Technical Memorandum No. 4.3

Interstate 10 Corridor Implementation Plan for Florida's Principal FIHS Limited-Access Corridors

Prepared for:

Florida Department of Transportation
ITS Office
605 Suwannee Street, MS 90
Tallahassee, Florida 32399-0450
(850) 410-5600

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Created By:	Travis Justice David Chang
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Reviewed By:	Terrel L. Shaw, II
Reviewed By:	Travis Justice
Modified By:	Pamela Hoke
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AADT ..... Average Annual Daily Traffic
AHS..... Automated Highway System
APTS.....Advanced Public Transportation System
ARG .....Autonomous Route Guidance
ATIS.....Advanced Traveler Information System
ATMS .....Advanced Traffic Management System
AVSS .....Advanced Vehicle Safety System
CCTV .....Closed-Circuit Television
CFR ..... Code of Federal Regulation
CMS ..... Changeable Message Sign
CVO .....Commercial Vehicle Operations
DHSMV ..... Department of Highway Safety & Motor Vehicles
DMS .....Dynamic Message Sign
DOT .....Department of Transportation
E-911.....Enhanced 911
EPS..... Electronic Payment System
ETC .....Electronic Toll Collection
FDOT ..... Florida Department of Transportation
FFN ..... Florida Fiber Network
FHP .....Florida Highway Patrol
FHWA.....Federal Highway Administration
FIHS.....Florida Intrastate Highway System
FMS..... Freeway Management System
FON..... Fiber Optic Network
HAR ..... Highway Advisory Radio
HAZMAT ..... Hazardous Materials
HOV .....High Occupancy Vehicle
HPMS..... Highway Performance Monitoring System
ICC.....Interstate Commerce Commission
IMS .....Incident Management System
ITS.....Intelligent Transportation System
LOA .....Letter of Agreement

MCO ..... Maintenance and Construction Operations
MOU ..... Memorandum of Understanding
NITSA ..... *National Intelligent Transportation System Architecture*
RCC ..... Regional Communications Center
RR Service Patrols ..... Road Ranger Service Patrols
RTMC ..... Regional Traffic Management Center
RWIS ..... Road Weather Information System
SEOC ..... State Emergency Operations Center
SEP-14 ..... Special Experimental Project No. 14
SIS ..... Strategic Intermodal System
STMC ..... Satellite (or Secondary) Traffic Management Center
TMC ..... Traffic Management Center
VMT ..... Vehicle Miles Traveled
VPD ..... Vehicles Per Day
VTMC ..... Virtual Traffic Management Center
WIM ..... Weigh-in-Motion

1. Introduction

1.1 Purpose

This corridor implementation plan was prepared to outline a series of priorities, conceptual project descriptions, and an estimate of project costs to deploy intelligent transportation systems (ITS) along the Interstate 10 (I-10) corridor. This report draws extensively on previous technical memoranda developed for the principal Florida Intrastate Highway System (FIHS) limited-access corridors. This implementation plan was defined following a systems engineering approach that reflects the user needs, issues, problems, and objectives. These needs, issues, problems, and objectives were organized into a vision statement, mission statement, goals, objectives, and performance measures, and documented in a series of user services from the *National ITS Architecture (NITSA)* that include consideration of the Evacuation Coordination and Maintenance and Construction Operation (MCO) User Services outlined in *Technical Memorandum No. 2 – ITS Needs Model*. Market packages were identified that satisfy the user services. The market packages were then mapped to projects recommended for advancement along the corridor. This approach provides traceability of the recommended projects to the vision, goals, and objectives developed in concert with the stakeholders for the corridor.

1.2 Corridor Description

The limits of the I-10 corridor are from the Alabama State Line in Escambia County to Interstate 95 (I-95) in Duval County. The I-10 corridor also includes Interstate 110 (I-110) in Escambia County. The corridor traverses several counties, including Duval, Baker, Columbia, Suwannee, Madison, Jefferson, Leon, Gadsden, Jackson, Washington, Holmes, Walton, Okaloosa, Santa Rosa, and Escambia counties. The corridor provides access to several major metropolitan areas including Jacksonville, Lake City, Tallahassee, and Pensacola. Figure 1.1 illustrates the corridor location. Currently, Florida Department of Transportation (FDOT) District 2 operates and maintains the interstate from Duval to Jefferson County and District 3 operates and maintains I-10 and I-110 from Jefferson to Escambia County.

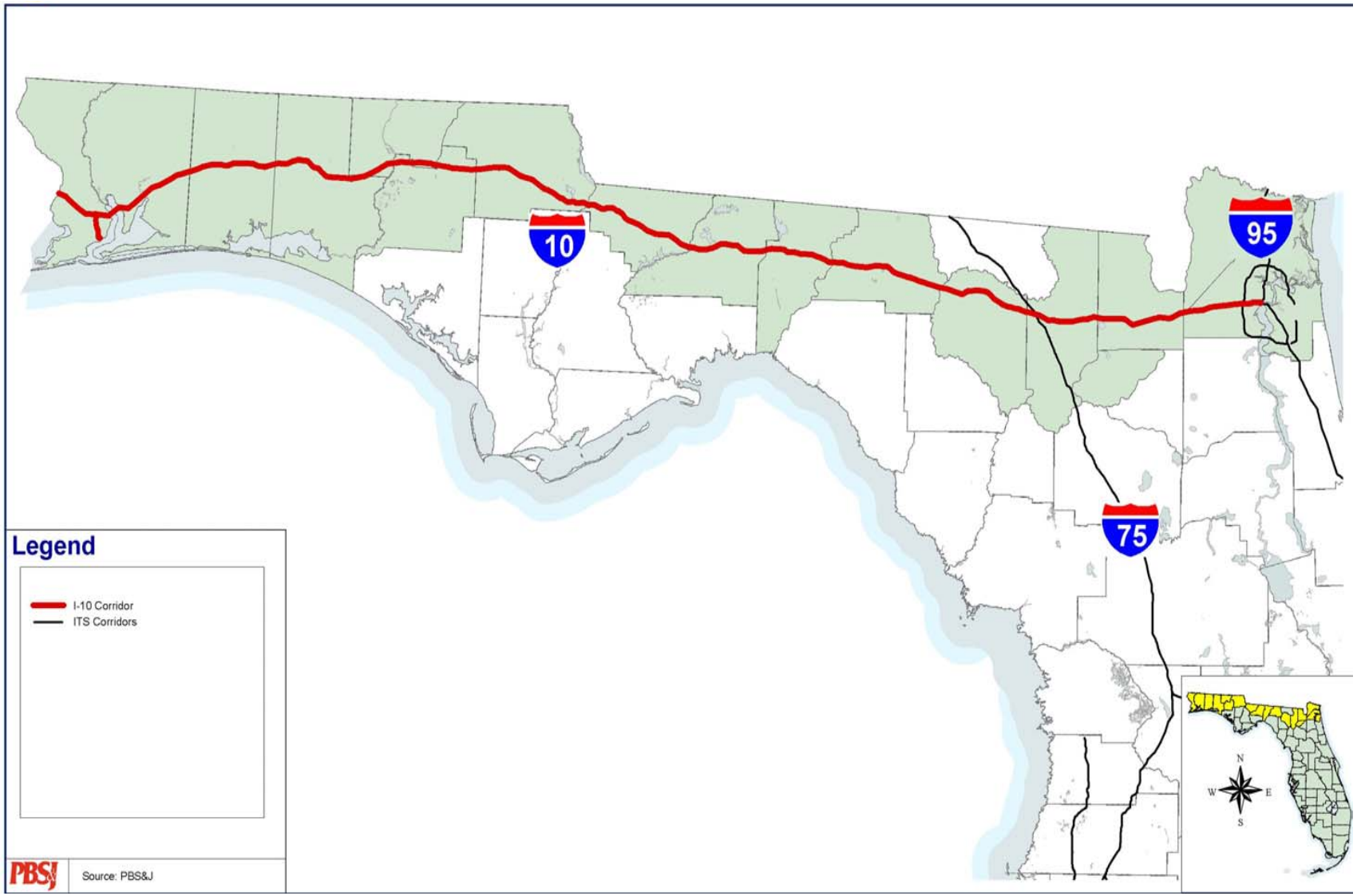
1.3 Document Organization

This document is organized to be a standalone summary of the corridor level analysis provided in support of the *ITS Program Plan* and to document the *ITS Corridor Master Plans* for the I-10 corridor.

Section 2 of this document details the current physical and operational characteristics along the I-10 corridor.

Section 3 presents the needs, issues, problems, and objectives defined along the FIHS limited-access corridors, and details the mission statement, vision, and market packages selected for implementation along the corridor.

Figure 1.1 – I-10 Corridor Locations



Section 4 details the identification of gaps in existing, programmed, and planned ITS services along the corridor as defined by the market package selections.

Section 5 discusses the proposed agency roles and responsibilities in the deployment, operations, and maintenance of the ITS.

Section 6 identifies the recommended conceptual ITS projects for the corridor and details the costs, benefits, and impacts associated with the deployment of the proposed projects.

Section 7 presents the report summary.

2. Legacy Systems

The following text identifies existing physical and operational conditions along the I-10 corridor as presented in *Technical Memorandum No. 1 – ITS Legacy Catalog* prepared for the FIHS *ITS Corridor Master Plans*:

- I-10 consists mainly of four general-use lanes except for a small portion of the interstate located in Duval County that is comprised of six lanes. I-110, in Escambia County, is comprised of four lanes along the entire corridor.

- I-10 also has a low interchange density of 6.2 miles per interchange, which is typical for a primarily rural corridor. Its highest interchange densities are located within the urban areas of Duval and Escambia counties. The interchange locations for I-10 are shown in Figure 2.1 and the corridor area types are illustrated in Figure 2.2.

- The I-10 corridor exhibits an unusually high concentration of accident locations for a rural four-lane facility, particularly in the area from Jackson County to Madison County. The interchanges of I-10 and Interstate 75 (I-75) and I-10 and I-95 are also identified as high accident locations. Typically, large interstate-to-interstate interchanges experience high accident volumes due to the complex nature of the weaving and merging patterns at these interchanges. The high crash frequency locations for I-10 are shown on Figure 2.3.

- Based on year 2000 statistics, the I-10 corridor has an average annual daily traffic (AADT) of 24,782 vehicles per day (vpd). The average traffic volume forecasts for the years 2010 and 2020 are 35,438 vpd and 49,929 vpd. These forecasts represent an increase of 30 percent from 2000 to 2010 and 29 percent from 2010 to 2020 for the entire corridor. Duval County contains the largest urban section of the corridor with an AADT of 83,907 vpd. Travel demand is expected to double (159,087 vpd) in Duval County by the year 2020 as well. The other areas of potential high travel demand growth along I-10 are Leon, Jefferson, Escambia, and Columbia counties. Figures 2.4 through 2.6 illustrate the existing and forecasted AADTs for the I-10 corridor.

- Tourism is Florida's largest industry. Due to the high volume of annual tourists, the state transportation system must be designed to accommodate the social and recreational travel generated by the major tourist attractions and activity centers, in addition to supporting the daily commuter and freight travel. Therefore, by locating the state's major activity centers, special generators, and tourist attractions, ITS solutions such as real-time traveler information systems and incident management techniques can be implemented in coordination with multi-modal improvements to improve mobility to and around these major activity centers.

- Major activity centers along the I-10 corridor include several state parks and local recreational theme parks; however, the largest travel generators are the Alltel Stadium in Jacksonville and the beaches located in the Florida panhandle.

