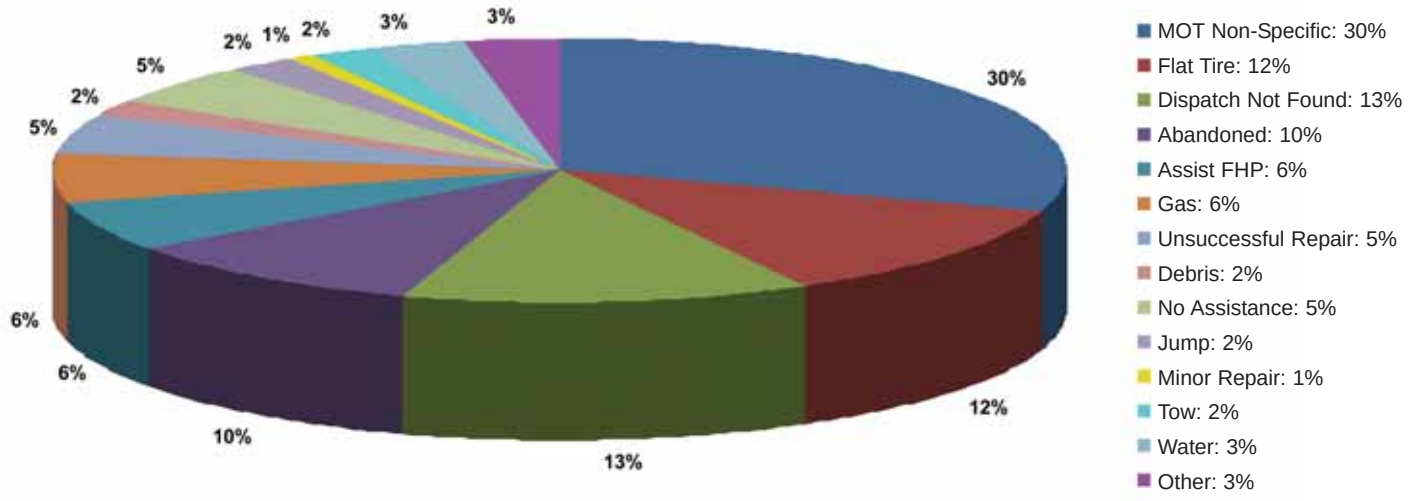
The most notable achievements of the Road Ranger program during FY 2007/2008 include the following:

- Road Ranger Drivers Information System - This system automates the management of Road Ranger contractors, drivers, schedules, vehicles, Road Rangers involved in crashes, roadway and beat information, as well as system user management and the generation of various reports.
- Automated Vehicle Location (AVL) System - Road Ranger vehicles were equipped with an AVL system to provide better tracking of vehicles. The AVL system enables the Department to provide more effective management of the Road Ranger fleet of vehicles in terms of dispatching as well as accountability.

FY 2007/2008 Incidents Involving Road Ranger Response by Roadway

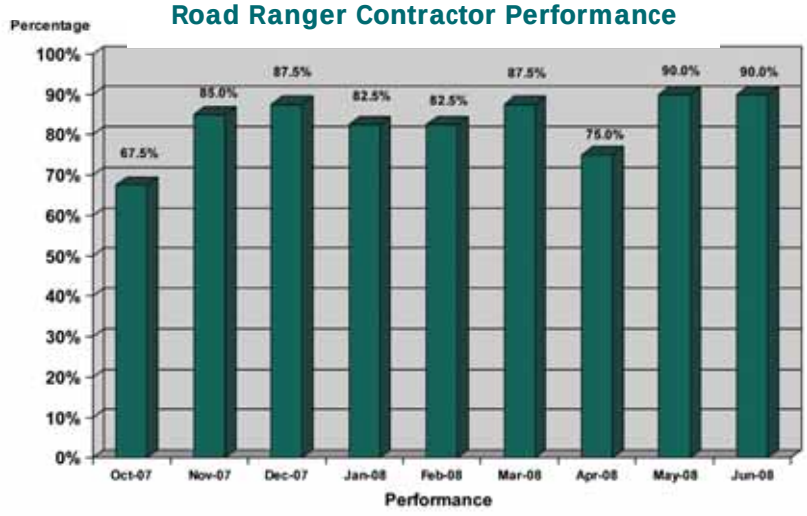


FY 07/08 Road Ranger Assists by Type



- Road Ranger Quality Control - More detailed and quantitative performance measures are being applied to the Road Ranger program to improve quality control in terms of following approved procedures; identifying where error rates are high; and the need for additional training. As a result, Road Ranger contractors have become more conscious of these quality control measures and have improved their performance in meeting contract requirements.

Road Ranger Contractor Performance



TMC operational improvements also increase the efficiency of Road Ranger services. The other aspect to the Road Ranger Program's success is contract management. FDOT District Six has automated contract management tasks to increase its contract management capabilities for project oversight. The traditional data collection and reporting processes were automated, which provided the FDOT more tools to work with the Road Ranger Program's contractors to improve the quality of service.

The FDOT also created a method for monthly contractor evaluations that established accountability. This served to clearly communicate the FDOT expectations and bring better awareness to the contractors on their performance.

All of these improvements will increase efficiency of the existing FDOT staff and allow them to focus on Road Ranger Program strategic/operational improvements in an effort to further increase the quality of service to motorists and reduce incident durations.

Road Rangers provided 96,983 assists during FY 2007/2008

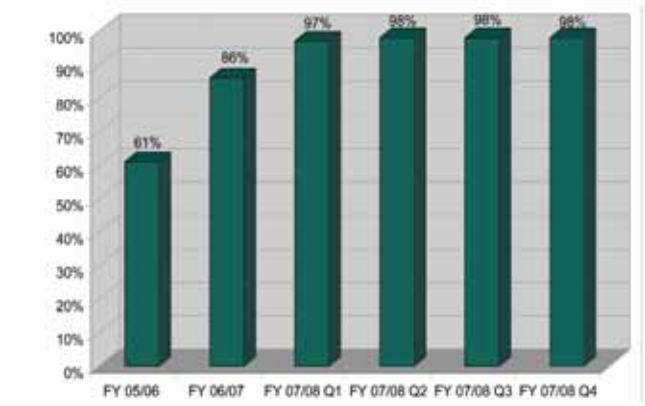
TRAVELER INFORMATION

The Advanced Traveler Information System (ATIS) project provides uniform, multimodal, real-time traveler and traffic information in South Florida under the SunGuide Program. The FDOT District Six leads this regional project with support from the FDOT District Four, Florida's Turnpike Enterprise and the MDX. The services are provided by a private ATIS partner that currently operates from within the FDOT District Six SunGuide TMC. In addition to disseminating real-time traffic information via the Web (www.511southflorida.com), they host a 511 telephone service including voice recognition. During FY 2007/2008, the 511 service received a total of 2,128,262 calls or an average of 177,355 per month (4% reduction as compared to the previous year). The 511 service also sent 928,232 e-mail alerts during FY 2007/2008 or an average of 77,353 per month (2% reduction as compared to the previous year). These reductions may be contributed to an increase in DMS usage.

The most notable events regarding traveler information during FY 2007/2008 include the following:

- Quality Control - In early 2006, the partners and 511 Contractor began tracking the level of consistency of 511 with that collected by the regional TMCs. This identified the need to improve the method and means for coordinating traffic data. As a result, the consistency of traffic information among the partners and 511 has increased to 98% in FY 2007/2008.

511/TMC Consistency of Information



- *A large banner was placed on the FDOT District Six Parking Garage to market the 511 service*

Marketing - A large 511 banner has been attached to the FDOT District Six parking garage. This provides information on the 511 service to the hundreds of thousands of motorists using SR 836 every day.

- Floodgate Messaging - 511 provides an initial message to broadcast events of regional impact (e.g., wildfires, Amber Alerts) before providing more detailed traveler information to the user.

- Website - The SunGuide 511southflorida website was upgraded to include easier to read, updated maps, and increased user-friendly options in viewing camera images and road conditions. In addition, the Sunguide.org website was upgraded

- 511 Portable Display - A portable 511 South Florida Display was professionally designed and created for the 2008 Freeway and Tollway Operations Conference.

- Dolphin Stadium Tab - A Dolphin Stadium webpage is being developed for sports and other special events. Information is provided regarding stadium parking and game day travel route alerts including parking status and other information.

During next year, the 511 service will transition to statewide operations. In addition, the integration of travel time messages, derived from information provided by roadway detectors, will be completed.