Figure 2.1 – I-10 Corridor Interchange Locations

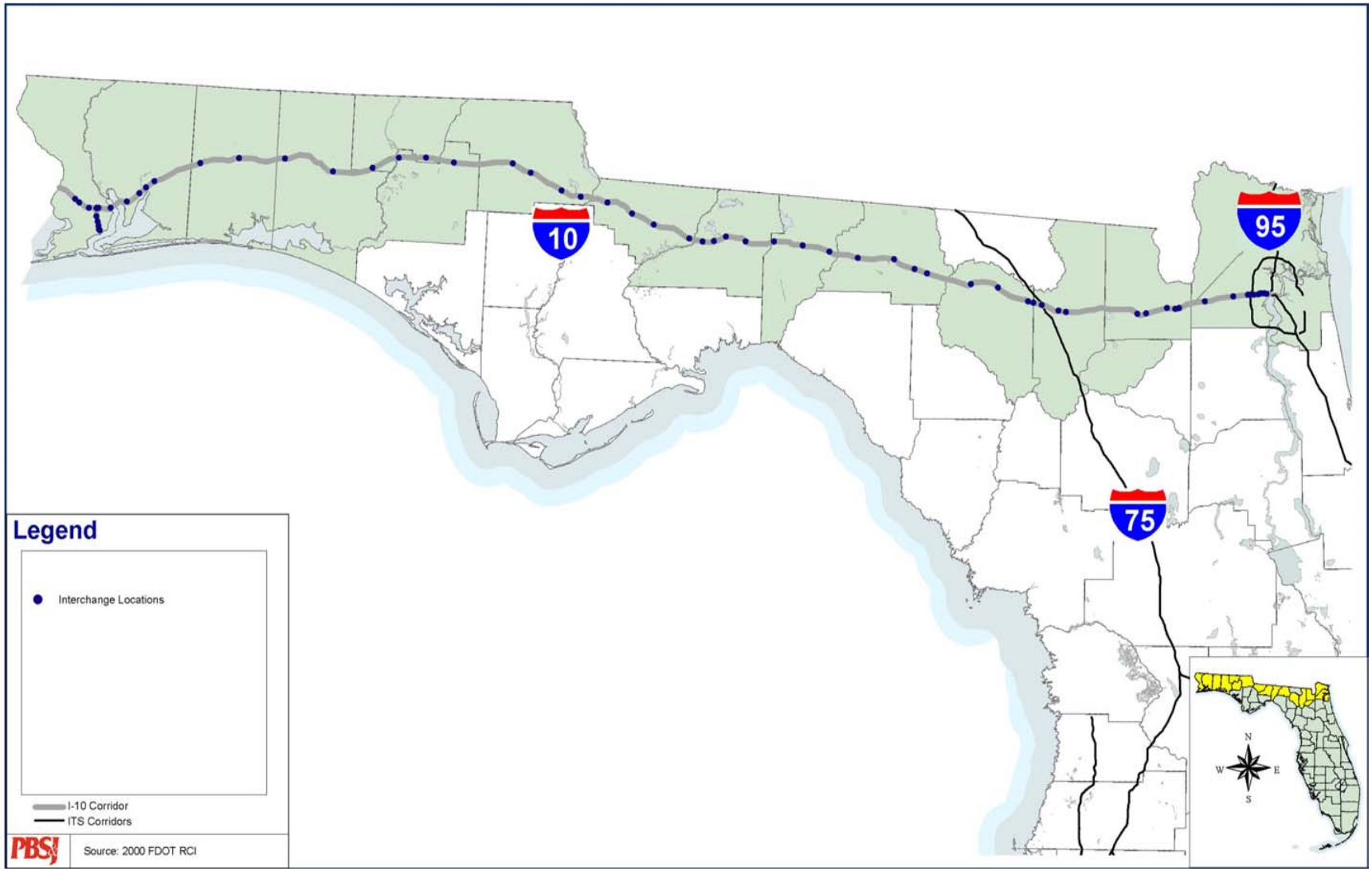


Figure 2.2 – I-10 Corridor Area Types

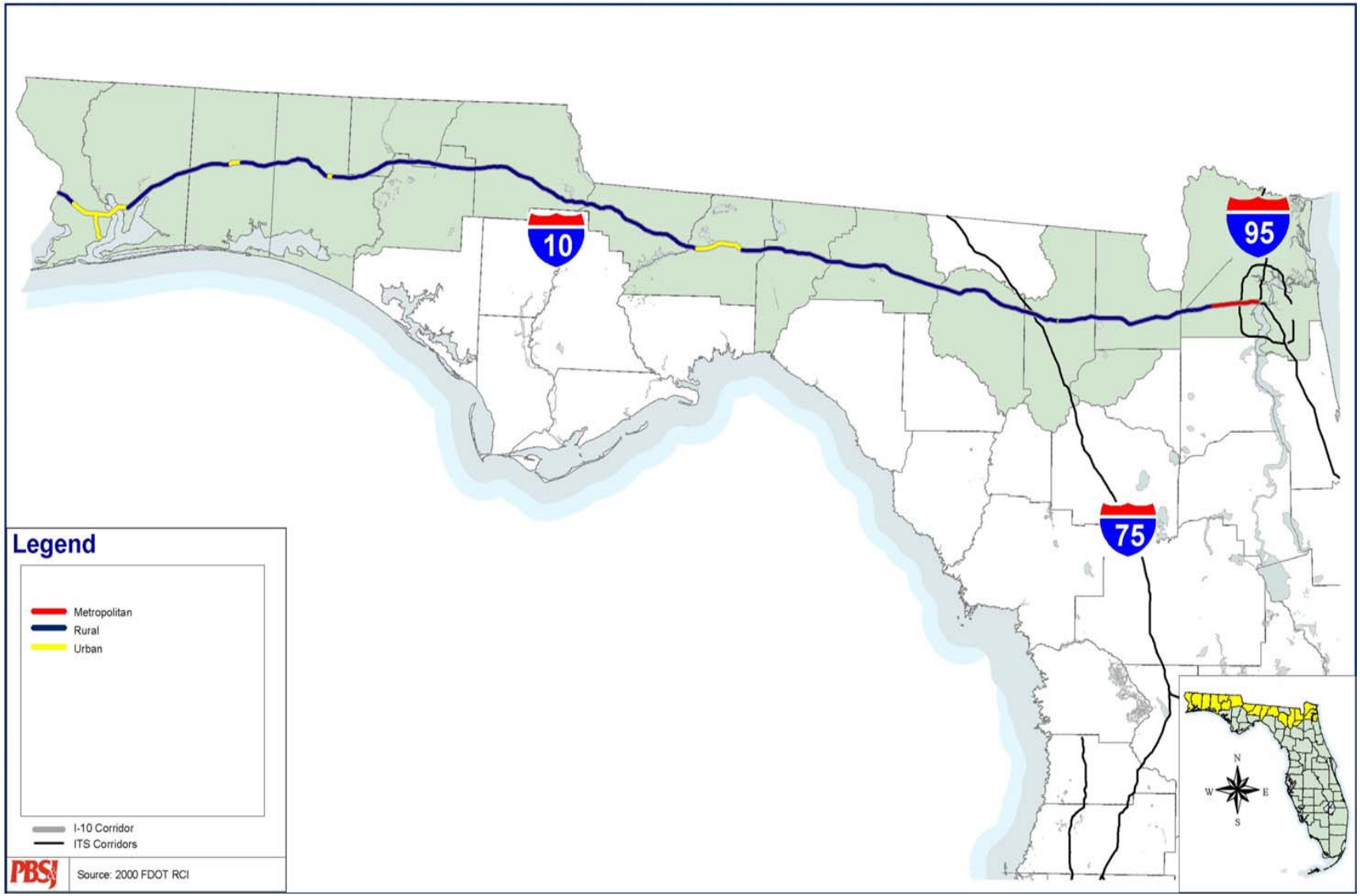


Figure 2.3 – I-10 Corridor High Crash Frequency Locations

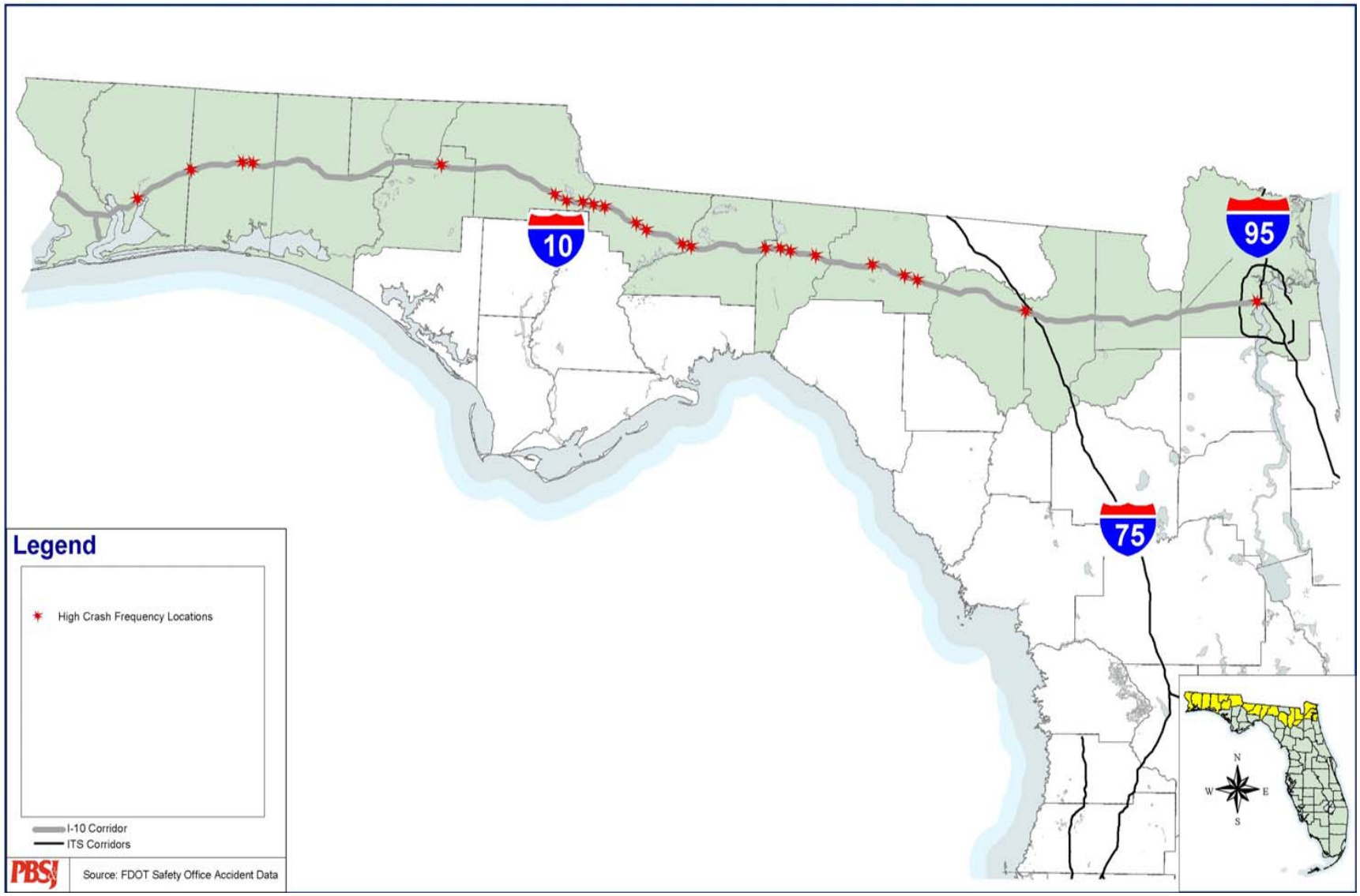


Figure 2.4 – I-10 Corridor – 2000 AADT

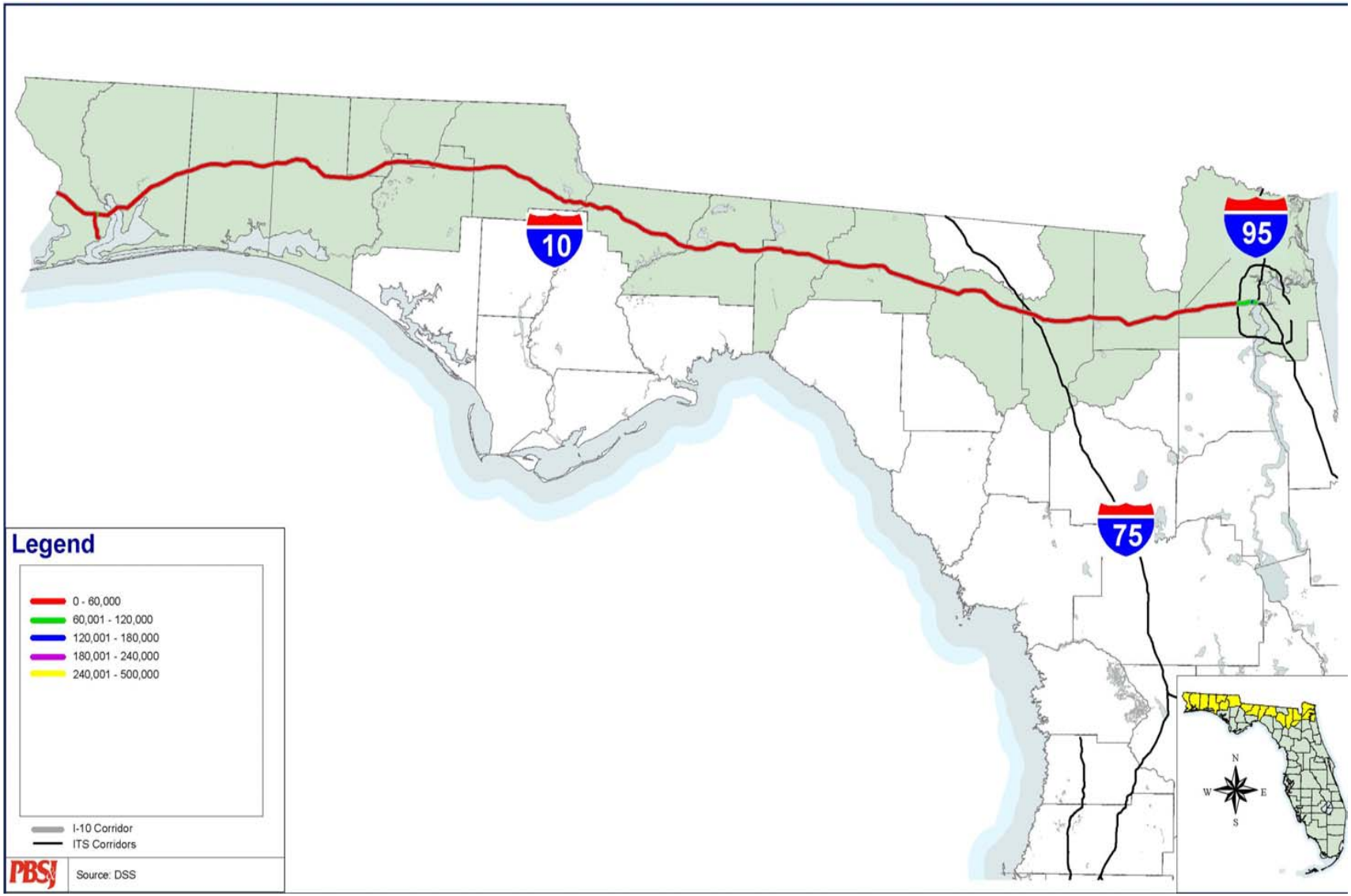


Figure 2.5 – I-10 Corridor – 2010 AADT

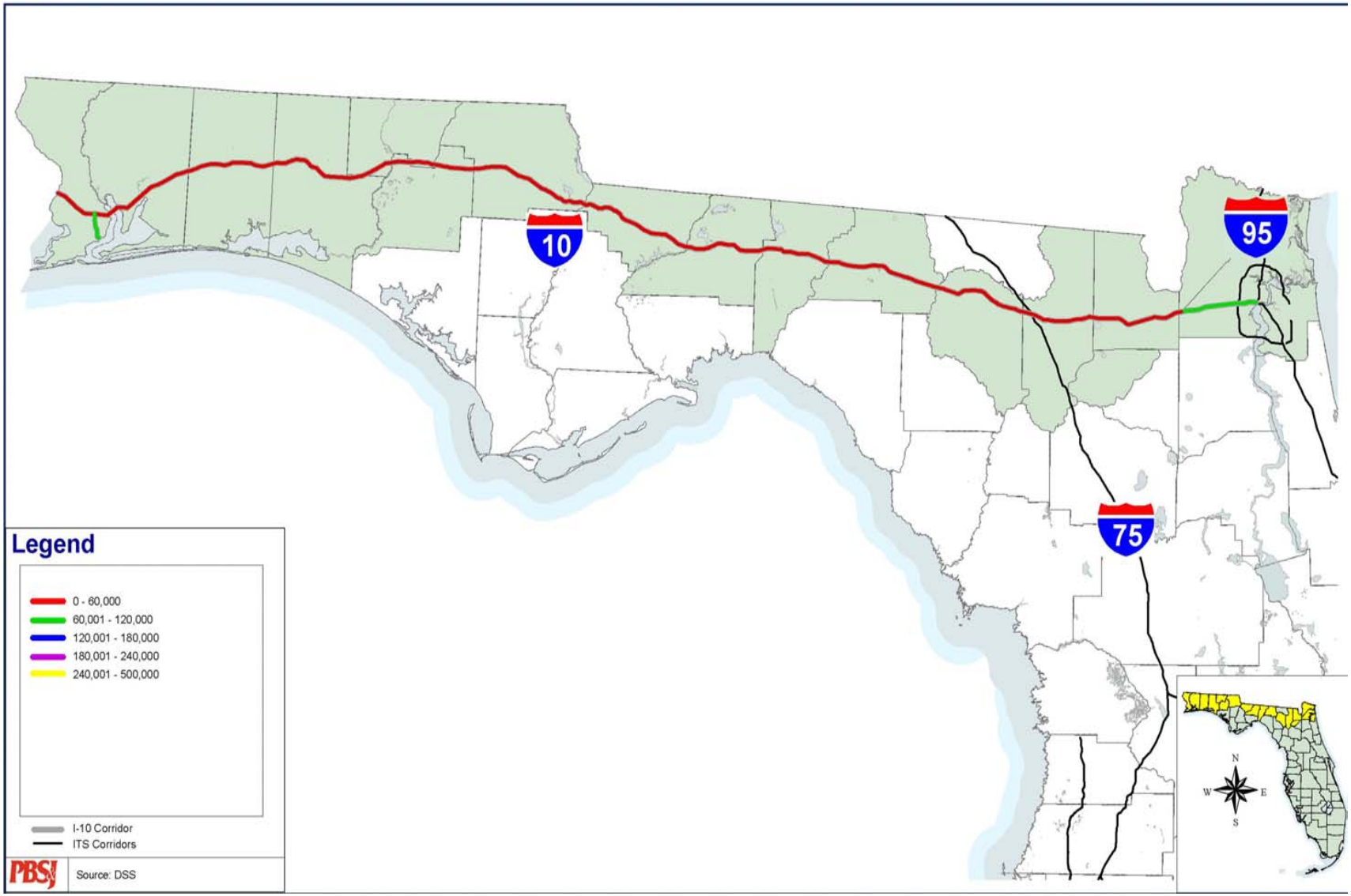
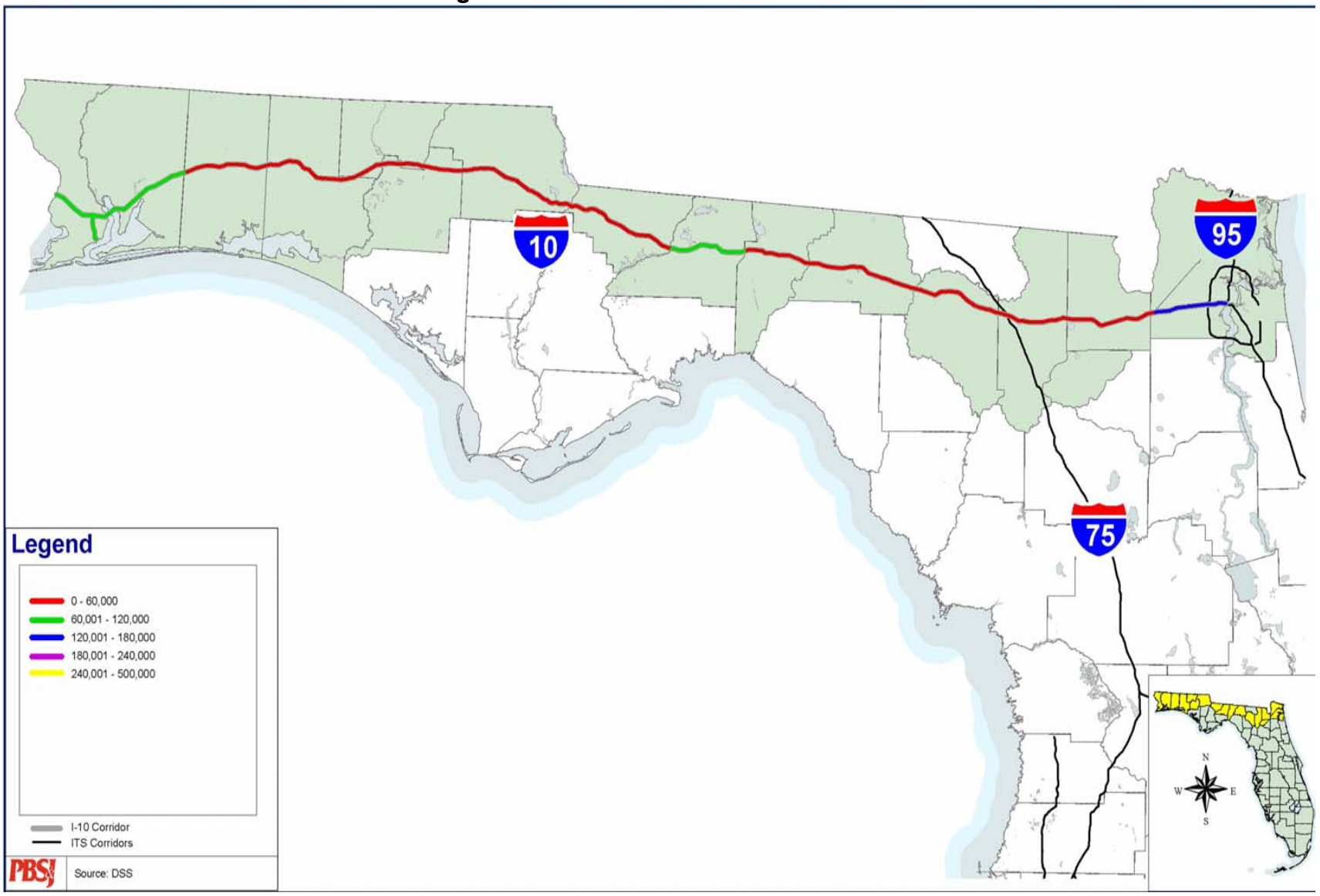


Figure 2.6 – I-10 Corridor – 2020 AADT



2.1 Current ITS Plans and Programs

This section identifies existing and planned ITS along the I-10 corridor. These services will be mapped in Section 4 of this report to determine gaps in existing and planned services.

- Motorist Aid Call Boxes – A statewide motorist aid system using roadside call boxes has been deployed along the entire length of I-10 at one-mile intervals. The call boxes are a partnership between FDOT and the Florida Highway Patrol (FHP). Each FDOT district maintains the call boxes, acknowledges calls for assistance, and redirects calls to the FHP. FHP dispatches service vehicles to aid the motorists. The system utilizes a microwave communications backbone operated and maintained by FDOT.

- Road Ranger (RR) Service Patrols – This ITS program, operated by the FDOT districts through private contractors, includes roadside assistance and incident clearance. RR Service Patrols are currently operating along the study interstate facilities primarily in the large urbanized area of Jacksonville.

- Commercial Vehicle Operations (CVO) – A weigh-in-motion (WIM) site is currently located along I-10 in Jackson County. There are also two more WIM sites planned for the I-10 corridor in Madison and Escambia counties.

- District 2 has begun a comprehensive program of implementing an incident management program along I-10 in the Jacksonville area. This system currently exists along I-10 from Interstate 295 (I-295) to I-95 and will eventually encompass the entire interstate network as the fiber optic network (FON) is expanded.

- District 3 has a small-scale incident management system (IMS) along the I-10 Escambia Bay Bridge. The district, however, has recently completed an *ITS Plan for Interstate System* that identifies the need for freeway management systems (FMS) along I-10 in Pensacola, Tallahassee, and the rural areas in between. In addition, the FMS will include traveler information kiosks at a welcome center located east of SR 87.

Figures 2.7 and 2.8 show the existing and planned ITS coverage for I-10.

Figure 2.7 – I-10 Corridor Existing ITS Coverage

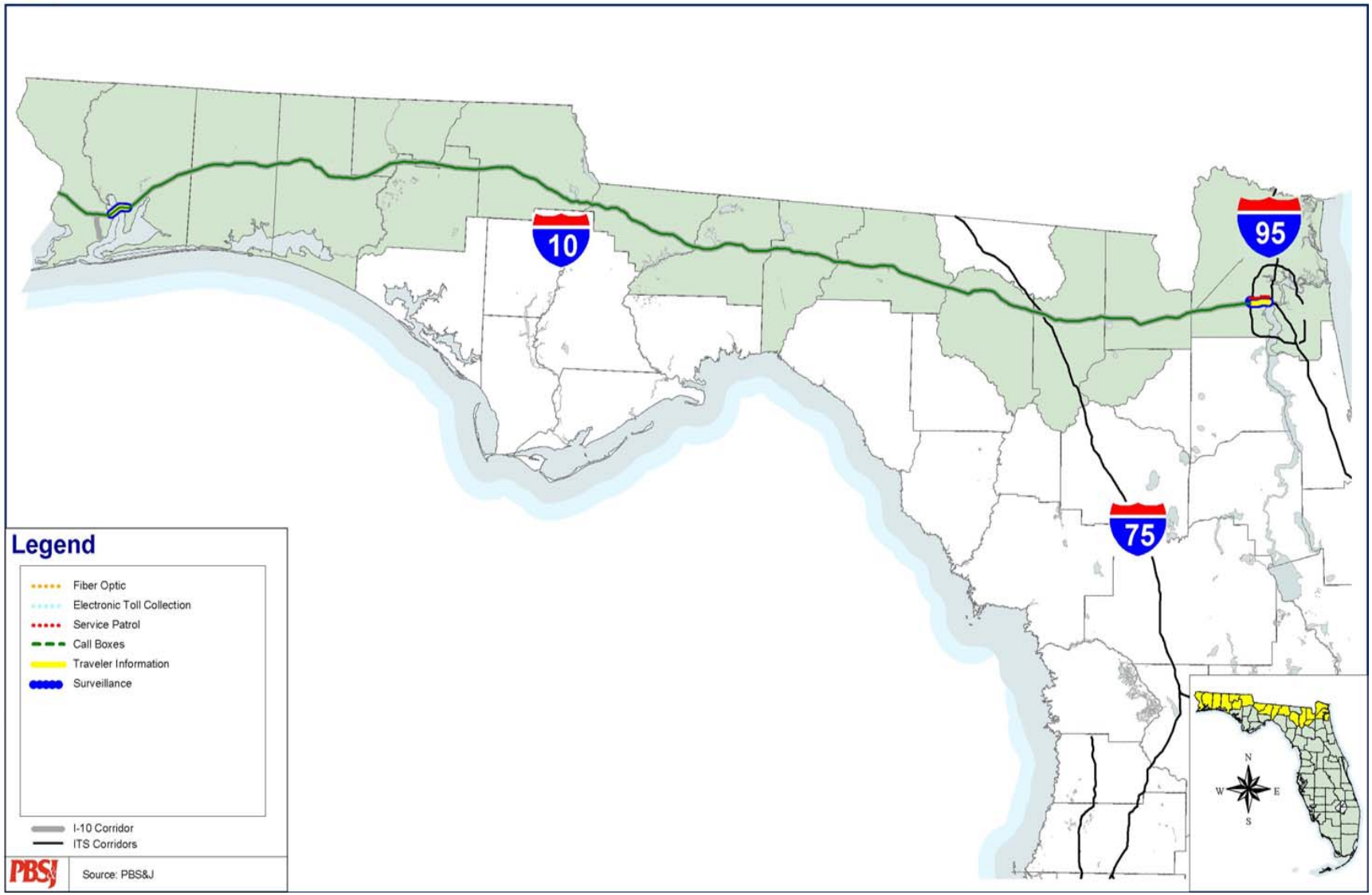
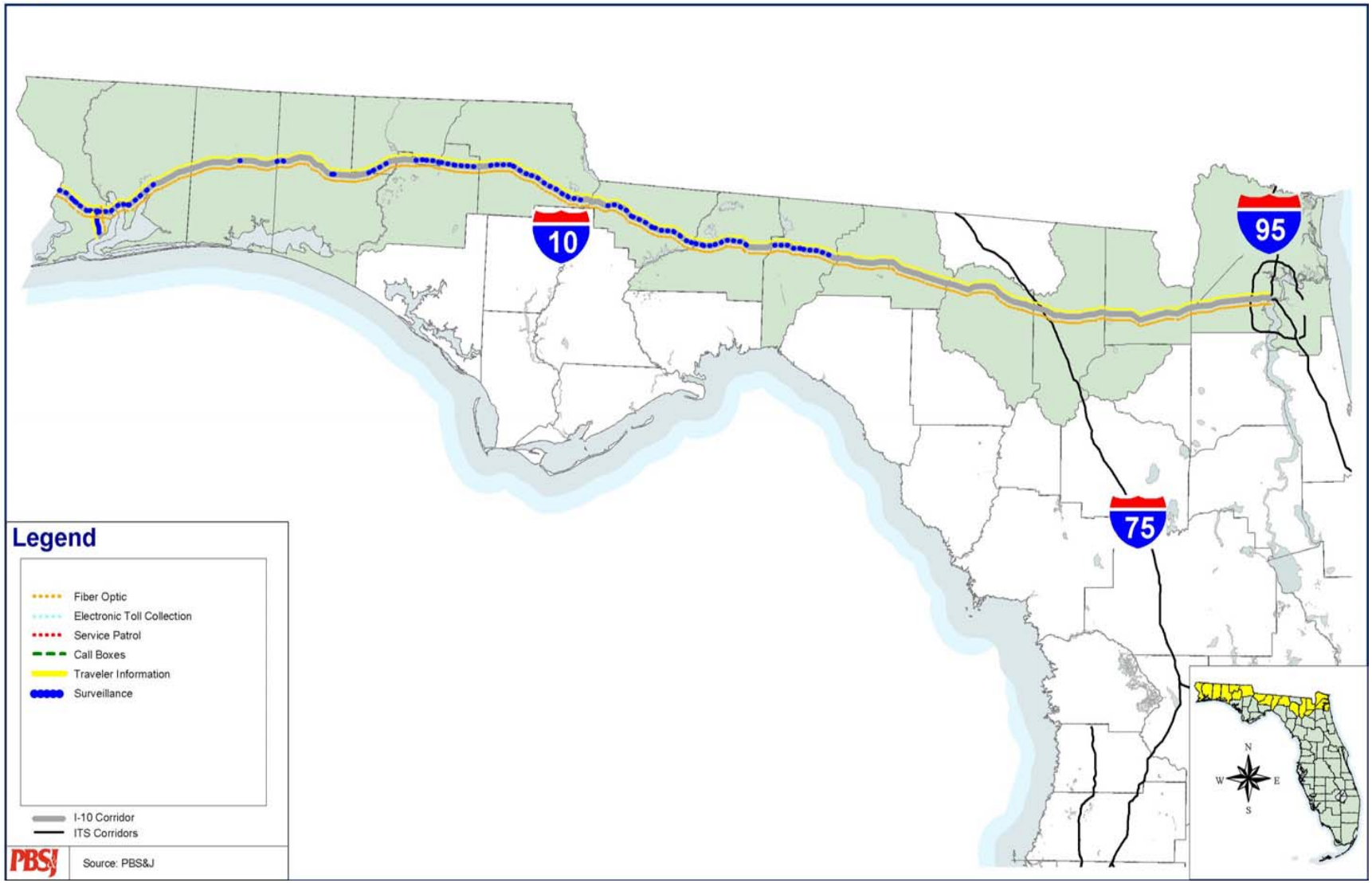


Figure 2.8 – I-10 Corridor Planned ITS Coverage



2.2 Existing Communications Infrastructure

Currently, the only data communications system available along the I-10 corridor is a microwave system. Due to the complexity and volume of the data required to support proposed ITS deployments along the FIHS corridors, the existing microwave communications system will require an upgrade, which is scheduled for the year 2004. Plans to implement a FON along the FIHS corridors are currently under development. The FON communications would be optimal for the communication needs for the statewide ITS deployments due to its capacity to accommodate a large volume of data.

Additionally, several municipalities along the corridor have installed small segments of fiber with planned interconnection to the intrastate fiber network. The City of Tallahassee has provided fiber optic connections terminating at I-10 for future connection to their advanced traffic management system (ATMS).

Figure 2.9 illustrates the existing microwave tower locations along I-10 and Figure 2.10 illustrates existing fiber locations.

2.3 Proposed Capacity Improvement Projects

It is important to identify programmed and cost-feasible plan improvements (construction only) so funding for potential ITS deployments can be leveraged with funding of capacity improvements and consideration of the roadway modifications can be included in the design of the ITS improvements. Figures 2.11 and 2.12 illustrate the programmed and 2025 cost-feasible improvements for the I-10 and I-110 corridors in FDOT Districts 2 and 3. The statewide ten-year plan for FIHS facilities did not contain any projects for the I-10 and I-110 corridor. As identified in Figure 2.11, the I-10 corridor has only a few interchange modification projects identified as programmed. Roadway widening projects along I-10 are identified in the cost-feasible plan for the Pensacola, Tallahassee, and Jacksonville areas.

Figure 2.9 – I-10 Corridor Microwave Communications Infrastructure

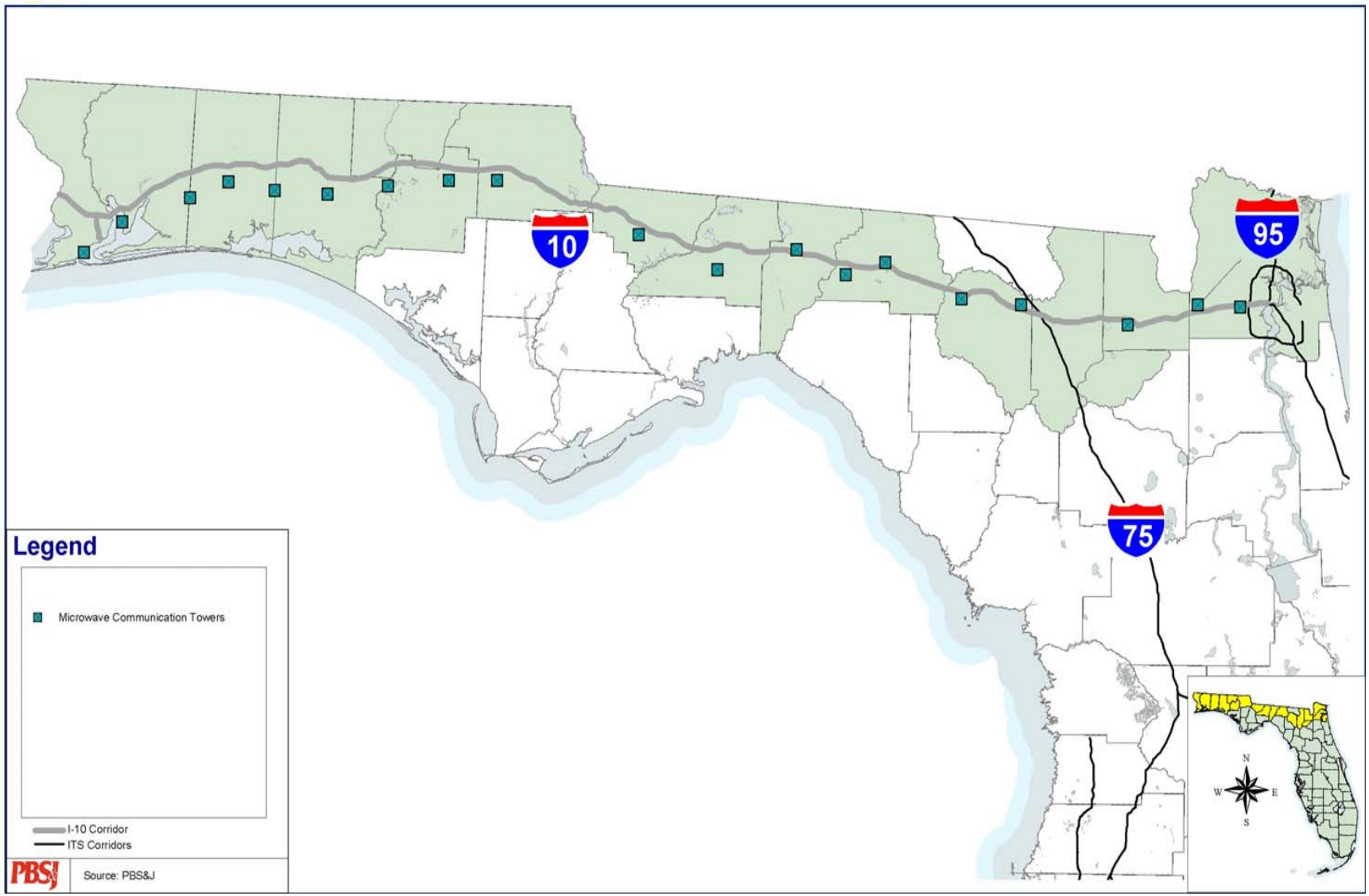


Figure 2.10 – I-10 Corridor Existing Fiber Optic Cable

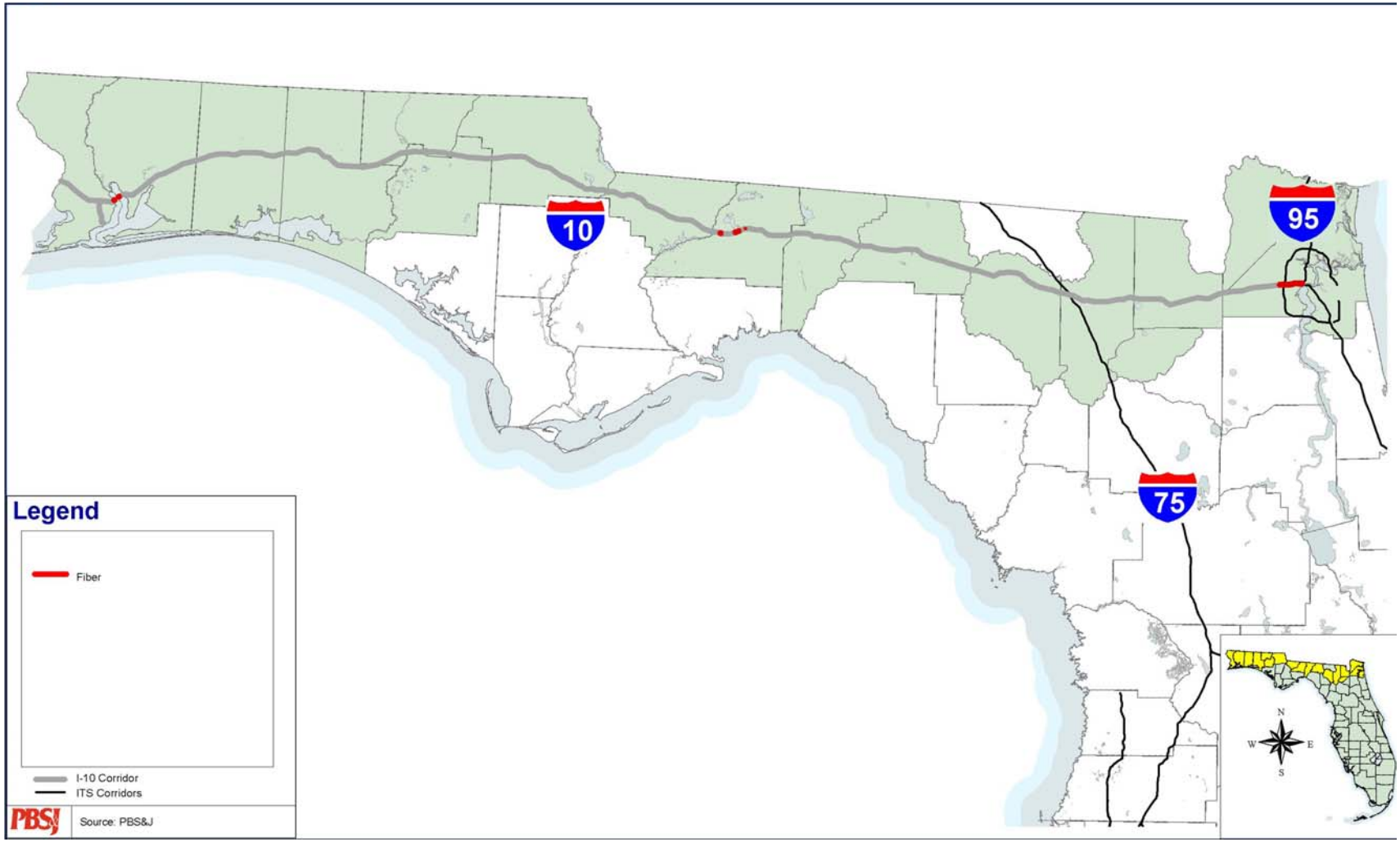


Figure 2.11 – I-10 Corridor Programmed Capacity Improvements

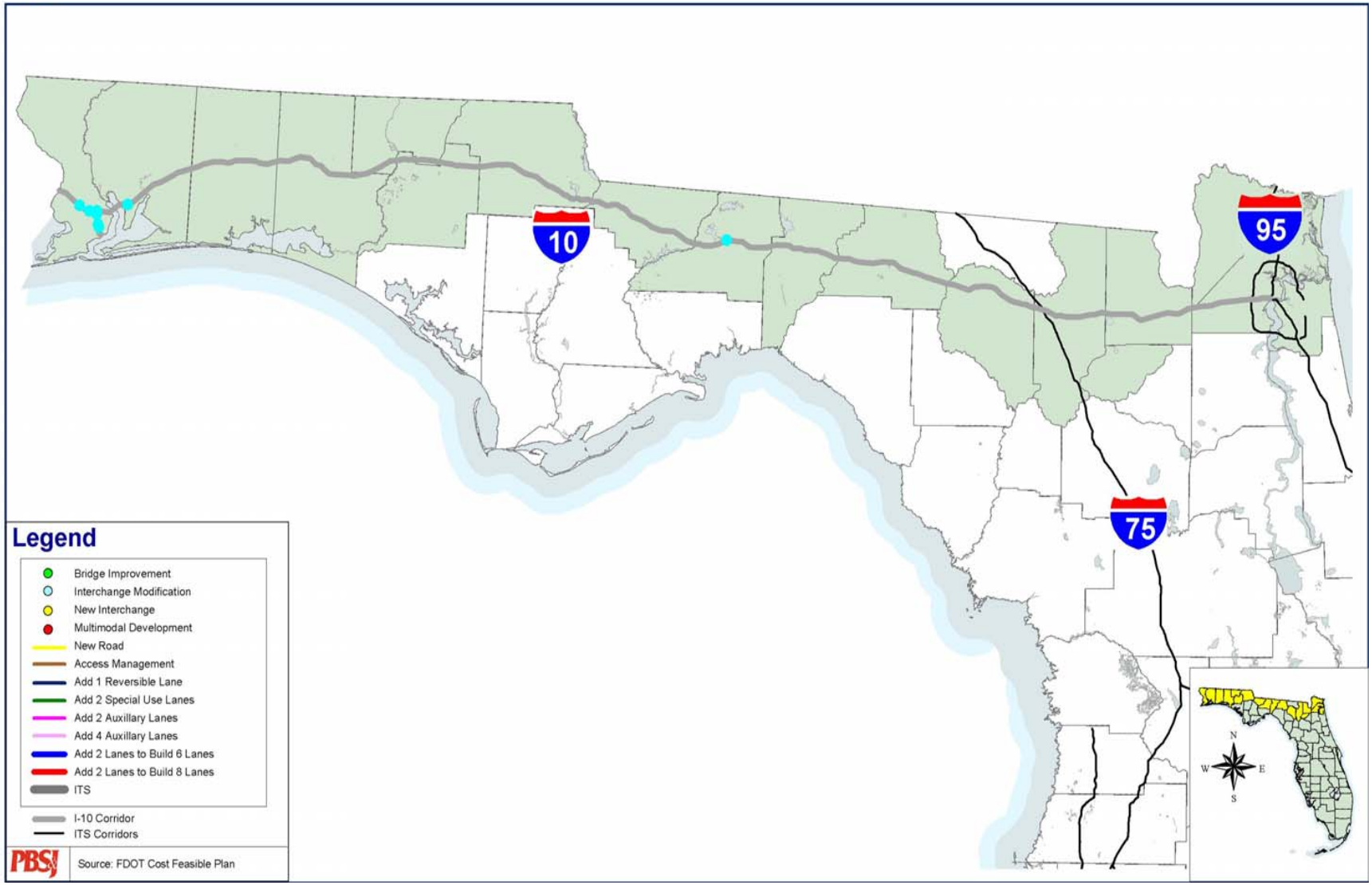
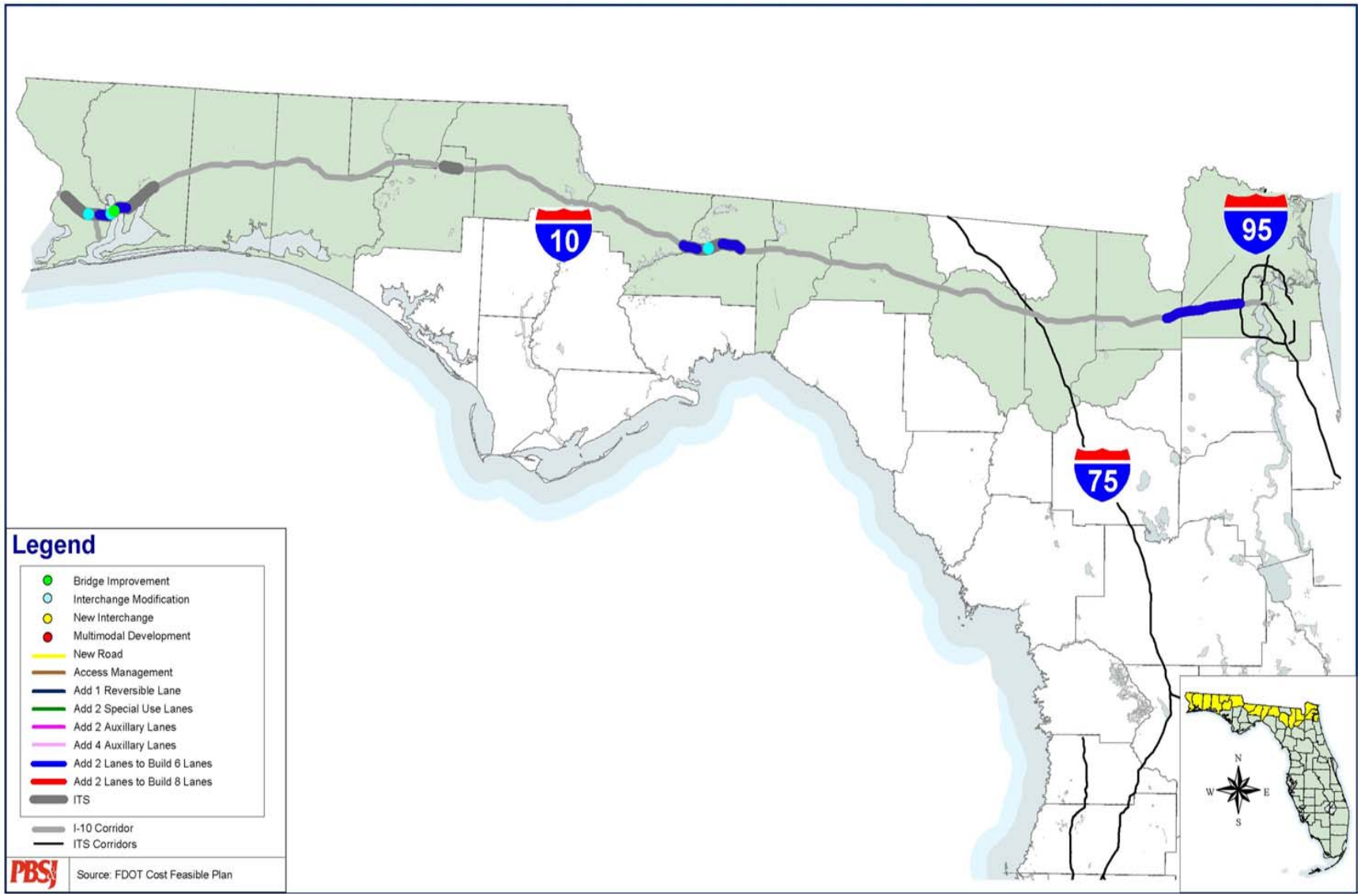


Figure 2.12 – I-10 Corridor Cost-Feasible Plan Improvements



3. Need for ITS and Proposed Deployment Concepts

3.1 Needs, Issues, Problems, and Objectives

The following needs, issues, problems, and objectives were identified for ITS deployments in Florida along the principal FIHS limited-access corridors. The needs, issues, problems, and objectives were organized based on FDOT's mission statement as follows:

> Florida will provide and manage a safe transportation system that ensures the mobility of people and goods, while enhancing economic competitiveness and the quality of our environment and communities.

From this mission, FDOT derived four primary goals to carry out the mission. Associated with each goal are a number of objectives for implementation.

3.1.1 Safe Transportation – Moving People and Goods Safely

- In 1999, 2,290 people died on Florida's highways resulting in a fatal accident rate (2.1 per million vehicle-miles) higher than the national average (1.5 per million vehicle-miles). Less than one percent of these crashes were due to road-related conditions. Strategies are needed to provide a safer driving environment and to improve vehicular safety to reduce the potential for driver errors and severe accidents.

- FDOT's *FIHS Cost-Feasible Plan* will be implemented as proposed, resulting in significant capacity improvement projects, interchange modifications, and related programs on a statewide basis along each of the major corridors. These programs will result in a significant number of construction work zones along these major corridors.

- Providing safe work zones and maintaining traffic along these high-traffic volumes is a priority needed to support FDOT's mission to provide "safe" transportation services.

- The safety of commercial vehicle operators is dependent on reliable and predictable traffic flows at interchanges, weigh and inspection stations, and gates for intermodal facilities – such as rail, port, and airport cargo facilities. The formation of queues on these corridors is a safety concern for the commercial vehicle operators and other vehicles.

- Commercial vehicle operators seek safe environments at our rest and weigh stations where vehicles can be parked overnight to satisfy the rest requirements of the Interstate Commerce Commission (ICC).

- Innovative technologies are needed to enhance the coverage and accuracy of inspections and enforcement of commercial vehicle safety requirements.

- Florida has the greatest risk of landfall of hurricanes in the nation requiring residents and visitors to respond quickly to events requiring evacuation. Based on the average since 1900, a named storm is anticipated to land in Florida once per year and a storm that requires a major evacuation is likely once every three years. Services are needed that can:

    - Support pre-planning for evacuations;
    - Manage traffic during evacuation scenarios;
    - Manage demand through communications with shelters and other safe harbors;
    - Provide route guidance information and information on traffic/travel conditions and weather including winds, rainfalls, and storm surge;
    - Support remote configuration management of highways during evacuation conditions or other emergencies;
    - Provide accurate and timely traveler information regarding incidents on evacuation routes;
    - Share emergency information among local and regional traffic management centers (TMCs) and emergency management facilities; and
    - Detect, verify, respond to, and clear incidents and manage traffic around accidents, emergencies, and other incidents.

- A number of other weather and natural events affect traffic and transportation including flooding, fog, tornados, wildfires, and heavy rainfalls where unsafe driving conditions may exist or diversions of major corridors are required. Surveillance and information of when these unsafe conditions exist are needed to improve driving conditions and manage traffic.

- Improve and expand our ability to identify motorists in need and verify and respond to their needs in an efficient and cost-effective manner.

- Reduce the risk of accidents and other incidents by warning drivers of approaching congestion, inclement weather, steep downgrades, sharp curves, and other hazardous conditions.

3.1.2 System Management – Preservation and Management of Florida's Transportation System

- Four of Florida's metropolitan areas are severely congested and rank among the nation's fifty most congested areas: Miami, Orlando, Tampa, and Jacksonville. (Source: 2000 Urban Mobility Study, Texas Transportation Institute.) In Florida's seven largest urbanized counties (those with 500,000 or more in population including Miami-Dade, Broward, Palm Beach, Pinellas, Hillsborough, Orange, and Duval), the amount of traffic that is congested along these corridors doubled from 1990 to 1999. (Source: Florida's

Mobility Performance Measures Program.) In order to manage the efficiency of the transportation system, the following objectives are needed:

- Improve travel times along the corridors;
- Improve predictability and reliability of travel times;
- Reduce accidents and other incidents during normal flows that result from congestion and delays that result from "rubber-necking" during incidents;
- Reduce congestion-related delays by reducing queues and spillback from other facilities;
- Reduce delays caused by congestion in construction work zones;
- Manage traffic accessing these major corridors at interchanges to improve through-put and traffic flow;
- Reduce unnecessary delays at tolls booths; and
- Reduce unnecessary delays at the gates of intermodal facilities.

- In addition to managing traffic flows, additional alternatives are needed to enable coordinated regional transportation operations by sharing information among regional traffic operations centers and agencies to maximize efficiency of the system and demand between modes. Information to support and promote transit and other multi-modal use and manage transit vehicles or fleets has the potential to reduce congestion on highways and increase mobility.

- Commercial vehicles present a considerable load on our roadway infrastructure and proper enforcement is needed to eliminate illegally over-weight vehicles that cause damage to pavement and bridges.

- Improve our abilities to detect, verify, respond, and clear incidents to minimize the impacts on traffic flow.

- Improve traveler information to better manage traffic and inform travelers of delays and breakdowns in our largest metropolitan areas, even when no alternative can be offered to divert or re-route travelers to other modes or roadways exists. Traveler information services are valuable communications tools that can help us manage our system more efficiently by modifying driver behavior and increasing awareness of traffic conditions.

- Technologies are needed to support the operations and management of alternate highway configurations such as special-use lanes (SULs) that serve high occupancy vehicles (HOVs), operate as express toll lanes, provide preferences to commercial vehicles or transit vehicles, open road tolling, and other alternative configurations and management plans to promote the efficiency and effectiveness of our infrastructure.

- During the course of ITS corridor and program deployments nationally and in Florida, there is an increasing need for data and information sharing to better manage and operate the system by:

- Supporting systems evaluation and alternative analysis of future ITS deployments to ensure we are deploying resources efficiently and effectively;
- Supporting and supplementing other data collection programs such as the 200-highest hour report, highway performance monitoring system (HPMS) and design traffic factors for geometric and pavement design;
- Supporting highway operational performance reporting, modeling simulation, and other techniques for the operations and management of the system;
- Providing before and after studies for ITS deployments. Many current programs are unable to assess their benefits or effectiveness because no data was collected on conditions and performance prior to installation of ITS.

3.1.3 Economic Competitiveness – A Transportation System that Enhances Florida's Economic Competitiveness

Commercial vehicles form the backbone of the state's freight transportation network. All aspects of the economy rely on commercial vehicles to meet their transportation needs. The trucking industry is an active participant in all of Florida's economy. Motor carriers haul 77 percent of all shipments originating in Florida (by weight), have a combined value of $154 billion, and provide the landside link to all of our intermodal facilities. The following objectives are needed to support Florida's economic competitiveness:

- Ensure efficient landside access to intermodal, port, airport, and truck terminal facilities;
- Ensure efficient intermodal transfer of people and goods;
- Promote safe and efficient access of vehicles to markets; and
- Expedite permitting and clearance of commercial vehicles at weigh and agricultural inspection sites to keep commerce moving.

Tourism is one of Florida's top industries and providing a safe, efficient, and easily navigable transportation network to support more than 60 million visitors each year is essential to Florida's long-term economic prosperity. The following objectives are needed to support Florida's economic competitiveness:

- Ensure efficient access to major activity centers such as tourist attractions, state parks, and other areas of interest; and

- Provide safe and efficient tourist travel and reduce vehicle-miles traveled (VMT) through the provision of accurate and timely traveler information.

FDOT, along with its partners, is currently considering the designation of the strategic intermodal system (SIS). Each of the five principal transportation corridors will likely be part of this SIS because of their roles in regional, statewide, and national transportation linkages.

3.1.4 Quality of Life – Increasing Mobility Options for a More Livable Florida

- To ensure we provide more livable communities in Florida, the planning and design of transportation systems should support communities' visions and be compatible with corridors of statewide and regional significance. To support this objective:

  - Provide efficient statewide ITS services with autonomy for decision-making to support local needs and regional cooperation to promote efficiency and regional and statewide goals;
  - Improve interoperability of ITS services through the development of statewide uniform device standards and specifications;
  - Support integration of ITS into local planning processes, programs, and capacity projects;
  - Provide name recognition of key ITS-related services through branding that will instill trust and confidence in traveler information services, roadside assistance, electronic payment services, and other strategic services;
  - Provide easy access and central data warehousing capabilities for transportation planning and design for all partners to support decision-making; and
  - Provide accurate real-time data to technology, business, and operational users for effective and responsive transportation operations.

- Improve the quality of environment by reducing air quality impacts of mobile source emissions through a more efficient and reliable transportation system.

- Reduce impacts of hazardous materials' (HAZMAT) incidents by providing response systems that provide first responders with access to information on the content of vehicles and vehicle locations so they can quickly respond and clear areas.

- Improve the availability of weather, traveler, and shelter information during natural and man-made disasters.

- Provide safe and efficient travel routes for freight carriers to reduce potential HAZMAT incidents in densely populated areas.

3.2 Mission and Vision

The ITS mission and vision statements were developed for the *ITS Corridor Master Plans* and *ITS Program Plan* to assist in defining the ultimate twenty-year ITS for the interstate corridors and to guide the selection of appropriate solutions to fulfill the ultimate ITS vision.

3.2.1 Mission

Provide effective ITS services for the principal FIHS limited-access corridors that enhance the safety and mobility of people and goods, economic competitiveness, and the quality of our environment and communities.

3.2.2 Vision

Two decades into the 21st century, travelers and shippers of goods along Florida's five principal transportation corridors are benefiting from infrastructure, and information and communications technologies that improve the safety, mobility, economic competitiveness, and livability of communities in Florida. Information is available that assists travelers and shippers in route planning, predicting travel times, and scheduling their trips/shipments to reduce delays and arrive at scheduled times. When congestion is severe along specific facilities, alternate routes and modes of travel will be suggested that may be more reliable or cost-effective. During their trip, information of travel conditions is provided in real-time so that scheduling and diversions can be planned if needed as a result of an incident. If an incident occurs, automated information technologies are capable of verifying the location and assessing the appropriate response to incidents. If necessary, emergency personnel or roadside assistance is dispatched, arriving in a short period of time. Traffic flow is restored quickly and delays minimized.

During normal operations, traffic flow is managed within the corridor to keep traffic moving and information on weather conditions is provided to an in-vehicle information service that alerts the driver when visibilities are compromised and advises a safe travel speed. If a natural disaster is impending, information is provided on appropriate local shelter locations, routes for travelers choosing to drive to another area, and other modes of travel that are available instead of driving.

The economy is thriving as a result of world-class access to international markets at ports, airports, and railheads from our agricultural, mining, and manufacturing industries and efficient deliveries of goods and services at the local level. Decisions on the operations, management, and future improvements to the corridors are made through a number of key partners. These decisions are based on measured benefits and a record of the performance of various technologies and elements are customized for communities to reflect their unique values and priorities. However, similar services are available statewide and on related arterial systems and are easily recognized by elderly drivers or visitors since strong name recognition exists for traveler information, roadside assistance, electronic tolls, and other essential services. FDOT is viewed as an ITS powerhouse and a model for how to cost-effectively deploy ITS services and partner with other public agencies and the private sector to create win-win agreements for the benefit of the citizens of Florida.

3.3 Themes, Strategies, and Market Packages for Implementation

Based on these goals and objectives, the following themes and strategies summarize the desired outcomes of the ITS deployments along the principal FIHS limited-access corridors. These themes and strategies are intended to describe the desired outcomes in non-technical terms that stakeholders can understand and may not follow strict technical definitions.

The market packages selected for the *ITS Corridor Master Plans* are identified in Table 3.1. These market packages were obtained from the *NITSA* in addition to the Evacuation Coordination and MCO Market Packages that were created. Those ITS solutions determined not to be applicable are labeled as "N/A".