TRAFFIC INCIDENT MANAGEMENT TEAM

The FDOT District Six ITS Program continues to organize meetings among the 150 local, regional and state agency members of the Miami-Dade Traffic Incident Management (TIM) Team. The TIM Team meeting agendas include post incident debriefings and regional updates. The post incident debriefings on major incidents provide a detailed timeline of events; a valuable asset in facilitating an open discussion to identify areas of improvement, as well as success stories. The TIM Team meetings have added updates on regional TMC activities (e.g., SEFRTOC) and training / workshops / seminars announcements to ensure the members are well informed and view the TIM Team meetings as a valuable source of information. The most notable achievements during FY 2007/2008 are the following:

- TIM Program Action Plan - The TIM Program Action Plan provides a short-term (i.e., 12 - 18 month) strategy on how to improve the performance and outcomes of the Miami-Dade TIM Team. The Florida Statewide TIM Strategic Plan and results from the FHWA TIM Program Self Assessments during the past three years provided the basis for the recommendations included in the Action Plan. The recommendations address the following objectives:
  - Improve detection, verification, response and clearance procedures
  - Develop multi-agency procedures to address major incidents / planned events
  - Expand multi-agency coordination
  - Improve responder and motorist safety
  - Increase TIM awareness at the public level
  - Evaluate performance of the TIM program to quantify benefits and improve the program
  - Evaluate the need for dedicated funding source for TIM activities

The Action Plan was completed during the past year and will serve as a road map for the TIM team to focus during the next year.

Traffic Incident Management teams coordinate emergency response and clearance with the numerous agencies that are involved in Incident Management

- I-95 Diversion Route Plan - The Miami-Dade TIM Team updated the I-95 Diversion Route Plans that were developed in the late 1980's. The updated plans provide a visual representation of feasible primary and secondary alternate routes that may be used during major traffic incidents that cause a full roadway closure in one or both travel directions on I-95. This document provides system wide, non-agency specific guidelines to be considered before implementing a traffic diversion for I-95. The guidelines in this document are a result of multi-agency participation at TIM meetings and special workshops supplemented by the meetings of the I-95 Diversion Route Task Force.

- I-95 Express - The TIM Team was very active during the past year in preparing for the operational start-up of the I-95 Express Lanes project. A table-top exercise was conducted, including multiple agencies within the region, to define roles and responsibilities of each TIM Team member based on seven incident scenarios. This exercise resulted in procedures to improve coordination and cooperation between

The Rapid Incident Scene Clearance (RISC) program will be initiated within District Six during FY 2008/2009

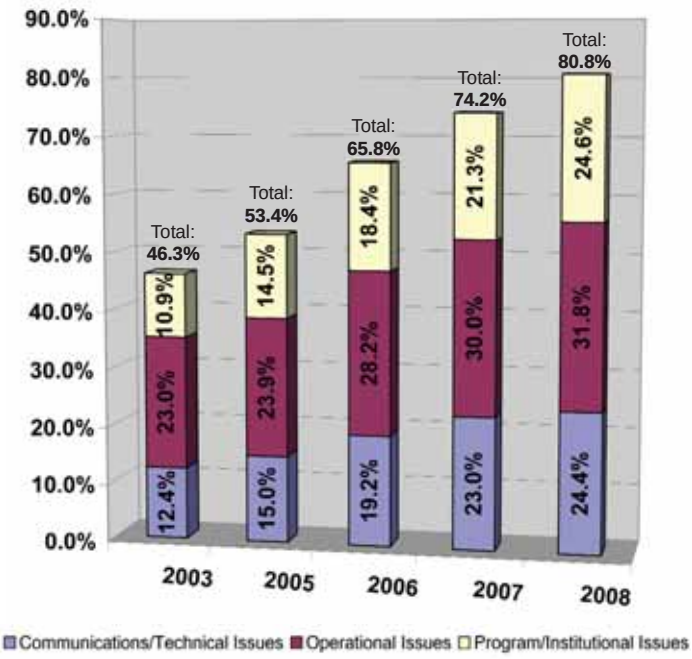
FDOT, incident / emergency responders, law enforcement agencies and other stakeholders to improve the performance of the project.

- Joint TIM Meeting - A joint TIM Team meeting was held between the Miami-Dade, Broward and Palm Beach TIM Teams at the Intertraffic North America Conference. This was the first joint meeting of all three county TIM Teams. The conference also provided an opportunity for the TIM Team members to explore new technologies to support their incident management efforts.

- Rapid Incident Scene Clearance (RISC) - The RISC program was established to clear major incidents more quickly by providing financial incentives to towing companies. To date, the Florida Turnpike Enterprise and MDX have active RISC programs within Florida with District Six coming on-line during FY 2008/2009.

The FHWA TIM self assessment for the Miami-Dade TIM Program has been conducted annually since 2005 and has shown continuous improvements in the program (see chart). The overall TIM Program score for 2008 was calculated at 80.8%, which is an improvement of 8.9% over the 2007 score of 74.2%.