Table 3.1 – Recommended Market Packages for the *ITS Corridor Master Plans* from the *NITSA, Version 3.0*

MP NO.	Market Package Name	Applicable
Advanced Public Transportation Systems (APTS)		
APTS1	Transit Vehicle Tracking	✓
APTS2	Transit Fixed-Route Operations	✓
APTS3	Demand Response Time Operations	N/A
APTS4	Transit Passenger and Fare Management	✓
APTS5	Transit Security	✓
APTS6	Transit Maintenance	N/A
APTS7	Multi-Modal Coordination	✓
APTS8	Transit Traveler Information	✓
Advanced Traveler Information Systems (ATIS)		
ATIS1	Broadcast Traveler Information	✓
ATIS2	Interactive Traveler Information	✓
ATIS3	Autonomous Route Guidance (ARG)	✓
ATIS4	Dynamic Route Guidance (DRG)	✓
ATIS5	ISP-Based Route Guidance	✓
ATIS6	Integrated Transportation Management/Route Guidance	✓
ATIS7	Yellow Pages and Reservations	✓
ATIS8	Dynamic Ridesharing	✓
ATIS9	In-Vehicle Signing	✓
Advanced Traffic Management Systems (ATMS)		
ATMS01	Network Surveillance	✓
ATMS02	Probe Surveillance	✓
ATMS03	Surface Street Control	N/A
ATMS04	Freeway Control	✓
ATMS05	HOV Lane Management	✓`
ATMS06	Traffic Information Dissemination	✓
ATMS07	Regional Traffic Control	✓
ATMS08	Incident Management System (IMS)	✓
ATMS09	Traffic Forecast and Demand Management	✓
ATMS10	Electronic Fare Collection	✓
ATMS11	Emissions Monitoring and Management	N/A
ATMS12	Virtual TMC and Smart Probe Data	✓
ATMS13	Standard Railroad Grade Crossing	✓
ATMS14	Advanced Railroad Grade Crossing	✓
ATMS15	Railroad Operations Coordination	✓
ATMS16	Parking Facility Management	✓
ATMS17	Reversible Lane Management	✓
ATMS18	Road Weather Information System (RWIS)	✓
ATMS19	Regional Parking Management	N/A
FL ATMS20	Speed Management	✓

Table 3.1 (Continued)

MP NO.	Market Package Name	Applicable
Advanced Vehicle Safety Systems (AVSS)		
AVSS01	Vehicle Safety Monitoring	N/A
AVSS02	Driver Safety Monitoring	N/A
AVSS03	Longitudinal Safety Warning	N/A
AVSS04	Lateral Safety Warning	✓
AVSS05	Intersection Safety Warning	N/A
AVSS06	Pre-Crash Restraint Deployment	N/A
AVSS07	Driver Visibility Improvement	✓
AVSS08	Advanced Vehicle Longitudinal Control	N/A
AVSS09	Advanced Vehicle Lateral Control	✓
AVSS10	Intersection Collision Avoidance	N/A
AVSS11	Automated Highway System (AHS)	✓
Commercial Vehicle Operations (CVO)		
CVO01	Fleet Administration	✓
CVO02	Freight Administration	✓
CVO03	Electronic Clearance	✓
CVO04	Commercial Vehicle Administrative Process	✓
CVO05	International Border Electronic Clearance	✓
CVO06	Weigh-in-Motion (WIM)	✓
CVO07	Roadside CVO Safety	✓
CVO08	On-Board CVO Safety	✓
CVO09	CVO Fleet Maintenance	✓
CVO10	HAZMAT Management	✓
Emergency Management		
EM1	Emergency Response	✓
EM2	Emergency Routing	✓
EM3	Mayday Support	✓
FL EM4	Evacuation Management	✓
Archived Data and Management		
AD1	ITS Data Mart	✓
AD2	ITS Data Warehouse	✓
AD3	ITS Virtual Data Warehouse	✓
Maintenance and Construction Operations (MCO)		
FL MCO1	Maintenance and Construction Management	✓

3.3.1 Coordinated Operations

- Facilitate, support, and enhance the coordination and implementation of interagency efforts in response to the needs of intercity travel, major incidents or special events of regional significance along the corridor, and the security of the transportation infrastructure.

- Promote coordination and cooperation among all organizations involved in incident management including state, county, and local transportation departments, toll road authorities, law enforcement agencies, emergency service providers, and other operating agencies within the corridor.

- Foster and facilitate continued development and implementation of regional incident management initiatives and educate the public and responders to the benefits of incident management.

- Encourage technology and resource sharing by coordinating the development of training programs to support member agencies' incident management programs and activities.

- Demonstrate and evaluate the application of innovative procedures and technologies to enhance incident management activities.

- Provide regional solutions for serving intercity travel by promoting the through movement of vehicles.

- Provide procedures and coordination during evacuation and other emergency situations to make the best use of system resources.

- Promote coordination among agencies in the notification and implementation of maintenance and construction.

3.3.2 Active Facilities Management

- Support traffic management along all facilities in a coordinated way.

- Support incident management for the detection of, response to, and clearance of accidents and other major incidents such as freeway service patrols and Mayday/E-911 support, development of incident response scenarios and traffic diversion plans, incident response centers or command posts, and traffic surveillance technologies.

- Provide transit management, including bus, commuter rail, and park-and-ride facilities, as well as other transit-related activities and manage SULs, such as high-occupancy toll or other value pricing, reversible lane control for high occupancy vehicle (HOV) facilities, and transit or emergency vehicle signal preemption systems.

- Improve the ability to monitor, schedule, and dispatch maintenance, construction, special services, or other public/community transportation fleets.

- Manage traffic flow and safety during evacuations related to hurricanes, fires, and other emergencies.

- Serve commercial vehicle operations (CVO), such as electronic screening systems, to verify the compliance of motor carriers with size, weight, safety and credentials regulations, and emergency response systems.

- Promote the use of electronic toll collection (ETC) and electronic payment systems (EPS) to improve traffic flow efficiencies and reduce infrastructure requirements.

- Implement procedures and systems that cost-effectively manage work zone activities.

- Manage lane closure prediction and scheduling.

- Collect/Maintain data on work zone locations and delay and alternate routing for mainlines and standard diversion or evacuation routes.

- Automate speed enforcement and variable speed limits in work zones.

- Support advanced traveler information systems (ATIS).

- Provide evacuation guidance that includes basic information to assist potential evacuees in determining whether evacuation is necessary. Once the decision is made to evacuate, the services will also assist evacuees in determining destination routes to shelters and other lodging options. This function will also provide guidance for returning to evacuated areas, information regarding clean up, and other pertinent information to be distributed from federal, state, and local agencies.

- Provide evacuation travel information that will benefit evacuees in planning their evacuation trip once that decision has been made. This function will also allow travelers to change course during the trip based on route and destination conditions.

- Provide evacuation traffic management to assist evacuation coordination personnel in the management of evacuation operations on the transportation network.

- Provide evacuation planning to support the evacuation process by providing information, current and historical, to emergency management planning personnel.

- Promote evacuation resource sharing to allow information and resource sharing between agencies involved in the evacuation including transportation, emergency management, law enforcement and other emergency service agencies.

- Improve the coordination of construction activity and other roadway activities with maintenance.

- Provide infrastructure security against terrorist attacks.

3.3.3 Information Sharing

- Coordinate data collection and information processing, management, and distribution.

- Coordinate data collection programs and sensor installation/operations.

- Inform and exchange data through coordinated operations.

- Centralize information processing, management, and storage.

- Open access to information delivery and use.

- Coordinate information report development.

- Coordinate transportation management strategy development.

A further review of the market packages was necessary to determine those that are feasible for deployment over the near-term. Additionally, the agencies responsible for deployment and the methodology of deployment was also considered prior to developing recommendations to ensure that all projects included in the corridor implementation plan were reasonable, production-ready projects.

The market packages feasible for near-term (ten years) deployment include:

- APTS – fixed-route transit operations, vehicle tracking, routing, and fare payment;
- ATIS – traveler information, 511implementation, and route guidance;
- ATMS – incident/freeway management, RWIS, HOV, and reversible lanes;
- CVO – electronic clearance and WIM;
- Emergency Management – evacuation management, Mayday support, and emergency response;
- Archived Data Management – ITS data mart and central data warehousing; and
- MCO.

In reviewing the potential deployment of these market packages, several of the proposed projects could not be recommended as corridor ITS projects because they are deployed on a statewide, systems-level basis and not on a corridor-by-corridor basis. These market packages include ATIS, CVO, and Archived Data Management. The ITS Central Office will be developing and deploying these ITS on a statewide basis. Additionally, APTS, MCO, emergency response, and evacuation management are deployed through other state or local agency programs.

The remaining market packages for consideration in the *I-10 Corridor Implementation Plan* include ATMS and Mayday services under Emergency Management. The I-10 corridor does not currently have HOV or reverse lane strategies, nor are these improvements planned in the near future. Mayday services include the existing RR Service Patrols and motorist aid call boxes, currently deployed and managed by the FDOT ITS and Traffic Engineering Offices. The current plans for the motorist aid call boxes do not identify future expansion of the system.

Therefore, only two market packages were selected for implementation along the corridors: FMS and RR Service Patrols.

4. Gap Analysis and Other Deployment Issues

4.1 Needs Gap Analysis by Segment and Market Packages

This section provides an analysis of existing, programmed, and planned ITS deployments along the I-10 and I-110 facilities utilizing work program information and conceptual project information provided by the districts. This analysis evaluates areas of ITS coverage and identifies "gaps" in the system. These gaps represent segments of the facilities that will not be addressed by existing, programmed, or planned ITS projects. Section 5 of this report will recommend ITS projects to fill the gaps to provide a consistent, comprehensive ITS infrastructure statewide.

For the purpose of the analysis, the ITS deployments were categorized into two market package areas. These areas are as follows: FMS and RR Service Patrols. Motorist aid call boxes and Evacuation Coordination were included in the gap analysis for potential future deployments.

These market packages were selected for implementation to fulfill one of the most important goals identified for statewide ITS services: moving people and goods safely and effectively. A FMS complimented by the RR Service Patrols and motorist aid call boxes will assist motorists by providing timely, accurate travel data that will reduce the number of incidents, thus saving time, money, and lives. Additionally, these deployments will assist agencies in better detection, verification, and clearance of incidents.

These deployments will also serve to develop a base infrastructure for statewide ITS deployments on which more complex, data intensive ITS services can be deployed. With the data collection, surveillance, and traveler information devices deployed through the implementation of FMS, future ITS deployments such as ATIS, APTS, and CVO will be more effective and more easily implemented.

The classification of these proposed ITS deployments into market package-related areas will assist in identifying appropriate ITS strategies to address the gaps. Table 4.1 illustrates the location of each FMS and RR Service Patrol gap for the I-10 and I-110 facilities. Motorist aid call boxes are located along the entire length of the facility.

Table 4.1 – Identified ITS Functional Gaps

Facility	Service Area	County	District	From	To
I-10	FMS	Washington	3	SR 189 Interchange	
I-10	FMS	Okaloosa	3	CR 279 Interchange	
I-10	FMS	Jackson	3	SR 276 Interchange	
I-10	FMS	Jackson	3	SR 69 and SR 69A Interchanges	
I-10	FMS	Jefferson	3	SR 59 Interchange	
I-10	FMS	Jefferson	3	SR 53 Interchange	
I-10	FMS	Madison, Suwannee, Columbia, Baker, Duval	2	East of CR 257	U.S. 301
I-10	FMS	Duval	2	East of U.S. 301	I-295
I-110	RR Service Patrols	Escambia	3	I-110/I-10 Interchange	I-110 Terminus
I-10	RR Service Patrols	Various	3	Alabama State Line	Washington/Jackson County Line
I-10	RR Service Patrols	Various	3	Washington/Jackson County Line	Madison/Suwannee County Line
I-10	RR Service Patrols	Various	2	Madison/Suwannee County Line	I-295

Source: PBS&J, 2002

4.2 Deployment Issues

Through the deployment of these existing ITS, a number of critical issues have emerged that should be addressed to achieve successful future ITS deployments along the FIHS limited-access corridors. These issues are covered in greater detail in *Technical Memorandum 4.1 – Concept of Operations*; however, a few of the major issues are identified below.

- Incorporating legacy and sunk investments;
- Partnering with local operational management to achieve synergy;
- Promoting efficient operations and management;
- Integrating software to promote statewide coordination and communications;
- Developing statewide standards, specifications, procurement guidelines, and performance measures;
- Balancing the need for local autonomy and control with centralized coordination and cost efficiency;

- Implementing services to provide coordinated operations, active facilities management, and information sharing;
- Supporting the needs of the full range of ITS users including commuters, tourists, commercial vehicles, and evacuees;
- Deploying ITS in a coherent, structured manner that provides a complete backbone of ITS services along the five principal FIHS limited-access corridors at an early stage;
- Developing efficient and rapid deployment based on practical experience and lessons learned throughout Florida and nationally;
- Supporting the effective development and deployment of the communications infrastructure required to support ITS, including the Florida Fiber Network (FFN);
- Supporting continued professional capacity building and training;
- Using ITS to support public safety; and
- Utilizing life-cycle considerations.

5. Conceptual Project Implementation

5.1 Overview

The functional gaps identified in Section 4 were reviewed and developed as recommended conceptual projects for advancement along the I-10 and I-110 corridors. The conceptual projects focused on three main functional areas: FMS, RR Service Patrols, and motorist aid call boxes. These projects were recommended to better detect, verify, and respond to incidents and non-recurring congestion due to incidents. Table 5.1 identifies the conceptual projects and their locations.

Table 5.1 – I-10 Proposed Conceptual Projects

Facility	Service Type	County	District	Area Type	From	To
I-10	FMS	Washington	3	R	SR 189 Interchange	
I-10	FMS	Okaloosa	3	R	CR 279 Interchange	
I-10	FMS	Jackson	3	R	SR 267 Interchange	
I-10	FMS	Jackson	3	R	SR 69 Interchange SR 69A Interchange	
I-10	FMS	Jefferson	3	R	SR 59 Interchange	
I-10	FMS	Jefferson	3	R	CR 257 Interchange	
I-10	FMS	Madison	2	R	U.S. 221 Interchange SR 14 Interchange SR 53 Interchange CR 255 Interchange U.S. 90 Interchange CR 137 Interchange	
I-10	FMS	Madison	2	R		
I-10	FMS	Madison	2	R		
I-10	FMS	Madison	2	R		
I-10	FMS	Suwannee	2	R		
I-10	FMS	Suwannee	2	R		
I-10	FMS	Columbia	2	R	I-75 Interchange	
I-10	FMS	Columbia	2	R	U.S. 41 Interchange U.S. 441 Interchange U.S. 90 Interchange CR 229 Interchange CR 125 Interchange SR 121 Interchange SR 228 Interchange U.S. 301 Interchange	
I-10	FMS	Columbia	2	R		
I-10	FMS	Baker	2	R		
I-10	FMS	Baker	2	R		
I-10	FMS	Baker	2	R		
I-10	FMS	Baker	2	R		
I-10	FMS	Baker	2	R		
I-10	FMS	Duval	2	R		
I-10	FMS	Duval	2	R	East of the U.S. 301	I-295
I-110	RR	Escambia	3	R	I-110/I-10	I-110 Terminus
I-10	RR Service Patrols	Various	3	R	Alabama State Line	Washington/Jackson County Line
I-10	RR Service Patrols	Various	3	R	Washington/Jackson County Line	Madison/Suwannee County Line
I-10	RR Service Patrols	Various	2	R	Madison/Suwannee County Line	I-295

5.2 Project Toolbox

To determine the cost, benefits, and impacts associated with the proposed ITS projects, the type and location of devices and capital equipment were estimated based on conceptual ITS design standards. For the FMS projects, a standard template or toolbox was developed for both rural and urban ITS deployments. Figures 5.1 and 5.2 present the conceptual design template for both the rural and urban FMS applications. The spacing standards included in the toolbox are derived from the review of existing Florida FMS in comparison with national device spacing standards.

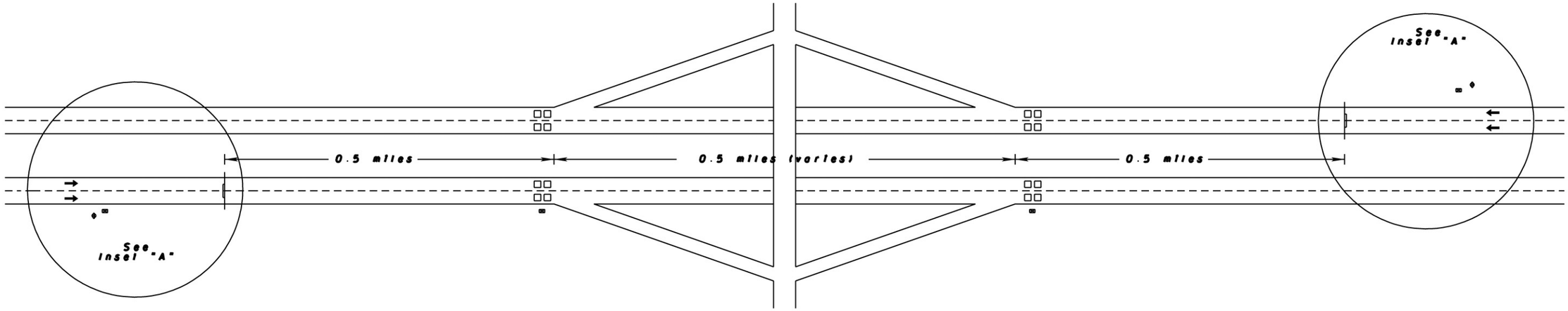
The rural FMS conceptual design illustrates the need for ITS devices primarily at the rural interchanges for incident detection, verification, and clearance. Dynamic message signs (DMS) and closed-circuit televisions (CCTV) are located at the approaches to the rural interchanges and the detection devices are located at all ramps. The urban FMS conceptual design assumes a much higher density of devices due to higher traffic volumes and complexity of data collection needs. The recommended spacing for the urban FMS is a half-mile for CCTVs, detection devices, and DMS at the approach to each urban interchange. Based on district recommendations, CCTVs will be spaced no farther than one mile apart in urban areas.

These toolbox templates were then applied to the proposed corridor projects to determine the number, type, and location of proposed devices which were used to estimate project costs, benefits, and impacts.

5.3 Conceptual Project Descriptions

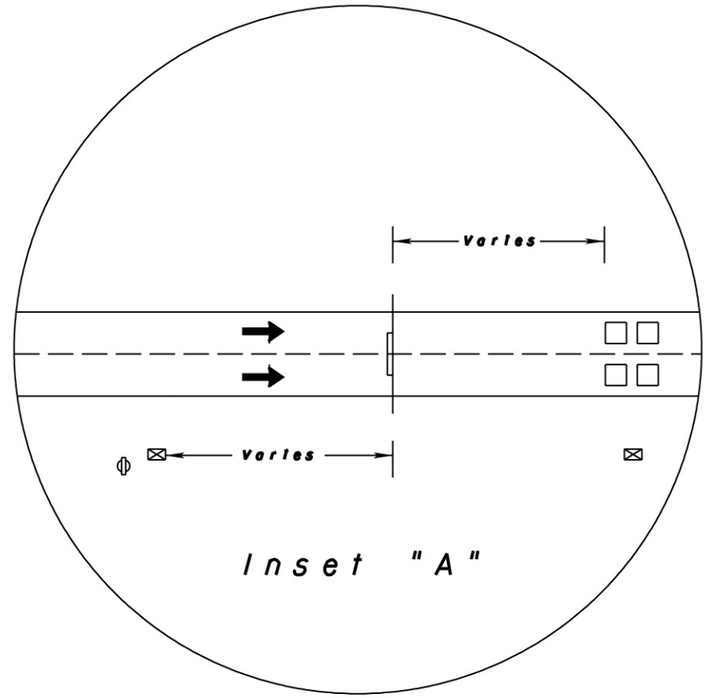
SR 189 Interchange in Okaloosa County and the CR 279 Interchange in Washington County – This project will include the deployment of an IMS/FMS at these two interchanges located on rural four-lane sections of I-10 in District 3. Each interchange ITS deployment will consist of two CCTV cameras, four DMS, and 16 loop detectors. The total number of devices for this project is four CCTV cameras, four DMS, and 32 loop detectors. Although these interchanges are located within the rural freeway IMS ITS project defined by District 3, ITS deployments were not included at these interchanges. They have been proposed as new projects to be included with the deployment of the rural freeway IMS because the SR 189 Interchange with I-10 was identified as a high accident location and CR 279 serves as an evacuation route from the Panama City area via SR 77 and SR 79.

SR 267 Interchange and SR 69 and 69A Interchanges in Jackson County – This project will include the deployment of an IMS/FMS at these two interchanges located on rural four lane sections of I-10 in District 3. Each interchange ITS deployment will consist of two CCTV cameras, four DMS, and 16 loop detectors. The total number of devices for this project is four CCTV cameras, four DMS, and 32 loop detectors. Although these interchanges are located within the rural freeway IMS ITS project defined by District 3, ITS deployments were not included at these interchanges. They have been proposed as new projects to be included with the deployment of the rural freeway IMS because both interchanges were identified as high accident locations and are also shown as moderate priority segments.



Legend

- PTZ CCTV
- DMS and Support
- Direction of Travel
- Cabinet (Typ.)
- Loop Detector



Notes:

1) DMS are spaced at approximately 1.5 miles apart. Actual sign locations must be determined on a site-to-site basis.
2) CCTV cameras will be spaced no farther than 2 miles apart. height of mounting pole and camera zoom capabilities will be determined on a site-to-site basis.
3) Loop Detectors shall be placed no farther than 2 miles apart.
4) The Vehicle Detection Area (VDA) for a rural interchange with no obstructions in the clear zone is approximately 4 miles.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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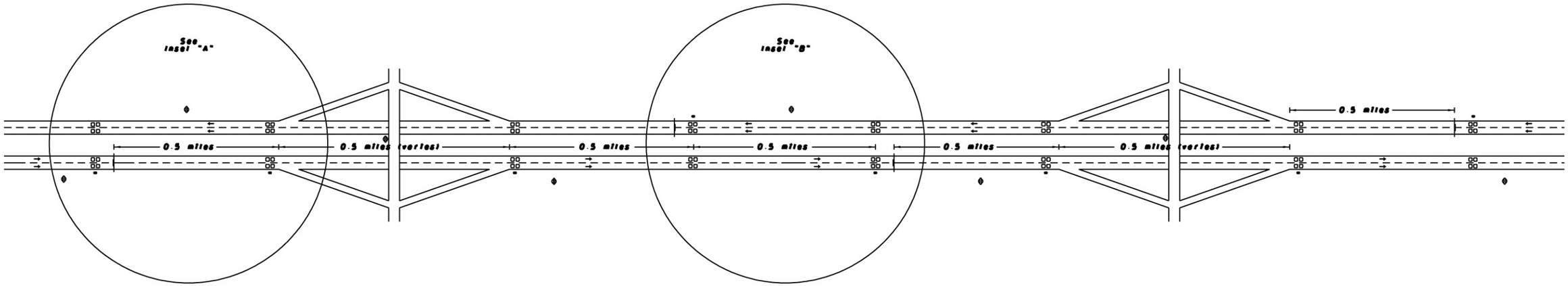
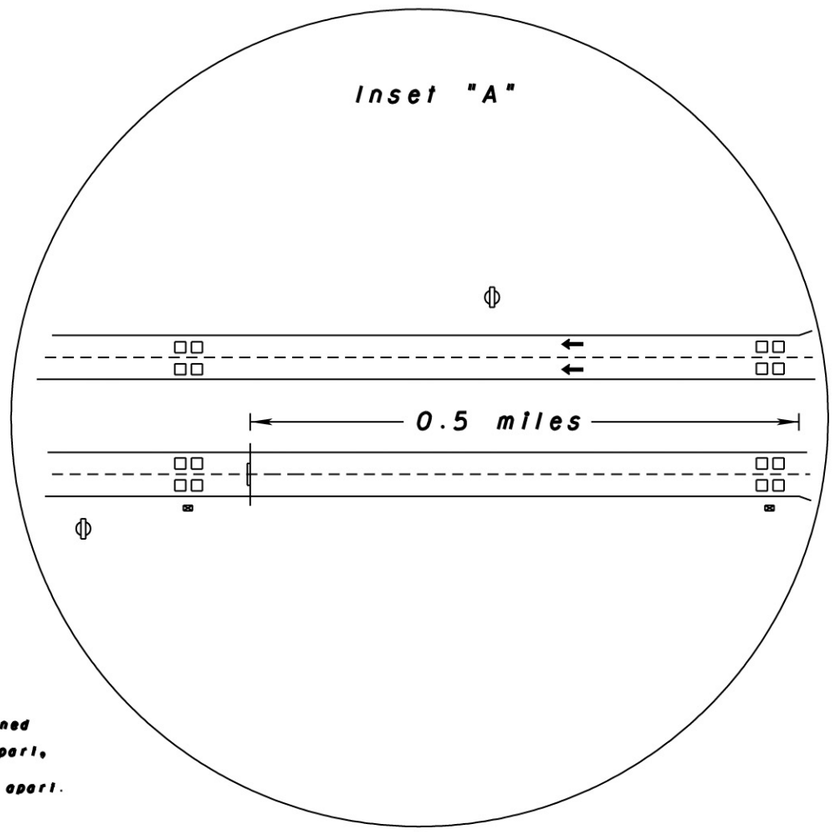
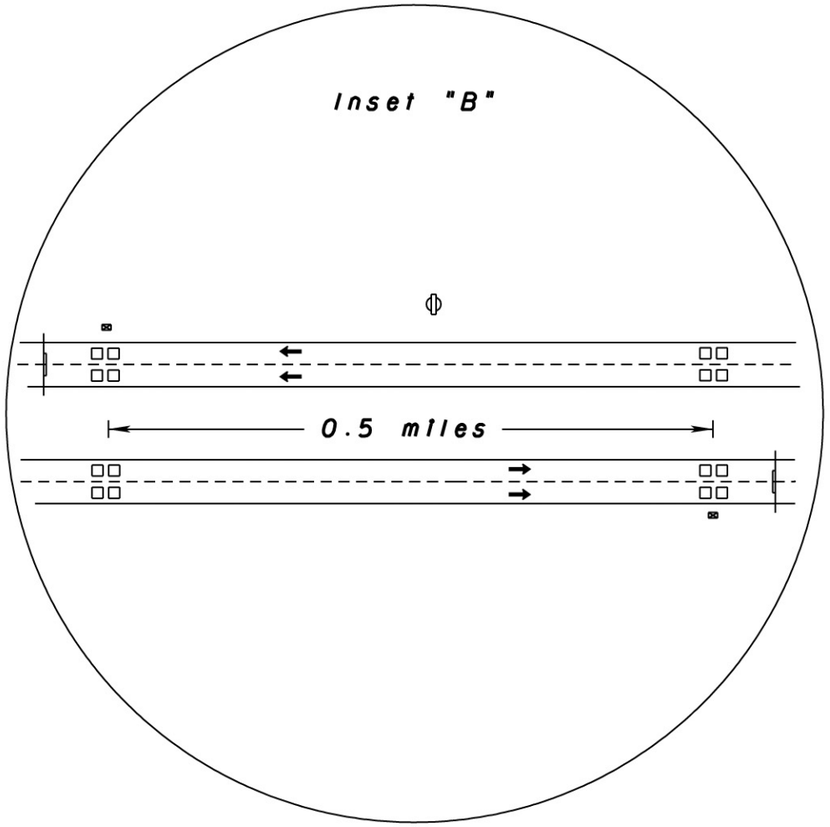
"Typical" Rural Interchange Configuration

Figure 6.1







Legend

- PTZ CCTV
- DMS and Support
- Direction of Travel
- Cabinet (Typ.)
- Loop Detector

Notes:

1) DMS spacings vary. Actual sign locations will be determined on a site-to-site basis.
2) CCTV cameras will be spaced no farther than 0.5 miles apart, height of mounting pole and camera zoom capabilities will be determined on a site-to-site basis.
3) Loop Detectors shall be placed no farther than 0.5 miles apart.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

"Typical" Urban Interchange Configuration

Figure 6.2

SR 59 and CR 257 Interchanges in Jefferson County – This project will include the deployment of an IMS/FMS at these two interchanges located on rural four-lane sections of I-10 in District 3. Each interchange ITS deployment will consist of two CCTV cameras, four DMS, and 16 loop detectors. The total number of devices for this project is four CCTV cameras, four DMS, and 32 loop detectors. Although these interchanges are located within the rural freeway IMS ITS project defined by District 3, ITS deployments were not included at these interchanges. They have been proposed as new projects to be included with the deployment of the rural freeway IMS because both interchanges were identified as high accident locations and are also shown as moderate priority segments.

U.S. 221, SR 14, SR 53, and CR 255 Interchanges in Madison County along with U.S. 90, U.S. 129, and the CR 137 Interchange in Suwannee County – This project will also deploy an IMS/FMS at each of these rural four-lane sections of I-10 in District 2. Each interchange project will consist of two CCTV cameras, two DMS, and 16 loop detectors. The total number of devices for this project is 14 CCTV cameras, 14 DMS, and 56 loop detectors. These interchanges were also proposed as rural ITS deployments as they coincide with high accident locations

I-75/I-10 Interchange Project – This project lies within a rural section of I-10, yet it is a major interchange where incidents are likely to occur and cause delays. In essence, this interchange is a rural interchange operating as an urban interchange. This project will deploy only the I-10 portion of the IMS/FMS needed to support this interchange ITS deployment. Also, this project may require devices to be located on each ramp due to the complexity of the merging and weaving sections of this interchange. The project will have a total of two CCTV cameras, two DMS, and 16 loop detectors. There will also be a proposed I-10 interchange project included in the *I-75 Corridor Implementation Plan* that will include the remaining devices for the completion of the interchange. These two projects may be consolidated into one in the *ITS Program Plan*.

U.S. 41 and U.S. 441 Interchanges in Columbia County, U.S. 90, CR 229, CR 125, SR 121 and the SR 228 Interchanges in Baker County, and the U.S. 301 Interchange in Duval County – The total number of devices needed to support the FMS at these interchanges is 16 CCTV cameras, 16 DMS, and 64 loop detectors.

IMS/FMS from East of U.S. 301 to I-295 in Duval County – This portion of I-10 still consists of four lanes. The total number of devices that is needed to support this portion of the project is eight CCTV cameras, eight DMS, and 64 loop detectors. Integration with the existing FMS along I-10 from I-295 to I-95 will be a consideration in the design of this project.

5.4 Rule 940 Integration

As part of the ITS conceptual project implementation process, the Federal Highway Administration (FHWA) has implemented Rule 940 which guides the integration of ITS projects into the planning process. Rule 940 states that all projects receiving federal funding, in whole or in part, must comply with the stipulations outlined in the rule. Since these projects will be integrated into the statewide ITS program for federal and state funding, the proposed conceptual projects recommended as part of this document must comply.

Rule 940 stipulates that in order for a project to advance into the design phase, a systems engineering analysis must be completed and must include, at a minimum:

- Identification of the portions of the regional (corridor) architecture being implemented;
- Identification of participating agencies' roles and responsibilities; and
- Procurement options.

The following sections address these topics for future project implementation.

5.4.1 Portions of the Corridor Architecture being Implemented

Each district's corridor architecture for I-10 provides a "big picture" or high-level view of ITS in that region. The I-10 corridor architecture consists of both FDOT Districts 2 and 3 I-10 corridor architectures. An ITS architecture typically defines:

- Functions (e.g., gathering traffic information or requesting route information) that must be performed to implement a given user service or market package;
- Physical entities or subsystems where these functions reside (e.g., roadside or the vehicle);
- Interfaces/Information flows between the physical systems; and
- Communications requirements for the information flows (e.g., wireline or wireless).

In addition, it identifies and specifies the requirements for the standards needed to support national and regional interoperability, as well as product standards needed to support economy of scale considerations in deployment. More information on the development of the corridor architecture is contained in *Technical Memorandum No. 3.4 – ITS Physical Architecture*.

To illustrate the architectural elements, subsystems, and the data flows between subsystems for a particular project, customized market package diagrams were developed. These diagrams have been included in Appendix A. Table 5.2 identifies the market packages from the *NITSA*, and the statewide and corridor architectures that were implemented by the proposed I-10 corridor projects. The boxes with the checks are included in the corridor architectures. The FMS projects implement ATMS market packages. They are as follows: ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, ATMS09, ATMS18, and FL ATMS20. The RR Service Patrol projects implement portions of EM1, EM2, EM3, and FL EM4.

Table 5.2 – Architecture Market Packages Implemented by the I-10 Projects

MP NO.	Market Package Name	FMS	RR Service Patrols	Motorist Aid Call Boxes
Advanced Traffic Management Systems (ATMS)				
ATMS01	Network Surveillance	✓		
ATMS04	Freeway Control	✓		
ATMS06	Traffic Information Dissemination	✓		
ATMS07	Regional Traffic Control	✓		
ATMS08	Incident Management System (IMS)	✓		
ATMS09	Traffic Forecast and Demand Management	✓		
ATMS18	Road Weather Information System (RWIS)	✓		
FL ATMS20	Speed Management	✓		
Emergency Management				
EM1	Emergency Response		✓	✓
EM2	Emergency Routing	✓	✓	✓
EM3	Mayday Support		✓	✓
FL EM4	Evacuation Management	✓	✓	

5.4.2 Institutional Agreements

A critical step of ITS project implementation is to identify existing and proposed institutional agreements among agencies or between agencies and private entities addressing ITS services or deployments. The effectiveness of ITS implementations depends on the support and cooperation of many stakeholders, while the efficiency depends on the identification of a clearly defined organization system, lines of communication, and responsibilities and roles. Each stakeholder must have a consensus and understand how they are to participate, where they are needed, what their duties will be, when they will be needed, and who will be responsible. These agreements can be extended over local, regional, and statewide jurisdictions. Depending on the service provided, roles taken by participating stakeholders, familiarity among and between stakeholders, and the internal legal restrictions between each stakeholder organization, agreements could take one of several forms:

- Informal
  - Verbal

- Semi-Formal
  - Memorandum of Understanding (MOU)
  - Letters of Agreement (LOA)

- Formal
    - Recorded Contracts

As needs, services, stakeholder involvement, and system architectures are refined, issues will become better identified, establishing a basis for the types of agreements to be pursued. Generally, those agreements will fall into one or more of the categories listed below.

Jurisdictional Authority Agreements are needed when there is more than one agency providing similar or identical services within the same region and authority has not been clearly established by the Legislature. In these instances, there is a need for the participating agencies to clearly understand who will have authority and responsibility for given situations or circumstances where authority may be invoked and under what conditions that authority may be transferred.

Legal Agreements are needed when there are public agencies procuring services and/or commodities or leasing commodities from private entities.

Resource Allocation / Sharing Agreements are needed when there is more than one agency that will provide similar or identical services within the same region. In this instance, the agreement establishes what resources will be allocated by each of the agencies and how the sharing will take place. Resources could be staff, maintenance vehicles, replacement equipment, or transportation management facilities. Costs and benefits are outlined and clear lines of communication and responsibility for funding, operations, and maintenance are established.

Funding Agreements are needed when there will be a sharing of planning, design, procurement, operations, and maintenance services among public agencies and even public/private ventures. Funding areas that will most likely be the subject of interagency agreements are as follows:

- Non-Recurring Costs –
    - Planning;
    - Design;
    - Construction; and
    - Property.

- Recurring Costs –
    - Utilities;
    - Power;
    - Communications; and
    - Software / Hardware enhancements, upgrades, and expansions.

Communications / Coordination Agreements are needed when there are agencies or public/private ventures sharing responsibility for operating and maintaining services and systems.

Planning Agreements are needed when there is more than one agency with an interest in the development of a service or services in the same region. These agreements will typically address funding, responsibility, scheduling and milestones, stakeholder review, and areas of special interest.

Design Agreements are needed when there is more than one agency pursuing the development of a service or services in the same region. These agreements will typically address funding, responsibility, scheduling and milestones, stakeholder review, and areas of special interest.

Procurement Agreements are needed when there is more than one agency involved in providing similar or identical services within the same region, requiring similar or identical private services and equipment. In this instance, the agreement establishes what resource will be procured by each of the agencies, how the funding will take place, how upgrades, enhancements, warranties, and/or replacements will be handled, and who will be responsible for operations and maintenance. Funding areas that will most likely be the subject of interagency agreements are as follows:

- Field Equipment;

- Physical Plant Facility –
  - Building;
  - Property;
  - Security;
  - Furnishings; and
  - Communications; and

- Hardware / Software.

Construction Agreements are needed when there is more than one agency involved in providing similar or identical services within the same region, requiring similar or identical private services and equipment. In this instance, the agreement establishes what each agency's responsibility is and how the funding and approvals will be handled.

Operations Agreements are needed when there is more than one agency providing similar or identical services within the same region. In this instance, the agencies will identify which portions of the operation each will be responsible for, how that responsibility will be shared or transferred when warranted, and how funding will be handled. Operations areas that will most likely be the subject of interagency agreements are as follows:

- Staffing;
- Security;
- Hardware / Software management;
- Communications plants;
- Signal control;
- Incident management;

- Data management;
- Data distribution;
- Changeable message sign (CMS) operation and control;
- CCTV operation and control; and
- Detection systems operation and control.

Maintenance Agreements are needed when there is more than one agency providing similar or identical services within the same region. In this instance, the agencies will identify which portions of the maintenance each will be responsible for, how that responsibility will be shared or transferred when warranted, and how funding will be handled. Maintenance areas that will most likely be the subject of interagency agreements are as follows:

- Field Equipment;

- Physical Plant Facility –
  - Building management;
  - Security;
  - Furnishings; and
  - Grounds;

- Hardware / Software;

- Communications Management; and

- Utility Locations.

Several existing agreements for the I-10 corridor are identified in *Technical Memorandum No. 1 – ITS Legacy Catalog* as follows:

- **Joint ITS Agreement for the District 2 ITS** – This agreement is between FDOT District 2 and the Department of Highway Safety and Motor Vehicles (DHSMV). It is a five-year agreement, originally initiated in April 2001, which addresses the operation and maintenance of a TMC, staffing of the TMC, and traffic management on the interstate system. District 2 designed, installed, and maintains the ITS services; FHP provides staff for monitoring and dispatching; and District 3 provides an attendant for TMC equipment maintenance.

- **MOU for the Florida Bay County ITS Integration Project** – This agreement is between FDOT District 3, the Bay County Traffic Engineering Department, and the Bay County School District. It defines the roles and responsibilities of each agency in the design, construction, implementation, operation, and maintenance of the ATMS and fiber optic communications plant. District 3 will design and construct the FON and plant, which includes integration with the existing Hathaway Bridge IMS. Bay County Engineering will be responsible for long-term operations and maintenance of the system

and components and the school board will participate in the funding of the system in exchange for use of the FON. The system is planned to connect to the FFN.

- **Operation Agreements of Motorist Aid Call Boxes –** A statewide motorist aid system using roadside call boxes has been deployed along the entire I-10 corridor at one-mile intervals. The call boxes are a partnership between FDOT and the FHP. Each FDOT district maintains the call boxes, acknowledges calls for assistance, and redirects calls to the FHP. FHP dispatches service vehicles to aid the motorists. The system utilizes a microwave communications backbone operated and maintained by FDOT.

Based on the defined FMS and RR Service Patrol projects for I-10, the agreements shown in Table 5.3 may be necessary to provide support for the ITS deployments and cooperation among the stakeholders.

Table 5.3 – Institutional Agreements for Future ITS Project Implementations

Category	Stakeholders		Agreement
Freeway Management Systems	**FDOT District 2**	FDOT District 3	**Jurisdictional Authority Agreement** for FDOT District 3 to maintain and operate the I-10 corridor segment between the current district boundary and the proposed RTMC boundary.
	FDOT District 2's Jacksonville RTMC	FDOT District 3's Tallahassee RTMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between RTMCs.
		City of Jacksonville TMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local TMC.
		FHP Troop B, G	**Operations/Maintenance Agreements** for regional security, incident management, and operations between the RTMC and FHP.
	FDOT District 3's Tallahassee RTMC	Pensacola Satellite Traffic Operation Facility	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the STMC.
		Escambia County TMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local TMC.
		Leon County TMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local TMC.
	FDOT District 3's Tallahassee RTMC	FHP Troop A, H	**Operations/Maintenance Agreements** for regional security, incident management, and operations between the RTMC and FHP.
	Escambia County TMC	City of Pensacola TMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between local TMCs.
	Leon County TMC	City of Tallahassee Traffic Control Center	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between local TMCs.

Table 5.3 (Continued)

Category	Stakeholders	Agreement	Category
RR Service Patrols	FDOT District 2's Jacksonville RTMC	Private Sectors	**Legal Agreements** for FDOT procuring services from private sectors.
	FDOT District 3's Tallahassee RTMC	Private Sectors	**Legal Agreements** for FDOT procuring services from private sectors.
	FDOT District 2's Jacksonville RTMC	FDOT District 3's Tallahassee RTMC	**Operations/Maintenance Agreements** for incident management and operations between RR Service Patrols and RTMCs.
FMS / RR Service Patrols	FDOT District 2	FDOT District 3	**Funding, Design, Planning, Procurement, Construction, and Operations and Maintenance Agreements** when implementing ITS projects among authorities.

5.4.3 Procurement Options for ITS Projects

When implementing ITS, states have several types of contracting options available for procurement purposes. If utilizing federal funding sources, the issue of whether the project qualifies as "construction" must be addressed. In general terms, a project can be classified as construction if it is primarily concerned with the building or reconstruction of a highway or with the direct facilitation of traffic control.

Although ITS are by their nature intended to ease congestion and positively affect the flow of traffic, they may not meet the federal definition of construction for the purposes of limiting contracting options. Any project that strictly involves the installation of field devices is considered construction. However, if the project involves software for controlling the devices or the configuration of the devices in a central control or communications center/system, it is not construction. Also, if the project requires only limited installation of field devices, such as with wireless communications and portable message signs, then the project will not be considered as a construction project. Each project and its unique qualities must be considered individually in order to determine whether it might be classified as construction.

Projects utilizing federal funding sources must be categorized into either "construction" or "non-construction" type projects. The reason for this categorization is that federal laws require projects federally funded to be procured using particular contracting methods. Historically, state departments of transportation (DOTs) have engaged almost exclusively in projects firmly in the construction category. However, more recently, the DOTs have been becoming involved in projects that have elements not clearly within that arena. Although ITS projects are intended to address surface transportation issues familiar to DOTs such as safety, efficiency, mobility, congestion, and quality of life (generally the same issues addressed by traditional construction projects), they also include elements such as telecommunications, computers, software, electronics, and sensing technologies that are new to DOT project managers. Therein lies the difficulty in deploying ITS projects.

There are four types of contracting possibilities that are applicable to ITS project procurement. These types are:

- Traditional construction contracts;
- Engineering and design services contracts;
- Non-engineering and non-architectural contracts; and
- Innovative contracts.

Title 23 United States Code (USC), Section 101, defines construction as:

> *"…the supervising, inspecting, actual building, and all expenses incidental to the construction or reconstruction of a highway,…**and improvements which directly facilitate and control traffic flow**, such as grade separation of intersections, widening of lanes, channelization of traffic, **traffic control systems**, and passenger loading and unloading areas."*

It is apparent from this definition that ITS projects can and do include components that fit this definition; however, they also include components that do not. Table 5.4 illustrates some of the possible components of an ITS project and how they can be classified as construction or non-construction.

Table 5.4 – Classification of ITS Project Components

Classification	Component
Construction	• Physical installation of field hardware and devices for freeway management and traffic signal systems including DMS, ramp meters, new traffic signals, new controller cabinets, land-use control signs, and vehicle detectors. • Installation of towers to support wireless communications, direct-bury conduit, and hardwire interconnect between signals and field devices or systems. • Installation of field hardware and devices to provide detection and verification capabilities.
Non-Construction	• Procurement of portable message signs, field device and communications system interfaces, operating system software development, and computer hardware. • Communications devices that are wireless or require only limited installation in concept. • Coordination and pre-planned incident management activities such as service patrols, route diversion, E-911 systems, computer-aided dispatch (CAD) systems, radio systems, and special events coordination.

Source: FHWA Memorandum, "*Procurement Information for ITS Projects*," May 1997.

The traditional procurement method employed in construction projects is the competitive bidding process wherein the lowest responsive and responsible bidder is selected. Although this method has been proven effective with construction projects, its success with ITS projects is not as clear. One reason is the fact that the separation between the design and construction elements of an ITS project is difficult to determine. Another is that a typical ITS project involves the implementation of advanced technologies including software development and the integration of computer-based systems, and expertise with such technologies is rare among construction contractors that normally bid on DOT projects.

Engineering and design services' contracts are defined by Title 23, Code of Federal Regulation (CFR), Part 172, as program management, construction management, feasibility studies, preliminary engineering, design, engineering, surveying, mapping, or architectural related services. The agency may retain such services prior to construction to obtain such deliverables as functional definition, preliminary or final design, feasibility analysis, and plans, specifications, and estimates, and use the documents in bid invitation, evaluation, and award.

Non-engineering/non-architectural contracts typically apply to procuring goods, services, supplies, equipment, and research and planning studies such as ITS field operational tests and early deployment studies.

Innovative contracts refer to contracting techniques having the potential to reduce life-cycle costs and maintain product quality. FHWA established Special Experimental Project No. 14 (SEP-14) – Innovative Contracting Practices in 1990 in order to enable states to implement and evaluate non-traditional contracting practices that would allow them to add quality and timeliness to their projects while maintaining the advantage of competition in the procurement process. Examples of innovative contracts are lane rental, warranty, cost-plus-time bidding, and design-build. However, all of the above practices, with the exception of design-build, have subsequently been approved by FHWA as non-experimental and now require only FHWA division administrator approval. Currently, only projects that utilize factors other than costs in the award process and those that incorporate both design and construction in one contract (design-build) require approval from FHWA headquarters as "experimental" contracting practices.

Although the above descriptions appear to be constraining, there are several contracting techniques that allow more flexibility under each procurement type. The selection of appropriate contracting options depends on several variables, including:

- Type and complexity of project requirements;
- Interdependence of subsystems and components of the project;
- Inclusion of roadway construction along with ITS services;
- Implementation of emerging and/or rapidly changing technologies;
- Need for contractor pre-qualification; and
- Limited or constrained project schedule.

One method of increasing the likelihood of an ITS project being successfully implemented is grouping the project elements into logical components and using the appropriate procurement method for each. Typical project components may be products, systems, and services. The physical installations can employ the traditional design-bid-build method while a systems manager can be retained in order to accomplish new systems development or integration with legacy systems. For extremely complex or severely schedule-limited projects, the design-build technique may be appropriate. In addition, applying the pre-qualification feature of contracting techniques can complement each of the above options. Design-build is unique in that it is the only technique that combines the engineering and design services phase and the construction phase into one contract. The design-bid-build and systems manager techniques both divide these two phases into two separate contracts.

Design-Bid-Build Approach – Design-bid-build is probably the most familiar project delivery vehicle to most transportation professionals. In this scenario, the project design is accomplished by either a contracted engineering consultant or by in-house staff. The next step is to invite contractors to submit bids and, after awarding the contract to the lowest bidder, the project is constructed. While this method is effective with traditional construction projects, difficulties may be encountered when the project includes components such as computer hardware and software, communications systems, other rapidly changing technologies, and in cases where the functional and operational requirements of the project are not clearly defined. It can, however, be well suited for ITS projects characterized by tasks such as constructing a TMC, system expansion where detailed specifications are available, off-the-shelf or proprietary components,

and physical installations of devices. This familiar technique for procurement can be beneficial due to the increased level of competition and pool of potential bidders, its simplicity, and the lack of need for justification of its use. Its limitations for project elements like those mentioned previously are highlighted by the challenges of providing detailed requirements that allow the establishment of realistic low bids, minimizing deployment schedules, and finding a single vendor with adequate knowledge and experience to perform all required services at a fixed price.

Design-Build Approach – Design-build is a contracting technique that, rather than having two sequential contracts for engineering and design services and construction as in design-bid-build, combines the two "phases" to be let as one contract. Some of the challenges associated with employing design-bid-build can be overcome using design-build. In addition, features such as pre-qualification, competitive sealed bidding, and basing award criteria on price and other factors increase its flexibility. This technique is especially useful for projects that have clearly defined functional and performance requirements, but can potentially benefit from innovation in the achievement of those goals. In addition, projects requiring significant systems integration and having complex, unknown, or rapidly changing technology components or severe schedule limitations are well suited for design-build.

The transportation agency typically provides preliminary plans, detailed specifications, design criteria, and scope of work to prospective bidders, and the proposals are ranked based on design quality, management capability, scheduling, and cost. The selected contractor is then responsible for completing detailed design and systems engineering, procurement of all devices, systems, and services, testing, inspection and system integration, and final systems deployment. In some cases, the deployed system is leased, maintained, or operated by the contractor for a specified period of time before final acceptance by the agency. The design-build technique allows maximum flexibility for design innovation, optimizes project development and deployment as well as schedule, and provides a single point of contact for consistent and continuous quality assurance throughout the project. However, difficulties may arise with this method if well-defined functional and operational specifications are not developed beforehand. Also, the requirement for overlapping skills in design, integration, and construction along with the increased burden of responsibility and risk to the contractor may limit the pool of prospective bidders and may result in higher overall cost to the agency.

In the last quarter of 2001, both the federal and state governments took steps to simplify, broaden, and ease the restrictions for using the design-build contracting method.

In November, Florida Governor Jeb Bush signed a bill, CS/SB 24-B, which will allow FDOT, until June 30, 2003, to combine right-of-way phases with design and construction phases and allows FDOT to enter into design-build contracts prior to obtaining title for all right-of-ways. The bill also lifted the $120 million annual statewide limit for design-build projects.

In October, the FHWA issued a Notice of Proposed Rulemaking to implement regulations for design-build contracts. Currently, all design-build projects are considered "experimental" and states must follow the procedures of SEP-14 to qualify for federal aid. The Notice of Proposed Rulemaking proposes to allow the use of design-build contracting under new regulations for "qualified projects," while projects which are not "qualified" would continue to follow the SEP-

14 procedures. Qualified projects are defined in the Notice of Proposed Rulemaking as any project with a total estimated cost greater than $50 million or an ITS project greater then $5 million.

Systems Manager Approach – The systems manager approach is a project delivery strategy that incorporates elements of both the design-bid-build and the design-build techniques. The systems manager responsibilities overlap the design and construction phases of the project, typically including development of plans, specifications, and estimates, development of project sequencing, and coordination of subsystems, design, inspection, testing, and integration of system components into a complete operating system. This technique employs the separate services of "engineering and design" and "construction" while maintaining a single point of responsibility for system design and integration. Project elements that make the systems manager option attractive are projects including complex or rapidly changing technologies such as computer hardware, software, and communications, and extensive integration and/or expansion of subsystems or legacy systems. Benefits of this technique include providing seamless systems integration and deployment which has the potential to positively impact the cost-effectiveness and schedule of the project, allowing greater flexibility in the determination of scope of work and system requirements and allowing the agency to maintain authority for project management. On the other hand, costs may increase, the systems manager may not have control over construction contracts, and the need for quality oversight by the agency is great in order to avoid design errors and omissions.