FHWA TIM Self Assessment for the Miami-Dade TIM Program



ITS MAINTENANCE

The FDOT District Six ITS Program is highly interactive, and dependent on state-of-the-art technology that is used to monitor and report roadway status system wide. The entire network of equipment - the roadway detectors and CCTV cameras that track and monitor vehicle flow, the communications infrastructure, SunGuide℠ software and computer servers that assess and respond to traffic congestion, dynamic message signs and the 511 traveler information service that warn motorists of travel conditions in real time - must remain in operation 24/7. These systems, in turn, call for an aggressive maintenance program that ensures ITS equipment is in shape to detect, report and redirect the flow of traffic throughout the region.

Over the years, FDOT has developed several strategies for improving system availability through enhanced Information Technology (IT) / ITS maintenance procedures. During the past year, FDOT retained a District Wide ITS Operations Consultant to provide the manpower to support and implement these strategies. The most notable achievements during FY 2007/2008 are the following:

- Remote Network Management - The network management system - "Solarwinds" - was deployed to monitor all network devices (e.g., routers, switches, servers) within the TMC as well as the hub sites. It enables advanced alerting for correlated events, sustained conditions and complex combinations of device status. It is anticipated that this system will be expanded to include the ITS field devices during the next year. Remote network management enables enhanced detection and repair of malfunctions as well as reduces maintenance costs.

System Availability of ITS Equipment reached 97% during FY 2007/2008

- Remote Computer Server and Workstation Management - The system "Altiris" was deployed to enable remote monitoring of the computer server and workstation usage, storage and CPU capacity as well as better manage software patches and track computer availability. Remote computer server and workstation management allow remote diagnostic capabilities, enhances maintenance, reduces maintenance costs and provides historic data on a month-to-month basis.

- Network Sharing and Redundancy - Implemented redundant fiber access from the TMC to the NAP of the Americas through a fiber swap with Miami-Dade County. The NAP of the Americas is a 750,000 square foot, category 5 hurricane related data center meet point for over 59 different telecommunication carriers providing the majority of layer-1, layer-2 and layer-3 communication switching traffic bound to more than 148 countries in the world. FDOT engineered a co-location within the Miami-Dade County suite. The NAP of the Americas implementation will allow District Six, or any of FDOT State's TMC operating with the SunGuide℠ software, the ability to provide disaster recovery services from any location within the state. Network sharing and redundancy provide the ability to transmit data to virtually anywhere in the world; lowers telecommunications costs; and provides system redundancy during disasters.

- Maintenance Reporting System - Improved reporting systems have been implemented to address all aspects of IT / ITS maintenance, including: hardware and software availability; utility locates; system administration; system downtime; system spare inventory; and SunGuide℠ software management. Specifically, system administration reports document the system availability on a monthly basis for critical and non-critical IT systems. System documentation reports provide detailed hardware and software information on IT systems such as IT life-cycle, software inventory, patch management, maintenance standard operating

guidelines and video wall status. SunGuide℠ software monthly performance reports document critical software bugs, SunGuide configurations, significant configuration events, changes anticipated, software enhancements, footprints and change management board meetings. The maintenance reporting system provides a historic perspective of system maintenance on a month-to-month basis.

- System Inventory - Implemented the system "Wisetrack" to inventory and catalog all IT and ITS devices and IT spare equipment. It centrally manages the IT and ITS assets, where they are, who uses them and all costs. System inventory enables the determination of the number of spare parts needed and reduces overall IT costs.

By virtue of these new tools, and additional manpower support provided by the District Wide ITS Operations Consultant contract, the Department has improved their resources in being able to better identify and track system availability as well as provide increased on-site IT support (i.e., IT coverage expanded from 7am - 5pm to 6am - 8pm, Monday - Friday as well as providing additional coverage on Saturdays between 8am - 5pm).

These resources contributed to system availability of 97.05% during FY 2007/2008. The system availability by each subsystem is presented in the table below.

FDOT District Six ITS System Availability (FY 2007/2008)

ITS Subsystem	System Availability
CCTV Camera System	93.90%
Dynamic Message Sign System	85.93%
TMC Building Power	100.00%
TMC Video Wall System	99.97%
470 MHz Radio System	98.20%
SunGuide Software	99.55%
Communications	99.76%
Detector System	96.98%
TMC Workstations	99.12%
Total System Availability	**97.05%**

BENEFITS TO THE PUBLIC

The FDOT District Six ITS Program budgets for FY 2007/2008 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.

ITS benefits include travel delay savings and Road Ranger assists

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 established a baseline average duration of incidents that blocked travel lanes of 50 minutes. During FY 2007/2008, the average duration was reduced to 36.2 minutes. Using published, widely accepted statistical methods for estimating the cost implications of traffic delays, this translates into savings of $289 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 17.63. For every dollar invested, about $17.63 in economic benefit is valued for the motoring public.