In addition to the above techniques, agencies may employ the pre-qualification feature of contracting in order to limit potential contractors to those that possess the required skills, experience level, and familiarity to design or construct an ITS project containing advanced technologies and complex systems. This feature can enhance the potential for a quality project by increasing the likelihood of selecting an experienced consultant or contractor that possesses the specific skills and experience required to develop or deploy the project. However, care must be taken to ensure that the pre-qualification criteria do not fail to incorporate skills specific to ITS components if done as part of a larger project. Also, this feature may increase the costs and time to deploy a project due to the required development of the criteria as well as the added step in the selection process.

The following additional optional provisions, which are no longer considered experimental by FHWA, may also be incorporated if applicable to ITS projects. Cost-plus-time bidding encourages contractors to complete a project ahead of schedule by offering financial incentives and discourages schedule overruns by assessing fees. Lane rental is used to minimize construction impacts on travelers by requiring the contractor to pay fees, weighted for peak travel periods, for lane or ramp closures. Warranty provisions require the prime contractor to guarantee workmanship or materials for a limited time period.

5.4.4 Summary

Perhaps the most important aspect of successful ITS project deployment is an agency's ability to maintain a flexible approach to choosing a method of procurement. Because each project is unique and has vastly differing elements of construction, system development and integration, complex technologies, and cost and schedule constraints, each project must be considered and its components defined individually. The procurement method chosen will significantly affect the deployment of the project. Since ITS projects are not typical highway construction projects, traditional methods employed by transportation agencies may not be the best solution. Since construction, engineering and design services, and non-engineering/non-architectural types of projects form the framework for grouping requirements in terms of products, services, and systems, the best solution may sometimes be to divide the project into components that individually meet these definitions and select procurement options accordingly. Because the "line" between construction and design may not be easily identified, this task may be one of the most challenging in the process.

5.5 Operations and Management

The division of roles and responsibilities for the management and operations of the I-10 ITS is both functional and geographic. The functional division of responsibilities for I-10 occurs with the Evacuation Coordination User Service. During evacuation conditions, the State Emergency Operations Center (SEOC) is responsible for command and control of all state resources as outlined in the general approach to operations. The District 2 and District 3 offices are responsible for the command and control of the corridor for the application of all other operational functions. Command and control of operations of the I-10 corridor will be as follows:

- District 3 is fully responsible for the I-10 corridor in District 3 from the Alabama State Line to U.S. 90 in Suwannee County from the Tallahassee RTMC (planned).
- District 3 is fully responsible for the full extent of the I-110 corridor in Escambia County.
- District 2 is fully responsible for the I-10 corridor in District 2 from U.S. 90 in Suwannee County to I-95 in District 2 from the Jacksonville RTMC.

Based on an analysis of the division boundaries and regional communications center (RCC) boundaries, it may be reasonable for District 2 to consider relinquishing command and control decisions for I-10 in accordance with the RCC boundaries. This approach would create a more efficient dispatch and operational response to incidents occurring along this largely rural corridor. However, this proposal is conceptual and limited discussions regarding this concept have occurred between the districts at this time.

In addition to the primary command and control responsibilities for the corridor, the Pensacola Secondary Traffic Management Center (STMC) (planned) will serve as the secondary control center for the Tallahassee RTMC and the Lake City Virtual Traffic Management Center (VTMC) (planned) will serve as the secondary control center for the Jacksonville RTMC. Jurisdictional boundaries for maintenance of the ITS infrastructure and devices along the corridor will be coincidental with the operational boundaries between Districts 2 and 3.

5.6 Project Cost Estimates

As discussed previously in Section 5.2, the toolbox was used to estimate the project devices and conceptual design. These devices were then inventoried for each proposed project and a unit cost was applied to the devices to determine construction, operations, and maintenance costs for the proposed projects. The unit costs are based on estimates provided by the districts as well as the FHWA ITS Unit Costs Database. Each proposed project was then combined with the projects developed by FDOT Districts 2 and 3. The unit costs are provided in Appendix B.

The same methodology was used to calculate the costs of the planned I-10 projects presented by District 3. The devices and device locations were derived from the *I-10 ITS Feasibility Stud*y prepared by District 3 and the FHWA ITS unit costs were applied to develop project cost estimates consistent with the proposed projects. The planned project costs were compared to the costs developed by District 3 to ensure that the revised costs were, at a minimum, no less than the district's estimated project costs. The RR Service Patrol cost estimates are for initiation of services only and were based on FHWA cost estimates.

Operations and maintenance costs were calculated based on the life cycle of the project devices, assuming a ten-year life cycle. The life-cycle unit costs were also derived from the FHWA ITS Unit Costs Database and are also contained in Appendix B. Once the construction, operations, and maintenance costs were estimated, design and construction, engineering, and inspection costs were calculated based on FDOT standard cost estimation methodology that assumes a percentage of the project construction cost. Fifteen percent of the construction cost was assumed for design and twenty percent was assumed for construction, engineering, and inspection. Table 5.5 and Figure 5.3 illustrate all of the ITS needs for the I-10 corridor.

Table 5.5 - Corridor Needs

Facility: *I-10*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
2	Jacksonville RTMC	Jacksonville RTMC	Jacksonville RTMC Relocation for Joint Dispatch Building	RTMC	PE	$0.200
2	Jacksonville RTMC	Jacksonville RTMC	Jacksonville RTMC Relocation for Joint Dispatch Building	RTMC	CONST	$6.000
2	Jacksonville RTMC	Jacksonville RTMC	Jacksonville RTMC Relocation for Joint Dispatch Building	RTMC	CEI	$1.200
2	US 301Interchange	I-295 Interchange	Rural Areas Freeway Management System (R-5)	FMS	PE	$0.402
2	US 301Interchange	I-295 Interchange	Rural Areas Freeway Management System (R-5)	FMS	CONST	$2.682
2	US 301Interchange	I-295 Interchange	Rural Areas Freeway Management System (R-5)	FMS	CEI	$0.537
2	US 221 Interchange	CR 255 Interchange (Madison)	Rural Areas Freeway Management System (R-6)	FMS	PE	$0.402
2	US 221 Interchange	CR 255 Interchange (Madison)	Rural Areas Freeway Management System (R-6)	FMS	CONST	$2.682
2	US 221 Interchange	CR 255 Interchange (Madison)	Rural Areas Freeway Management System (R-6)	FMS	CEI	$0.537
2	US 90 Interchange	SR 228 Interchange	Rural Areas Freeway Management System (R-8)	FMS	PE	$0.402
2	US 90 Interchange	SR 228 Interchange	Rural Areas Freeway Management System (R-8)	FMS	CONST	$2.682
2	US 90 Interchange	SR 228 Interchange	Rural Areas Freeway Management System (R-8)	FMS	CEI	$0.537
2	US 90 Interchange (Suwannee)	CR 137 Interchange (Suwannee)	Rural Areas Freeway Management System (R-9)	FMS	PE	$0.302
2	US 90 Interchange (Suwannee)	CR 137 Interchange (Suwannee)	Rural Areas Freeway Management System (R-9)	FMS	CONST	$2.012
2	US 90 Interchange (Suwannee)	CR 137 Interchange (Suwannee)	Rural Areas Freeway Management System (R-9)	FMS	CEI	$0.402
2	I-75 Interchange	US41 / US441 Interchange	Rural Areas Freeway Management System (R-7)	FMS	PE	$0.302
2	I-75 Interchange	US41 / US441 Interchange	Rural Areas Freeway Management System (R-7)	FMS	CONST	$2.012
2	I-75 Interchange	US41 / US441 Interchange	Rural Areas Freeway Management System (R-7)	FMS	CEI	$0.402
				PDC Sum		$23.696

Table 5.5 - Corridor Needs

Facility: *I-10*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
3	Pensacola TMC	Pensacola TMC	Pensacola Traffic Management Center Building	RTMC	PE	$0.120
3	Pensacola TMC	Pensacola TMC	Pensacola Traffic Management Center Building	RTMC	CONST	$1.650
3	Pensacola TMC	Pensacola TMC	Pensacola Traffic Management Center Building	RTMC	CEI	$0.330
3	Pensacola TMC	Pensacola TMC	Pensacola Traffic Management Center Systems	RTMC	CONST	$0.573
3	Alabama State Line	Jefferson / Madison Co. Line	Portable DMS (12) for Emergency Management	EVAC	CONST	$0.360
3	Tallahassee RTMC	Tallahassee RTMC	Tallahassee Regional Traffic Management Center Building	RTMC	PE	$0.116
3	Tallahassee RTMC	Tallahassee RTMC	Tallahassee Regional Traffic Management Center Building	RTMC	CONST	$1.638
3	Tallahassee RTMC	Tallahassee RTMC	Tallahassee Regional Traffic Management Center Building	RTMC	CEI	$0.328
3	Tallahassee RTMC	Tallahassee RTMC	Tallahassee Regional Traffic Management Center Systems	RTMC	CONST	$0.573
3	Welcome Center	East of SR 87	Pensacola Area Freeway Management System	FMS	PE	$0.931
3	Welcome Center	East of SR 87	Pensacola Area Freeway Management System	FMS	CONST	$6.205
3	Welcome Center	East of SR 87	Pensacola Area Freeway Management System	FMS	CEI	$1.241
3	West of US 90 (Gadsden County)	East of US 90 (Leon County)	Tallahassee Area Freeway Management System	FMS	PE	$0.696
3	West of US 90 (Gadsden County)	East of US 90 (Leon County)	Tallahassee Area Freeway Management System	FMS	CONST	$4.637
3	West of US 90 (Gadsden County)	East of US 90 (Leon County)	Tallahassee Area Freeway Management System	FMS	CEI	$0.927
3	SR 189 Interchange	CR 257 Interchange (Jefferson)	Rural Areas Freeway Management System (R-1)	FMS	PE	$0.704
3	SR 189 Interchange	CR 257 Interchange (Jefferson)	Rural Areas Freeway Management System (R-1)	FMS	CONST	$4.694
3	SR 189 Interchange	CR 257 Interchange (Jefferson)	Rural Areas Freeway Management System (R-1)	FMS	CEI	$0.939
3	SR 285 Interchange	SR 79 Interchange	Rural Areas Freeway Management System (R-2)	FMS	PE	$0.402
3	SR 285 Interchange	SR 79 Interchange	Rural Areas Freeway Management System (R-2)	FMS	CONST	$2.682
3	SR 285 Interchange	SR 79 Interchange	Rural Areas Freeway Management System (R-2)	FMS	CEI	$0.537
3	SR 77 Interchange	SR 69A Interchange	Rural Areas Freeway Management System (R-3)	FMS	PE	$0.503

Table 5.5 - Corridor Needs

Facility: *I-10*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
3	SR 77 Interchange	SR 69A Interchange	Rural Areas Freeway Management System (R-3)	FMS	CONST	$3.353
3	SR 77 Interchange	SR 69A Interchange	Rural Areas Freeway Management System (R-3)	FMS	CEI	$0.671
3	SR 69 Interchange	SR 267 Interchange	Rural Areas Freeway Management System (R-4)	FMS	PE	$0.310
3	SR 69 Interchange	SR 267 Interchange	Rural Areas Freeway Management System (R-4)	FMS	CONST	$2.064
3	SR 69 Interchange	SR 267 Interchange	Rural Areas Freeway Management System (R-4)	FMS	CEI	$0.413
3	US 90 West	US 90 East	Fiber Optic Network	FON	PE	$0.208
3	US 90 West	US 90 East	Fiber Optic Network	FON	CONST	$1.740
3	US 90 West	US 90 East	Fiber Optic Network	FON	CEI	$0.139
3	Alabama State Line/I-10 Welcome Center	SR 87	Fiber Optic Network	FON	PE	$0.326
3	Alabama State Line/I-10 Welcome Center	SR 87	Fiber Optic Network	FON	CONST	$2.719
3	Alabama State Line/I-10 Welcome Center	SR 87	Fiber Optic Network	FON	CEI	$0.218
3	Jefferson/Madison Co. Line	I-295	Fiber Optic Network	FON	PE	$1.684
3	Jefferson/Madison Co. Line	I-295	Fiber Optic Network	FON	CONST	$14.030
3	Jefferson/Madison Co. Line	I-295	Fiber Optic Network	FON	CEI	$1.120
3	SR 87	US 90 West	Fiber Optic Network	FON	PE	$2.230
3	SR 87	US 90 West	Fiber Optic Network	FON	CONST	$18.660
3	SR 87	US 90 West	Fiber Optic Network	FON	CEI	$1.490
3	US 90 East	Jefferson/Madison Co. Line	Fiber Optic Network	FON	PE	$0.361
3	US 90 East	Jefferson/Madison Co. Line	Fiber Optic Network	FON	CONST	$14.030
3	US 90 East	Jefferson/Madison Co. Line	Fiber Optic Network	FON	CEI	$1.120
				PDC Sum		$97.670

Table 5.5 - Corridor Needs

Facility: *I-110*

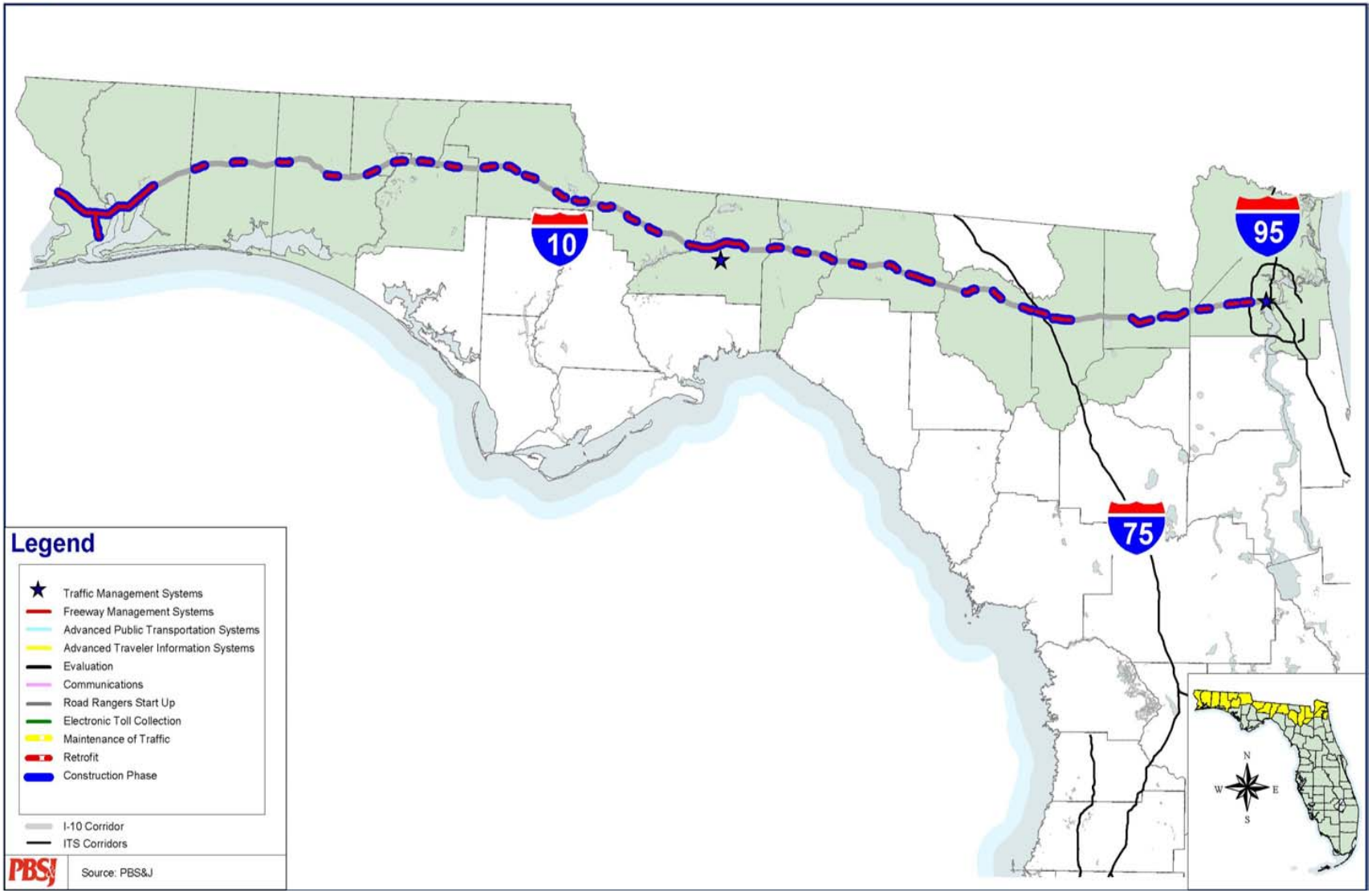
District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
3	I-10	Pensacola Bay Bridge	I-110 Pensacola Area Freeway Management System	FMS	PE	$0.328
3	I-10	Pensacola Bay Bridge	I-110 Pensacola Area Freeway Management System	FMS	CONST	$2.189
3	I-10	Pensacola Bay Bridge	I-110 Pensacola Area Freeway Management System	FMS	CEI	$0.438
3	Pensacola Bay Bridge	I-10	Fiber Optic Network	FON	PE	$0.088
3	Pensacola Bay Bridge	I-10	Fiber Optic Network	FON	CONST	$0.738
3	Pensacola Bay Bridge	I-10	Fiber Optic Network	FON	CEI	$0.059
				PDC Sum		$3.841

Table 5.5 - Corridor Needs

Facility: *I-110*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
				Grand Total All Facilities		*$125.206*

Figure 5.3 – I-10 Corridor ITS Needs



5.7 Project Priorities and Phasing

Once the planned ITS projects were defined, they were combined with the planned ITS projects developed by FDOT Districts 2 and 3 as part of their ITS corridor feasibility studies. The proposed and planned projects were regrouped as projects and then prioritized according to the prioritization methodology outlined below.

5.7.1 Prioritization Methodology

Table 5.6 contains the following assumptions and constraints considered in developing the strategic approach for prioritization of ITS.

Table 5.6 – Criteria for Prioritizing ITS Deployments

Criteria	Measure	Score	Weighting
Population and Urbanization	Population within each county from the 2000 Census.	Based on the percentile rank of the most populated to least populated.	10%
Incidents	Safety ratio as provided by Safety Office.	Based on the percentile rank from the highest to lowest safety ratio	20%
Congestion Levels	Percent of travel heavily congested (LOS E/F) along each corridor as defined by the Mobility Performance Measures program (TranStat).	Based on the percentile rank from the highest percentage of travel congested to lowest.	20%
Special Event Generators	Number of attendees of special events in each county each year as provided by Visit Florida and through research of known venues and special events.	Based on the percentile rank from the highest number of attendees to the lowest by county.	10%
Evacuation Coordination	Number of evacuees generated on each facility during critical storm events as determined using the demand estimating tool generated by PBS&J for U.S. Army Corps of Engineers.	Based on the percentile rank from the highest number of evacuees to the lowest by county.	15%
CVO Operations	Truck volume as reported in the Roadway Characteristics Inventory (RCI).	Based on the percentile rank from the highest truck volume to lowest by segment	5%
Production Capability	Project Phase Complete • Design Complete • Design Criteria Complete or Design Underway	100 67	5%
Programmed Improvement Construction Capacity	Programmed capacity improvements where permanent installation can be used to support smart work zone management.	Improvement Fiscal Year FY03 – 100% FY04 – 80% FY05 – 60% FY06 – 40% FY07 – 20%	15%
		TOTAL	100%

Following the application of these prioritization criteria, the results were analyzed and adjusted to reflect the following:

- System continuity and connectivity to existing ITS services and communications systems;
- Coordination with capacity improvement projects that are included in the *Ten-Year FIHS Cost-Feasible Plan;*
- Reasonableness and logical termini;
- Local needs and priorities addressed in corridor and regional ITS plans prepared by the districts and expressway authorities;
- Congestion mitigation for severely congested facilities;
- Safety considerations to address high-accident locations; and
- Consideration of priorities provided by the expressway authorities.

Table 5.7 summarizes the high and moderate priority segments for I-10 and I-110. The need for ITS deployment is supported on a statewide basis for all FIHS limited-access corridors. This table summarizes the relative priority of ITS for the purposes of phasing implementation only. Figure 5.4 illustrates the result of the prioritization analysis for the I-10 corridor and recommended prioritization based on high, moderate, and low priorities.

Table 5.7 – Priority Segments for ITS Deployment[1]

Facility	Relative Priority	Area	From	To	Existing FMS?
I-10	High	Jacksonville	I-295	I-95	Yes
I-10	Moderate	Pensacola	U.S. 90	SR 281	
I-110	Moderate	Pensacola	Entire length		
I-10	Moderate	Crestview	SR 85	Okaloosa/Walton County Line	
I-10	Moderate	Marianna to Madison (includes Tallahassee)	SR 73	U.S. 90	
I-10	Low	Madison to Columbia	U.S. 90	I-75	
I-10	Moderate	I-75 and I-10 Interchange	I-75 and I-10 Interchange	I-75 and I-10 Interchange	

5.7.2 Project Phasing for the I-10 and I-110 Corridors

Table 5.8 and Figures 5.5 and 5.6 illustrate the recommended Ten-Year ITS Cost-Feasible Plan deployments on the I-10/I-110 corridor. The recommended ranking and phasing of the District 3 projects as presented in the *I-10 ITS Feasibility Study* were retained.

[1] The need for ITS deployment is supported on a statewide basis for all FIHS limited-access corridors. This table summarizes the relative priority of ITS for the purposes of phasing implementation only.

Figure 5.4 – I-10 Corridor *ITS Program Plan* Priorities (Adjusted)

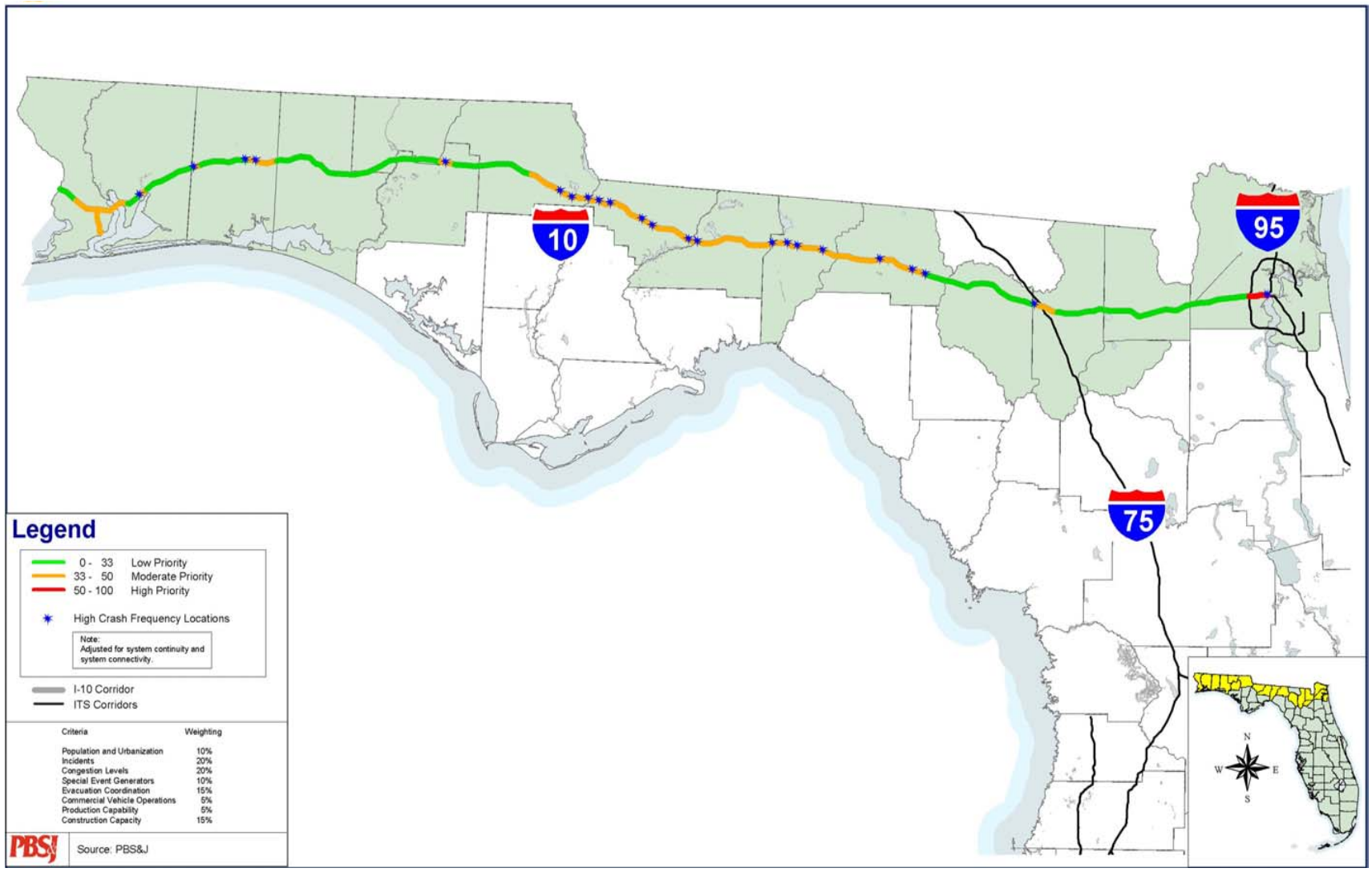


Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
4100201	1	I-4	From Hillsborough Co. Line to Polk Co. Line	I-4 Corridor Consultant	MOT	CONST	$5.47											$5.47	District	
4100201	1	I-4	From Hillsborough Co. Line to Polk Co. Line	I-4 Corridor Consultant	MOT	CEI	$1.40											$1.40	Statewide	
102501	1	I-75	From Collier/Lee County Line to Lee/Charlotte County Line	Freeway and Incident Management System	FMS	PE				$0.41								$0.41	Statewide	
102502	1	I-75	From Collier/Lee County Line to Lee/Charlotte County Line	Freeway and Incident Management System	FMS	CONST				$3.42								$3.42	Statewide	
102503	1	I-75	From Collier/Lee County Line to Lee/Charlotte County Line	Freeway and Incident Management System	FMS	CEI				$0.68								$0.68	Statewide	
102701	1	I-75	From Sarasota/Manatee County Line to I-275 (Manatee)	Freeway Management System	FMS	PE										$0.65		$0.65	Statewide	
102702	1	I-75	From Sarasota/Manatee County Line to I-275 (Manatee)	Freeway Management System	FMS	CONST											$4.47	$4.47	Statewide	
102703	1	I-75	From Sarasota/Manatee County Line to I-275 (Manatee)	Freeway Management System	FMS	CEI											$0.89	$0.89	Statewide	
102801	1	I-75	From Charlotte/ Sarasota County Line to Sarasota /Manatee County Line	Freeway Incident Management System	FMS	PE								$0.90				$0.90	Statewide	
102802	1	I-75	From Charlotte/ Sarasota County Line to Sarasota/ /Manatee County Line	Freeway Incident Management System	FMS	CONST									$5.03	$2.80		$7.83	Statewide	
102803	1	I-75	From Charlotte/ Sarasota County Line to Sarasota /Manatee County Line	Freeway Incident Management System	FMS	CEI									$1.01	$0.56		$1.57	Statewide	
103602	1	I-75		Ft. Myers RTMC/Systems Integration	RTMC	CONST				$2.22								$2.22	Statewide	
104201	1	I-75	From Broward/Collier County Line to Collier/Lee County Line	Freeway Incident Management System	FMS	PE				$0.68								$0.68	Statewide	
104202	1	I-75	From Broward/Collier County Line to Collier/Lee County Line	Freeway Incident Management System	FMS	CONST				$5.69								$5.69	Statewide	
104203	1	I-75	From Broward/Collier County Line to Collier/Lee County Line	Freeway Incident Management System	FMS	CEI				$1.14								$1.14	Statewide	
111701	1	I-75		Sarasota TMC/Building	RTMC	PE				$0.27								$0.27	Statewide	
111702	1	I-75		Sarasota TMC/Building	RTMC	CONST				$2.22								$2.22	Statewide	
111703	1	I-75		Sarasota TMC/Building	RTMC	CEI				$0.44								$0.44	Statewide	
111802	1	I-75		Sarasota TMC/Systems	RTMC	CONST				$0.68								$0.68	Statewide	
137301	1	I-75	From Collier/Lee Co. Line to Lee/Charlotte Co. Line	Fiber Optic Network	FON	PE				$0.53								$0.53	Statewide	
137302	1	I-75	From Collier/Lee Co. Line to Lee/Charlotte Co. Line	Fiber Optic Network	FON	CONST				$4.39								$4.39	Statewide	
137303	1	I-75	From Collier/Lee Co. Line to Lee/Charlotte Co. Line	Fiber Optic Network	FON	CEI				$0.35								$0.35	Statewide	
137401	1	I-75	From Lee/ Charlotte Co. Line to Charlotte/Sarasota Co. Line	Fiber Optic Network	FON	PE								$0.39				$0.39	Statewide	
137402	1	I-75	From Lee/ Charlotte Co. Line to Charlotte/Sarasota Co. Line	Fiber Optic Network	FON	CONST								$3.22				$3.22	Statewide	
137403	1	I-75	From Lee/ Charlotte Co. Line to Charlotte/Sarasota Co. Line	Fiber Optic Network	FON	CEI								$0.26				$0.26	Statewide	
137501	1	I-75	From Sarasota/Manatee Co. Line to I-275 (Manatee County)	Fiber Optic Network	FON	PE										$0.29		$0.29	Statewide	
137502	1	I-75	From Sarasota/Manatee Co. Line to I-275 (Manatee County)	Fiber Optic Network	FON	CONST											$2.48	$2.48	Statewide	
137503	1	I-75	From Sarasota/Manatee Co. Line to I-275 (Manatee County)	Fiber Optic Network	FON	CEI											$0.20	$0.20	Statewide	
138201	1	I-75	From Charlotte/Sarasota Co. Line to Sarasota/Manatee Co. Line	Fiber Optic Network	FON	PE									$0.77			$0.77	Statewide	
138202	1	I-75	From Charlotte/Sarasota Co. Line to Sarasota/Manatee Co. Line	Fiber Optic Network	FON	CONST									$6.44			$6.44	Statewide	
138203	1	I-75	From Charlotte/Sarasota Co. Line to Sarasota/Manatee Co. Line	Fiber Optic Network	FON	CEI									$0.52			$0.52	Statewide	
138501	1	I-75	From Lee/Charlotte Co. Line to Charlotte/ Sarasota Co. Line	Freeway and Incident Management System	FMS	PE								$1.30				$1.30	Statewide	
138502	1	I-75	From Lee/Charlotte Co. Line to Charlotte/Sarasota Co. Line	Freeway and Incident Management System	FMS	CONST								$6.51				$6.51	Statewide	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
138503	1	I-75	From Lee/Charlotte Co. Line to Charlotte/Sarasota Co. Line	Freeway and Incident Management System	FMS	CEI								$0.78				$0.78	Statewide	
2020621	1	I-75	From Lee/ Charlotte County Line to Manatee/Hillsborough County Line	I-75 Incident Management Project Plan for Charlotte, Sarasota and Manatee Counties	FMS	Planning	$0.50											$0.50	District	Initially showing PE phase updated to planning in order to be consistent with Work Program
2133061	2		From Jacksonville TMC to Jacksonville TMC	Jax ITS/Phase-1 Traffic Center Building	FMS	CONST	$0.11											$0.11	District	
204401	2	I-295	From I-10 to I-95 N	Incident Management System, Traveler Information, Management Center and Fiber	FMS	PE										$0.48		$0.48	Statewide	
204402	2	I-295	From I-10 to I-95 N	Incident Management System, Traveler Information, Management Center and Fiber	FMS	CONST											$4.17	$4.17	Statewide	
204403	2	I-295	From I-10 to I-95 N	Incident Management System, Traveler Information, Management Center and Fiber	FMS	CEI											$0.83	$0.83	Statewide	
204501	2	I-295	From I-95 S to I-10	Incident Management System, Traveler Information, Management Center and Fiber	FMS	PE									$0.73			$0.73	Statewide	
204502	2	I-295	From I-95 S to I-10	Incident Management System, Traveler Information, Management Center and Fiber	FMS	CONST										$5.01		$5.01	Statewide	
204503	2	I-295	From I-95 S to I-10	Incident Management System, Traveler Information, Management Center and Fiber	FMS	CEI										$1.00		$1.00	Statewide	
237001	2	I-295	From I-10 to I-95N	Fiber Optic Network	FON	PE									$0.26			$0.26	Statewide	
237002	2	I-295	From I-10 to I-95N	Fiber Optic Network	FON	CONST										$2.25		$2.25	Statewide	
237003	2	I-295	From I-10 to I-95N	Fiber Optic Network	FON	CEI										$0.17		$0.17	Statewide	
237101	2	I-295	From I-95S to I-10	Fiber Optic Network	FON	PE									$0.37			$0.37	Statewide	
237102	2	I-295	From I-95S to I-10	Fiber Optic Network	FON	CONST										$3.22		$3.22	Statewide	
237103	2	I-295	From I-95S to I-10	Fiber Optic Network	FON	CEI										$0.26		$0.26	Statewide	
203901	2	I-95	From I-10 to Airport Road	Fiber Optic Network	FON	PE			$0.17									$0.17	Statewide	
203902	2	I-95	From I-10 to Airport Road	Fiber Optic Network	FON	CONST			$1.45									$1.45	Statewide	
203903	2	I-95	From I-10 to Airport Road	Fiber Optic Network	FON	CEI			$0.12									$0.12	Statewide	
204001	2	I-95	From I-10 to Trout River	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	PE			$0.15									$0.15	Statewide	
204002	2	I-95	From I-10 to Trout River	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	CONST			$1.01									$1.01	Statewide	
204003	2	I-95	From I-10 to Trout River	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	CEI			$0.20									$0.20	Statewide	
204101	2	I-95	From Trout River to Airport/Duval Road	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	PE			$0.28									$0.28	Statewide	
204102	2	I-95	From Trout River to Airport/Duval Road	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	CONST			$0.86	$1.05								$1.91	Statewide	
204103	2	I-95	From Trout River to Airport/Duval Road	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	CEI			$0.17	$0.21								$0.38	Statewide	
2132961	2	I-95	From I-295 S to I-10	Jacksonville Interstate Surveillance and Control System Phase 3	FMS	PE	$0.08											$0.08	District	
2132961	2	I-95	From I-295 S to I-10	Jacksonville Interstate Surveillance and Control System Phase 3	FMS	D/B		$6.62										$6.62	District	
308301	3	I-10		Pensacola Traffic Management Center Building	RTMC	PE						$0.14						$0.14	Statewide	
308302	3	I-10		Pensacola Traffic Management Center Building	RTMC	CONST						$1.95						$1.95	Statewide	
308303	3	I-10		Pensacola Traffic Management Center Building	RTMC	CEI						$0.39						$0.39	Statewide	
308402	3	I-10		Pensacola Traffic Management Center Systems	RTMC	CONST						$0.68						$0.68	Statewide	
313201	3	I-10		Tallahassee Regional Traffic Management Center Building	RTMC	PE							$0.14					$0.14	Statewide	
313202	3	I-10		Tallahassee Regional Traffic Management Center Building	RTMC	CONST							$2.00					$2.00	Statewide	
313203	3	I-10		Tallahassee Regional Traffic Management Center Building	RTMC	CEI							$0.40					$0.40	Statewide	
313302	3	I-10		Tallahassee Regional Traffic Management Center Systems	RTMC	CONST							$0.70					$0.70	Statewide	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
321501	3	I-10	From Welcome Center to East of SR 87	Pensacola Area Freeway Management System	FMS	PE							$1.14					$1.14	Statewide	
321502	3	I-10	From Welcome Center to East of SR 87	Pensacola Area Freeway Management System	FMS	CONST							$7.58					$7.58	Statewide	This project covers the entire urban area of Pensacola along I-10.
321503	3	I-10	From Welcome Center to East of SR 87	Pensacola Area Freeway Management System	FMS	CEI							$1.52					$1.52	Statewide	
321701	3	I-10	From West of US 90 (Gadsden County) to East of US 90 (Leon County)	Tallahassee Area Freeway Management System	FMS	PE							$0.85					$0.85	Statewide	
321702	3	I-10	From West of US 90 (Gadsden County) to East of US 90 (Leon County)	Tallahassee Area Freeway Management System	FMS	CONST								$5.85				$5.85	Statewide	
321703	3	I-10	From West of US 90 (Gadsden County) to East of US 90 (Leon County)	Tallahassee Area Freeway Management System	FMS	CEI								$1.17				$1.17	Statewide	
336701	3	I-10	From US 90 West to US 90 East	Fiber Optic Network	FON	PE							$0.25					$0.25	Statewide	
336702	3	I-10	From US 90 West to US 90 East	Fiber Optic Network	FON	CONST							$2.12					$2.12	Statewide	
336703	3	I-10	From US 90 West to US 90 East	Fiber Optic Network	FON	CEI							$0.17					$0.17	Statewide	
336801	3	I-10	From Alabama State Line/I-10 Welcome Center to SR 87	Fiber Optic Network	FON	PE							$0.40					$0.40	Statewide	
336802	3	I-10	From Alabama State Line/I-10 Welcome Center to SR 87	Fiber Optic Network	FON	CONST							$3.32					$3.32	Statewide	
336803	3	I-10	From Alabama State Line/I-10 Welcome Center to SR 87	Fiber Optic Network	FON	CEI							$0.27					$0.27	Statewide	
307901	3	I-110	From I-10 to Pensacola Bay Bridge	I-110 Pensacola Area Freeway Management System	FMS	PE							$0.40					$0.40	Statewide	
307902	3	I-110	From I-10 to Pensacola Bay Bridge	I-110 Pensacola Area Freeway Management System	FMS	CONST							$2.67					$2.67	Statewide	This project includes the entire length of I-110.
307903	3	I-110	From I-10 to Pensacola Bay Bridge	I-110 Pensacola Area Freeway Management System	FMS	CEI							$0.53					$0.53	Statewide	
336901	3	I-110	From Pensacola Bay Bridge to I-10	Fiber Optic Network	FON	PE							$0.11					$0.11	Statewide	
336902	3	I-110	From Pensacola Bay Bridge to I-10	Fiber Optic Network	FON	CONST							$0.90					$0.90	Statewide	Project includes the entire length of I-110.
336903	3	I-110	From Pensacola Bay Bridge to I-10	Fiber Optic Network	FON	CEI							$0.07					$0.07	Statewide	
407501	4	I-595	From I-75 to U.S. 1	OVCS Variable Speed Zone	FMS	PE									$0.39			$0.39	Statewide	
407502	4	I-595	From I-75 to U.S. 1	OVCS Variable Speed Zone	FMS	CONST									$2.61			$2.61	Statewide	
407503	4	I-595	From I-75 to U.S. 1	OVCS Variable Speed Zone	FMS	CEI									$0.52			$0.52	Statewide	
2317051	4	I-595	From Eastern Terminus to Sawgrass Expressway	I-595 Broward County Changeable Message Sign System	ATIS	CONST	$1.45											$1.45	District	
401401	4	I-75	From Sawgrass Expressway to Broward/Collier Co Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	PE						$0.85						$0.85	Statewide	
401402	4	I-75	From Sawgrass Expressway to Broward/Collier Co Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CONST							$5.87					$5.87	Statewide	Funded in FIHS CFP
401403	4	I-75	From Sawgrass Expressway to Broward/Collier Co Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CEI							$1.17					$1.17	Statewide	
423301	4	I-75	From Southern Terminus to Sawgrass Expressway	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	PE						$1.68						$1.68	Statewide	
423302	4	I-75	From Southern Terminus to Sawgrass Expressway	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CONST						$5.60	$5.79					$11.39	Statewide	
423303	4	I-75	From Southern Terminus to Sawgrass Expressway	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CEI						$1.12	$1.16					$2.28	Statewide	
438301	4	I-75	From Sawgrass Expressway to Broward/Collier Co. Line	Fiber Optic Network	FON	PE						$0.55						$0.55	Statewide	
438302	4	I-75	From Sawgrass Expressway to Broward/Collier Co. Line	Fiber Optic Network	FON	CONST						$4.59						$4.59	Statewide	
438303	4	I-75	From Sawgrass Expressway to Broward/Collier Co. Line	Fiber Optic Network	FON	CEI						$0.37						$0.37	Statewide	
438401	4	I-75	From Southern Terminus to Sawgrass Expressway	Fiber Optic Network	FON	PE						$0.31						$0.31	Statewide	
438402	4	I-75	From Southern Terminus to Sawgrass Expressway	Fiber Optic Network	FON	CONST						$2.58						$2.58	Statewide	
438403	4	I-75	From Southern Terminus to Sawgrass Expressway	Fiber Optic Network	FON	CEI						$0.21						$0.21	Statewide	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
4111961	4	I-75	From SR 826 to Broward/Collier Co. Line	I-75 ITS Corridor Plan	ATIS	PD& E	$0.31											$0.31	District	
407401	4	I-95	From Broward/Palm Beach Co. Line to Palm Beach/Martin Co. Line	OVCS Variable Speed Zone	FMS	PE									$0.39			$0.39	Statewide	
407402	4	I-95	From Broward/Palm Beach Co. Line to Palm Beach/Martin Co. Line	OVCS Variable Speed Zone	FMS	CONST										$2.69		$2.69	Statewide	FIHS CFP
407403	4	I-95	From Broward/Palm Beach Co. Line to Palm Beach/Martin Co. Line	OVCS Variable Speed Zone	FMS	CEI										$0.54		$0.54	Statewide	
2316541	4	I-95		Broward County I.T.S Operational Facility (TMC)	RTMC	PE	$0.35											$0.35	District	
2316541	4	I-95		Broward County I.T.S Operational Facility (TMC)	RTMC	CONST	$13.55											$13.55	District	
2316541	4	I-95		Broward County I.T.S Operational Facility (TMC)	RTMC	Utilities	$0.10											$0.10	District	
2316551	4	I-95	From Dade/Broward Co. Line to Broward/Palm Beach Co Line	Advance Incident Information System (AIIS)	ATIS	PE	$1.31											$1.31	District	
2316551	4	I-95	From Dade/Broward Co. Line to Broward/Palm Beach Co Line	Advance Incident Information System (AIIS)	ATIS	CONST			$11.26									$11.26	Statewide	
2316551	4	I-95	From Dade/Broward Co. Line to Broward/Palm Beach Co Line	Advance Incident Information System (AIIS)	ATIS	Utilities	$0.10											$0.10	District	
2316591	4	I-95	From Dade/Broward Co. Line to Broward/Palm Beach Co Line	I-95 Broward County Changeable Message Sign	ATIS	CONST	$0.83											$0.83	District	
2316601	4	I-95	From Broward/Palm Beach Co Line to SR 869 Sawgrass Expressway	Broward County Freeway Video Monitoring System	FMS	CONST	$0.59											$0.59	District	
2317391	4	I-95	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	I-95/I-595 Video Monitoring System Cameras Broward County	FMS	PE		$1.05										$1.05	District	
2317391	4	I-95	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	I-95/I-595 Video Monitoring System Cameras Broward County	FMS	CONST				$10.67								$10.67	District	
2318811	4	I-95	From Broward/Palm Beach Co Line to Palm Beach/Martin Co. Line	SR 9/I-95/Video Monitoring System	FMS	CONST			$10.30									$10.30	Statewide	
2319301	4	I-95		Palm Beach County ITS Operations Facility	RTMC	PE	$1.05											$1.05	District	
2319301	4	I-95		Palm Beach County ITS Operations Facility	RTMC	CONST				$6.58								$6.58	Statewide	
2319301	4	I-95		Palm Beach County ITS Operations Facility	RTMC	PD& E	$1.05											$1.05	District	
4048181	4	I-95	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	Arterial Incident Detour Route Sign System	FMS	PE		$0.55										$0.55	District	
4048181	4	I-95	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	Arterial Incident Detour Route Sign System	FMS	CONST				$2.85								$2.85	District	
4048271	4	I-95	From Broward/Palm Beach Co Line to Palm Beach/Martin Co. Line	Palm Beach County Dynamic Message Sign System (ATIS)	ATIS	PE	$0.08											$0.08	District	
4048271	4	I-95	From Broward/Palm Beach Co Line to Palm Beach/Martin Co. Line	Palm Beach County Dynamic Message Sign System (ATIS)	ATIS	CONST		$4.98										$4.98	District	
4090471	4	I-95	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	Broward Co. APTS Master Plan	APTS	PD& E	$0.26											$0.26	District	
4110671	4	I-95	From Broward/Palm Beach Co Line to Palm Beach/Martin Co. Line	Interim Traffic Management System (ITMS)	MOT	PE	$7.50											$7.50	Statewide	
4110671	4	I-95	From Broward/Palm Beach Co Line to Palm Beach/Martin Co. Line	Interim Traffic Management System (ITMS)	MOT	D/B		$3.20	$2.80	$2.80	$2.90	$3.00	$3.10	$3.20				$21.00	Statewide	
4124951	4	I-95	From Palm Beach/Martin Co. Line to Indian River/Brevard Co. Line	SR 9/I-95 Freeway Road Rangers Service Patrol	RR	MAINT				$1.10								$1.10	Statewide	
4125201	4	Various	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	I-95/I-595/I-75 Lane Condition Priority System	FMS	PE				$0.40								$0.40	Statewide	
4125201	4	Various	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	I-95/I-595/I-75 Lane Condition Priority System	FMS	CONST				$0.66								$0.66	Statewide	
503802	5	I-4	From SR 44 to I-95	I-4 Surveillance Motorist Information System Phase 5	FMS	CONST			$4.83									$4.83	Statewide	Needed to complete I-4/I-95 SMIS FON provided by a previous project.
503803	5	I-4	From SR 44 to I-95	I-4 Surveillance Motorist Information System Phase 5	FMS	CEI			$0.97									$0.97	Statewide	
2409482	5	I-4	From SR 44 to I-95	Integrate ITS in Volusia County	FMS	D/B	$0.15											$0.15	District	
2424442	5	I-4	From SR 528 to SR 482	I-4 Auxiliary Lanes from SR 528 to SR 482	FMS	CONST	$0.37											$0.37	District	
2424842	5	I-4	From SR 408 Interchange to	I-4 Interchange @ E/W Expressway Interim Improvements (SR 408)	FMS	CONST				$0.73								$0.73	District	
2424961	5	I-4	From SR 435 to Turnpike	I-4 Auxiliary Lanes from SR 435 to Turnpike	FMS	CONST	$0.22											$0.22	District	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
2424991	5	I-4	From SR 423 to SR 436	I-4 Auxiliary Lanes from SR 423 to SR 436	FMS	CONST	$5.50											$5.50	District	
2425231	5	I-4	From World Drive to US 27	I-4 SMIS (7 Miles) Phase 4 / 6- Lane Reconstruction Project	FMS	CONST		$2.00										$2.00	District	
2425311	5	I-4	From US 192 Interchange to	I-4 Interchange Freeway Management System	FMS	CONST			$1.29									$1.29	District	
2427021	5	I-4	From Lake Mary Blvd to SR 472	I-4 SMIS (22 Miles) Phase 3 - St. Johns River Bridge Replacement / Reconstruction	FMS	CONST	$3.00											$3.00	District	
4055151	5	I-4	From SR 536 to SR 528	I-4 Auxiliary Lanes from SR 536 to SR 528	FMS	CONST	$0.34											$0.34	District	
4107242	5	I-4	From SR 44 to DASH (I-95)	I-4 SMIS Fiber Optic Connection to DASH	FON	CONST		$0.56										$0.56	Statewide	
4107251	5	I-4		Regional Traffic Management Center (RTMC) Upgrade/ Retrofit	RTMC	D/B	$1.97											$1.97	District	
512701	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler County Line	Surveillance Motorist Information System/Daytona Area Smart Highways Phase IV	FMS	PE					$1.03							$1.03	Statewide	
512702	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler County Line	Surveillance Motorist Information System/Daytona Area Smart Highways Phase IV	FMS	CONST					$6.84							$6.84	Statewide	
512703	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler County Line	Surveillance Motorist Information System/Daytona Area Smart Highways Phase IV	FMS	CEI					$1.36							$1.36	Statewide	
512801	5	I-95	From SR 44 to US 1 (Volusia County)	Surveillance Motorist Information System/Daytona Area Smart Highways PhaseIII	FMS	PE					$0.32							$0.32	Statewide	
512802	5	I-95	From SR 44 to US 1 (Volusia County)	Surveillance Motorist Information System/Daytona Area Smart Highways PhaseIII	FMS	CONST					$2.10							$2.10	Statewide	
512803	5	I-95	From SR 44 to US 1 (Volusia County)	Surveillance Motorist Information System/Daytona Area Smart Highways PhaseIII	FMS	CEI					$0.42							$0.42	Statewide	
523901	5	I-95	From Indian River/Brevard Co. Line to SR44	Surveillance Motorist Information System/Daytona Area Smart Highway Phase IV	FMS	PE					$2.13							$2.13	Statewide	
523902	5	I-95	From Indian River/Brevard Co. Line to SR44	Surveillance Motorist Information System/Daytona Area Smart Highway Phase IV	FMS	CONST					$3.99	$7.00	$3.68					$14.67	Statewide	
523903	5	I-95	From Indian River/Brevard Co. Line to SR44	Surveillance Motorist Information System/Daytona Area Smart Highway Phase IV	FMS	CEI					$0.80	$1.25	$0.74					$2.79	Statewide	
540301	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler/St. Johns Co. Line	Fiber Optic Network	FON	PE				$0.06								$0.06	Statewide	
540302	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler/St. Johns Co. Line	Fiber Optic Network	FON	CONST				$0.42								$0.42	Statewide	
540303	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler/St. Johns Co. Line	Fiber Optic Network	FON	CEI				$0.03								$0.03	Statewide	
540401	5	I-95	From Indian River/Brevard Co. Line to SR 44	Fiber Optic Network	FON	PE					$0.97							$0.97	Statewide	
540402	5	I-95	From Indian River/Brevard Co. Line to SR 44	Fiber Optic Network	FON	CONST					$8.07							$8.07	Statewide	
540403	5	I-95	From Indian River/Brevard Co. Line to SR 44	Fiber Optic Network	FON	CEI					$0.65							$0.65	Statewide	
540501	5	I-95	From SR 44 to US 1 (Volusia County)	Fiber Optic Network	FON	PE				$0.26								$0.26	Statewide	
540502	5	I-95	From SR 44 to US 1 (Volusia County)	Fiber Optic Network	FON	CONST				$2.17								$2.17	Statewide	
540503	5	I-95	From SR 44 to US 1 (Volusia County)	Fiber Optic Network	FON	CEI				$0.17								$0.17	Statewide	
2422501	5	I-95	From SR 528 & I-95 Interchange to	I-95 phase 2 I-95/SR 528 Hurricane Evacuation System	FMS	D/B	$0.66											$0.66	District	
2422501	5	I-95	From SR 528 & I-95 Interchange to	I-95 Phase 2 I-95/SR 528 Hurricane Evacuation System	FMS	D/B	$3.00											$3.00	Statewide	
4701	5	Various		ITS-01:OOCEA's SR 408 & SR 417	FMS	PE	$0.24											$0.24	Expwy Auth	Coms on OOCEA's FON
4702	5	Various	From Kirkman Road to SR 417 West	ITS-01:OOCEA's SR 408 & SR 417	FMS	CONST	$2.42											$2.42	Expwy Auth	Coms on OOCEA's FON
4901	5	Various		ITS-02: OOCEA's SR 408, SR 417, & SR 528	FMS	PE	$0.16											$0.16	Expwy Auth	Coms on OOCEA's FON: Costs in SR 408 section 1 entry for ITS-3
4902	5	Various		ITS-02: OOCEA's SR 408, SR 417, & SR 528	FMS	CONST		$1.60										$1.60	Expwy Auth	Coms on OOCEA's FON: Costs in SR 408 section 1 entry for ITS-3
5401	5	Various		ITS-03: OOCEA's SR 408, SR 417, & SR 528	FMS	PE	$0.30											$0.30	Expwy Auth	Coms on OOCEA's FON
5402	5	Various		ITS-03: OOCEA's SR 408, SR 417, & SR 528	FMS	CONST		$3.03										$3.03	Expwy Auth	Coms on OOCEA's FON: Costs in SR 408 entry for ITS-4
5601	5	Various		ITS-04: OOCEA's SR 408, SR 417, & SR 528	FMS	PE		$0.33										$0.33	Expwy Auth	Coms on OOCEA's FON