Summary of Annual Costs

Annual Operating Expense	
ITS Operations Contracts:	$2,492,671
ITS Maintenance Contract:	$1,029,877
Road Ranger Contracts:	$3,409,980
ATIS Contract:	$658,560
FDOT Cost Center Operating Budget:	$1,622,836
Other (Consultants and FIU):	$923,750
Total Annual Costs:	**$10,137,674**

Capital Improvement Costs	
ITS Field Deployment Projects Completed Through FY 2007/2008:	$57,000,000
Annualized Capital Costs	$6,258,294
Total Annualized Costs:	**$16,395,968**

A LOOK AHEAD TO FY 2008/2009

The District Six ITS Program will be very active during FY 2008/2009.

FDOT is implementing express lanes along the I-95 corridor as part of an overall long-term strategy of integrated initiatives to improve the safety, throughput and reliability of mobility within southeast Florida. The I-95 Express will be implemented by converting existing High Occupancy Vehicles (HOV) lanes to the High Occupancy Toll (HOT) lanes. The I-95 express lanes will be located along I-95 between SR 112, NW 10th Avenue and I-195 interchange (southern terminus) extending up to Fort Lauderdale (northern terminus), covering a distance of approximately 22 miles. Geographically the 95 express lanes will traverse two FDOT districts: District Four (Broward County) and District Six (Miami-Dade County).

The 95 Express project will be deployed in a two-phased construction approach. Phase I will involve the initial implementation of the express lanes within the District Six jurisdiction, and Phase II will occur in both District Six and District Four simultaneously. Phase I will be implemented in two sub-phases; i.e., Phase IA and Phase IB. In Phase IA, the express lanes will be deployed in the northbound direction only between the southern terminus and Golden Glades Interchange (GGI). Phase IA is expected to open for operation beginning in the latter part of 2008. Phase IB will then include deployment in the southbound direction between the GGI and the southern terminus. Phase IB is expected to open for operation in late 2009.

The permitted usage of the express lanes includes the following modes for free: buses, vanpools, registered car pools (3+), motorcycles and hybrid vehicles. Other vehicles can also use the express lanes by paying a variable toll. The toll rate will vary depending on the time of day so that the express lanes can be free flowing - at approximately 50 mph - at all times.

Toll rates will increase as the traffic density in the express lanes increases, and rates will be assessed based upon congestion in the express lanes. Toll rates will be displayed on dynamic message signs at each point of entry so potential express lanes users will know the current toll rate before deciding to enter the lanes. The Florida Turnpike Enterprise (FTE) will be responsible for maintenance of the electronic toll collection system as well as operation of the toll data center and customer service center.

The initial phase of the I-95 Express Lanes will be operational during the latter part of 2008

Toll rate signs will be used along the I-95 Express Lanes to advise motorists of the variable toll rate during different times of the day.

In addition to the I-95 Express project, there are several other initiatives that will be implemented during FY 2008/2009 including the following:

Ramp Signaling – Ramp signaling along I-95 is coming to Southeast Florida in the latter part of 2008. Ramp signals are red-green traffic signals placed at freeway on-ramps. They control the rate at which vehicles enter the freeway. The signals can be set for different rates to optimize traffic flow and minimize congestion. Most importantly, ramp signals reduce crashes at ramp merges and make it easier for drivers to enter the traffic stream.

Ramp signals along I-95 will manage the rate of traffic flow entering onto the Interstate

SunGuide℠ software – The SunGuide℠ software will be upgraded to version 4. This will provide additional modules that will support a statewide 511 traveler information system as well as dynamic pricing for the I-95 Express project.

Rapid Incident Scene Clearance – FDOT will begin using the Rapid Incident Scene Clearance (RISC) program within District Six. RISC is an incentive-based program that provides bonuses to wrecker operators upon successfully removing all wreckage and re-opening the roadway within 90 minutes of receiving a Notice-to-Proceed. The wrecker operators are paid a bonus of $2,500 if they successfully meet this requirement. Additionally, if specialty equipment is approved for use during the incident cleanup, an additional bonus of $1,000 is paid. These bonuses are in addition to what the wrecker operators charge for their regular tow services. However, if the travel portion of the roadway is not cleared within three hours of the Notice-to-Proceed, the wrecker company can be assessed a penalty of $10 per minute ($600 per hour) until the roadway is reopened to traffic.

The RISC program will reward towing contractors for the quick removal of major traffic crashes closing limited access roadways

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