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
5602	5	Various		ITS-04: OOCEA's SR 408, SR 417, & SR 528	FMS	CONST		$3.32										$3.32	Expwy Auth	Coms on OOCEA's FON
5801	5	Various		ITS-05: OOCEA's SR 408, SR 417, SR 528, SR 520, & SR 50	FMS	CONST			$2.82									$2.82	Expwy Auth	Coms on OOCEA's FON
5802	5	Various		ITS-05: OOCEA's SR 408, SR 417, SR 528, SR 520, & SR 50	FMS	PE			$0.28									$0.28	Expwy Auth	Coms on OOCEA's FON
6301	5	Various		ITS-06: Traveler Information	ATIS	PE			$0.13									$0.13	Expwy Auth	
6302	5	Various		ITS-06: Traveler Information	ATIS	CONST			$1.35									$1.35	Expwy Auth	
6401	5	Various		ITS-07: Phase I System Automation	FMS	PE				$0.32								$0.32	Expwy Auth	Coms on OOCEA's FON
6402	5	Various		ITS-07: Phase I System Automation	FMS	CONST				$0.75								$0.75	Expwy Auth	Coms on OOCEA's FON
2502383	6			ITS Building/Comm. HUB Equipment Purchase (RTMC)	FMS	Capital			$0.10									$0.10	Statewide	
2516831	6	I-195	From NW 11 Avenue to SR 907/Alton Road	SR 112/I-195 ITS	FMS	PE			$0.05									$0.05	District	
2516831	6	I-195	From NW 11 Avenue to SR 907/Alton Road	SR 112/I-195 ITS	FMS	D/B				$7.76								$7.76	District	
2516861	6	I-395	From I-95 to West end of MacArthur Bridge	SR 836/I-395 ICS	FMS	PE					$0.35							$0.35	District	
2516851	6	I-75	From SR 826 to Miami-Dade/ Broward Co. Line	SR 93/I-75 ICS	FMS	PE	$0.01	$0.05										$0.05	District	
2516851	6	I-75	From SR 826 to Miami-Dade/ Broward Co. Line	SR 93/I-75 ICS	FMS	D/B				$10.23								$10.23	District	
2502381	6	I-95	From Sunguide RTMC to Sunguide RTMC	I-95 ITS Sunguide Control-Package "C"	FMS	Contract Incentives	$0.50											$0.50	District	Included Contract IncentivesPhase in order to be consistent with Work Program
2502381	6	I-95	From Sunguide RTMC to Sunguide RTMC	I-95 ITS Sunguide Control-Package "C"	FMS	CONST	$0.59											$0.59	District	
2516711	6	I-95	From US 1 to Miami-Dade/Broward County Line	I-95 Post Construction, Operations and Evaluation for Golden Glades Integration Project	FMS	CONST	$0.11											$0.11	District	
2516821	6	I-95	From US 1 to Ives Dairy Road	I-95 Intelligent Corridor System Package B	FMS	Contract Incentives			$1.50									$1.50	Statewide	Included Contract Incentives Phase in order to be consistent with Work Program
2516821	6	I-95	From US 1 to Ives Dairy Road	I-95 Intelligent Corridor System Package B	FMS	PE	$0.51											$0.51	District	
2516821	6	I-95	From US 1 to Ives Dairy Road	I-95 Intelligent Corridor System Package B	FMS	CONST	$3.90											$3.90	Statewide	
2516821	6	I-95	From US 1 to Ives Dairy Road	I-95 Intelligent Corridor System Package B	FMS	CONST	$17.04											$17.04	District	
4040801	6	I-95	From US 1 to Miami-Dade/ Broward Co. Line	SR 9A/I-95 Post Construction Evaluation	FMS	CEI	$0.51											$0.51	District	
4056631	6	I-95	From Sunguide ATIS to Sunguide ATIS	Miami-Dade Countywide Regional Traveler Information	ATIS	PE	$3.11											$3.11	District	
2497192	6	SR 826	From NW 154th Street to Golden Glades Interchange	SR 826 (Palmetto Expwy) East/West ITS Deployment	FMS	PE	$0.03											$0.03	District	
2497192	6	SR 826	From NW 154th Street to Golden Glades Interchange	SR 826 (Palmetto Expwy) East/West ITS Deployment	FMS	D/B	$3.02											$3.02	District	
1001802	6	SR 836	From SR 821 to NW 27th Ave	ITS - 002	FMS	CONST	$1.40											$1.40	Expwy Auth	Shown on map as MDX-1.
2502382	6	Various	From Sunguide RTMC to Sunguide RTMC	Package C- ITS Video Wall and Consoles	FMS	CONST			$3.38									$3.38	Statewide	
140601	7	I-275	From I-75 South to Sunshine Skyway Bridge	Fiber Optic Network	FON	PE									$0.10			$0.10	Statewide	
140602	7	I-275	From I-75 South to Sunshine Skyway Bridge	Fiber Optic Network	FON	CONST										$0.98		$0.98	Statewide	
140603	7	I-275	From I-75 South to Sunshine Skyway Bridge	Fiber Optic Network	FON	CEI										$0.08		$0.08	Statewide	
702001	7	I-275	From Bearss Ave to I-75	Freeway and Incident Management System	FMS	PE					$0.44							$0.44	Statewide	
702002	7	I-275	From Bearss Ave to I-75	Freeway and Incident Management System	FMS	CONST					$2.67							$2.67	Statewide	
702003	7	I-275	From Bearss Ave to I-75	Freeway and Incident Management System	FMS	CEI					$0.59							$0.59	Statewide	
737802	7	I-275	From South of Sunshine Skyway Bridge to McKinley Drive	Communication Link for Sunshine Skyway Bridge to FHP	FON	CONST		$5.73	$2.65									$8.38	Statewide	Cost revised to coincide with FHWA ITS Deployment plan.
737901	7	I-275	From Fowler Ave to Bearss Ave	Fiber Optic Network	FON	PE		$0.03										$0.03	Statewide	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
737902	7	I-275	From Fowler Ave to Bearss Ave	Fiber Optic Network	FON	CONST			$0.29									$0.29	Statewide	
737903	7	I-275	From Fowler Ave to Bearss Ave	Fiber Optic Network	FON	CEI			$0.02									$0.02	Statewide	
743301	7	I-275	From Howard Frankland Bridge to Hillsborough River	Links II/III	FMS	PE						$0.24						$0.24	Statewide	
743302	7	I-275	From Howard Frankland Bridge to Hillsborough River	Links II/III	FMS	CONST									$2.74			$2.74	Statewide	See Note 1.
743303	7	I-275	From Howard Frankland Bridge to Hillsborough River	Links II/III	FMS	CEI									$0.39			$0.39	Statewide	See Note 1.
743401	7	I-275	From Bearss Ave to I-75	Fiber Optic Network	FON	PE					$0.11							$0.11	Statewide	
743402	7	I-275	From Bearss Ave to I-75	Fiber Optic Network	FON	CONST					$0.91							$0.91	Statewide	
743403	7	I-275	From Bearss Ave to I-75	Fiber Optic Network	FON	CEI					$0.07							$0.07	Statewide	
2583981	7	I-275	From Howard Frankland Bridge to Himes Ave	Links Stage II	FON	CONST						$1.30						$1.30	Statewide	
2583991	7	I-275	From Himes Ave. to Hillsborough River	Links Stage III	FON	CONST						$1.30						$1.30	Statewide	
2586431	7	I-275	From I-275 and I-4 Interchange to	ITS at I-4/I-275 Interchange	FMS	MOT			$1.10									$1.10	District	
2586432	7	I-275	From Hillsborough River to I-4	I-275/I-4 Freeway Management System	FMS	PE		$0.33										$0.33	District	
2586432	7	I-275	From Hillsborough River to I-4	I-275/I-4 Freeway Management System	FMS	CONST				$1.10								$1.10	Statewide	
4072331	7	I-275	From MLK Blvd to Bearss Ave	I-275 Freeway Management System	FMS	PE		$0.20										$0.20	District	
4072331	7	I-275	From MLK Blvd to Bearss Ave	I-275 Freeway Management System	FMS	CONST				$2.67								$2.67	Statewide	
4072332	7	I-275	From 54th Ave N to Howard Frankland	I-275 Freeway Management System	FMS	PE		$0.40										$0.40	District	
4072332	7	I-275	From 54th Ave N to Howard Frankland	I-275 Freeway Management System	FMS	CONST				$3.69								$3.69	Statewide	
4072333	7	I-275	From Howard Frankland to Kennedy Blvd	I-275 Freeway Management System	FMS	CONST				$0.32								$0.32	Statewide	
4072334	7	I-275	From 54th Ave S to 54th Ave N	I-275/Freeway Management System	FMS	PE			$0.30									$0.30	Statewide	
4072334	7	I-275	From 54th Ave S to 54th Ave N	I-275 Freeway Management System	FMS	CONST						$2.69						$2.69	Statewide	
4072335	7	I-275	From Sunshine Skyway Bridge to 54th Ave S	I-275 Freeway Management System	FMS	PE				$0.40								$0.40	Statewide	
4072335	7	I-275	From Sunshine Skyway to 54th Ave. South	I-275 Freeway Management System	FMS	CONST								$2.77				$2.77	Statewide	See Note 1 and 2.
4072336	7	I-275	From I-75 South to Sunshine Skyway	I-275 Freeway Management System	FMS	CONST											$2.02	$2.02	Statewide	See Note 1 and 2.
4086711	7	I-275	From Sunshine Skyway Bridge North End to Sunshine Skyway Bridge South	Skyway Video Monitoring System Modifications	ATIS	D/B	$1.64											$1.64	District	
740201	7	I-4	From I-275 to US 27 (Polk County)	Fiber Optic Network	FON	PE			$0.93									$0.93	Statewide	Project added to provide FON backbone for programmed I-4 ITS projects.
740202	7	I-4	From I-275 to US 27 (Polk County)	Fiber Optic Network	FON	CONST			$4.64									$4.64	Statewide	Project added to provide FON backbone for programmed I-4 ITS projects.
740203	7	I-4	From I-275 to US 27 (Polk County)	Fiber Optic Network	FON	CEI			$0.37									$0.37	Statewide	Project added to provide FON backbone for programmed I-4 ITS projects.
2584012	7	I-4	From 14th St to 50th St	I-4 Freeway Management System	FMS	CONST				$1.10								$1.10	Statewide	
4093661	7	I-4	From 50th Street to CR 579	I-4Freeway Management System	FMS	PE		$0.20										$0.20	District	
4093661	7	I-4	From 50th Street to CR 579	I-4 Freeway Management System	FMS	CONST				$2.70								$2.70	Statewide	
4093662	7	I-4	From CR 579 to Park Road	I-4 Freeway Management System	FMS	PE			$0.40									$0.40	Statewide	
4093662	7	I-4	From CR 579 to Park Road	I-4 Freeway Management System	FMS	CONST					$4.10							$4.10	Statewide	
4093663	7	I-4	From Park Road to Hillsborough/Polk Co. Line	I-4 Freeway Management System	FMS	PE				$0.61								$0.61	District	
4093663	7	I-4	From Park Road to Hillsborough/Polk Co. Line	I-4 Freeway Management System	FMS	CONST						$1.28						$1.28	District	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
4093664	7	I-4	From Hillsborough/Polk Co. Line to US 27	I-4 Freeway Management System	FMS	PE			$0.10									$0.10	District	
4093664	7	I-4	From Hillsborough/Polk Co. Line to US 27	I-4 Freeway Management System	FMS	CONST						$5.10						$5.10	Statewide	
743701	7	I-75	From US 301 (Brandon) to SR 54	Fiber Optic Network	FON	PE								$0.68				$0.68	Statewide	
743702	7	I-75	From US 301 (Brandon) to SR 54	Fiber Optic Network	FON	CONST								$4.58				$4.58	Statewide	
743703	7	I-75	From US 301 (Brandon) to SR 54	Fiber Optic Network	FON	CEI								$0.29				$0.29	Statewide	
4072321	7	I-75	From Tampa RTMC to Tampa RTMC	Tampa Bay Sunguide Freeway Management Center and System	FMS	PE	$0.81											$0.81	Statewide	
4072321	7	I-75	From Tampa RTMC to Tampa RTMC	Tampa Bay Sunguide Freeway Management Center and System	FMS	CONST			$4.79	$1.09								$5.87	Statewide	
4109091	7	I-75	From US 301 to Fowler Ave	I-75 Freeway Management System	FMS	PE			$0.30									$0.30	District	
4109091	7	I-75	From US 301 to Fowler Ave	I-75 Freeway Management System	FMS	CONST					$4.90							$4.90	Statewide	
4109092	7	I-75	From Fowler Ave to Bruce B Downs Blvd	I-75 Freeway Management System	FMS	PE						$0.10						$0.10	Statewide	
4109092	7	I-75	From Fowler Ave. to Bruce B. Downs Blvd.	I-75 Freeway Management System	FMS	CONST								$1.89				$1.89	Statewide	See Note 1.
4109093	7	I-75	From Bruce B Downs Blvd to I-275(Pasco County)	I-75 Freeway Management System	FMS	PE						$0.32						$0.32	Statewide	
4109093	7	I-75	From Bruce B. Downs Blvd. to I-275 (Pasco Co.)	I-75 Freeway Management System	FMS	CONST								$1.56				$1.56	Statewide	See Note 1.
4109094	7	I-75	From I-275 to Hernando Co. Line	I-75 Freeway Management System	FMS	PE						$0.14						$0.14	Statewide	
4109094	7	I-75	From I-275 to Hernando Co. Line	I-75 Freeway Management System	FMS	CONST								$3.28				$3.28	Statewide	See Note 1.
4109095	7	I-75	From Pasco Co. Line to SR 50	I-75 Freeway Management System	FMS	PE						$0.10						$0.10	Statewide	
4109095	7	I-75	From Pasco Co. Line to SR 50	I-75 Freeway Management System	FMS	CONST										$0.67		$0.67	Statewide	See Note 1.
4109096	7	I-75	From Manatee Co. Line to US 301	I-75 Freeway Management System	FMS	PE						$0.21						$0.21	Statewide	
4109096	7	I-75	From Manatee Co. Line to US 301	I-75 Freeway Management System	FMS	CONST								$2.65				$2.65	Statewide	See Note 1.
4109097	7	I-75	From I-275 to Hillsborough Co. Line	I-75 (Freeway Management System	FMS	PE						$0.10						$0.10	Statewide	
4109097	7	I-75	From I-275 to Hillsborough Co. Line	I-75 Freeway Management System	FMS	CONST								$0.57				$0.57	Statewide	See Note 1.
2558441	7	SR 589	From I-275 to Hillsborough River	Links Stage I	FMS	CONST			$1.59									$1.59	Statewide	
2558442	7	SR 589	From I-275 to Hillsborough River	Links Stage I	FMS	PE			$0.20									$0.20	Statewide	
2558442	7	SR 589	From I-275 to Hillsborough River	Links Stage I	FMS	CONST					$1.70							$1.70	Statewide	
4122861	8	Sawgrass	From Sawgrass Expressway Limits to Sawgrass Expressway Limits	Sunpass Challenge Sawgrass Expressway	FMS	PE	$0.07											$0.07	District	
4122861	8	Sawgrass	From Sawgrass Expressway Limits to Sawgrass Expressway Limits	Sunpass Challenge Sawgrass Expressway	FMS	CONST		$9.24										$9.24	District	See Note 5
4122861	8	Sawgrass	From Sawgrass Expressway Limits to Sawgrass Expressway Limits	Sunpass Challenge Sawgrass Expressway	FMS	Utilities		$0.21										$0.21	District	
4122861	8	Sawgrass	From Sawgrass Expressway Limits to Sawgrass Expressway Limits	Sunpass Challenge Sawgrass Expressway	FMS	Capital		$0.95										$0.95	District	
4122871	8	Sawgrass	From Sawgrass Expressway Limits to Sawgrass Expressway Limits	Sunpass Challenge Sawgrass Ramps II	FMS	PE	$0.01											$0.01	District	
4122881	8	SR 570	From Polk Parkway Limits to Polk Parkway Limits	Sunpass Challenge Polk Parkway	FMS	PE	$0.00											$0.00	District	
4122881	8	SR 570	From Polk Parkway Limits to Polk Parkway Limits	Sunpass Challenge Polk Parkway	FMS	CONST		$2.33										$2.33	District	See Note 5
4122881	8	SR 570	From Polk Parkway Limits to Polk Parkway Limits	Sunpass Challenge Polk Parkway	FMS	Capital		$0.68										$0.68	District	
843802	8	SR 91	From MP 263 to MP 267	Ocoee Video System and Fiber Optics	FMS	CONST	$0.25											$0.25		Bidding proposed to occur in FY'03.
1907501	8	SR 91	From MP4 to MP 75	SunNav Phase 1 Fiber Project	FMS	CONST	$8.00	$3.70										$11.70	District	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
1907661	8	SR 91		SunNav sm Software Development and Integration	FMS	PE	$3.07	$5.08	$5.75	$6.07	$6.42	$6.72						$33.10	District	See Note 4
4061221	8	SR 91	From I-95 to I-75	Mainline Communication HUBS & Fiber Distribution Cable	COM	PE	$1.66											$1.66	District	
4061221	8	SR 91	From I-95 to I-75	Mainline Communication HUBS & Fiber Distribution Cable	COM	CONST			$12.46									$12.46	District	
4061221	8	SR 91	From I-95 to I-75	Mainline Communication HUBS & Fiber Distribution Cable	COM	Utilities			$0.50									$0.50	District	
4061231	8	SR 91	From Turnpike Mainline to	Intelligent Transportation System (ITS) Incident Detection	FMS	PE				$0.81								$0.81	District	
4061231	8	SR 91	From Turnpike Mainline to	Intelligent Transportation System (ITS) Incident Detection	FMS	CONST						$10.66						$10.66	District	
4090601	8	SR 91	From I-95 to I-75	Sunpass System Monitoring Expansion and CCTV equipment	FMS	Capital	$1.60	$1.40	$1.50	$1.50	$1.50	$2.00						$9.50	Statewide	
1907171	8	Various	From I-95 to I-75	Advanced Traveler Information System DMS, HAR , TMC's	FMS	Right Of Way	$0.00											$0.00	District	Included Right Of Way Phase in order to be consistent with Work Program
1907171	8	Various	From I-95 to I-75	Advanced Traveler Information System DMS, HAR , TMC's	FMS	PE	$0.53											$0.53	District	
1907171	8	Various	From I-95 to I-75	Advanced Traveler Information System DMS, HAR , TMC's	FMS	CONST	$0.84											$0.84	District	
1907171	8	Various	From I-95 to I-75	Advanced Traveler Information System DMS, HAR , TMC's	FMS	Utilities	$1.07											$1.07	District	
	9	Central Office		ITS Central Office Consultants and Contingencies	FMS	PE		$7.90	$9.20	$8.40	$10.50	$8.63	$8.63	$7.32	$2.32	$3.31	$3.31	$69.51	Statewide	
915701	9	Central Office	Statewide	CVISN Phase I (Electronic Credentialing System & Automated Routing Software, Items 1-3)	CVISN	PE		$2.56										$2.56	Statewide	
915801	9	Central Office	Statewide	CVISN Phase II (Electronic Payment System and IFTA Clearing House, Items 4-10)	CVISN	PE			$1.08									$1.08	Statewide	
916601	9	Central Office	Statewide	Jacksonville Area SunGuide ATIS	ATIS	PE					$3.18							$3.18	Statewide	Public sector subsidy, private sector participation anticipated
918801	9	Central Office	Statewide	Southwest Florida ATIS	ATIS	PE					$3.00							$3.00	Statewide	Public sector subsidy, private sector participation anticipated
918901	9	Central Office	Statewide	Statewide 511 Services	ATIS	PE				$1.94								$1.94	Statewide	Public sector subsidy, private sector participation anticipated. Advanced 1 yr. To coincide with the 511 Implementation Plan.
924401	9	Central Office	Statewide	Statewide Highway Advisory Radio System Phase 1	ATIS	PE											$0.75	$0.75	Statewide	
924402	9	Central Office	Statewide	Statewide Highway Advisory Radio System Phase 1	ATIS	CONST											$4.98	$4.98	Statewide	
924403	9	Central Office	Statewide	Statewide Highway Advisory Radio System Phase 1	ATIS	CEI											$1.00	$1.00	Statewide	
930701	9	Central Office	Statewide	Statewide Road Weather Information System	ATIS	PE										$0.94		$0.94	Statewide	
930702	9	Central Office	Statewide	Statewide Road Weather Information System	ATIS	CONST										$3.14	$3.24	$6.38	Statewide	
930703	9	Central Office	Statewide	Statewide Road Weather Information System	ATIS	CEI										$0.63	$0.65	$1.28	Statewide	
939001	9	Central Office	Statewide	RTMC Software Library and Configuration Management	RTMC	PE		$1.40	$0.80	$0.60	$0.60	$0.17	$0.17	$0.18	$0.18	$0.19	$0.19	$4.48	Statewide	
4125431	9	I-4	Statewide	Tampa Bay SunGuide℠ ATIS	ATIS	PE		$5.00										$5.00	Statewide	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
				Total Statewide Manageed Funds (TSWMF)			$24.80	$21.40	$70.30	$65.60	$67.50	$55.30	$56.30	$50.00	$25.00	$30.00	$30.00	$496.20		
				Statewide Funds Programmed (S)			$18.21	$10.16	$38.12	$26.08	$15.10	$16.36	$3.10	$3.20	$0.00	$0.00	$0.00	$130.34		
				District Funds Programmed (D)			$81.69	$38.57	$21.55	$39.74	$6.77	$18.66	$0.00	$0.00	$0.00	$0.00	$0.00	$206.98		
				Other Programmed -Private (P)			$4.77	$8.28	$4.58	$1.07	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$18.69		
				Total Programmed (S+D+P)			$104.67	$57.01	$64.25	$66.89	$21.87	$35.03	$3.10	$3.20	$0.00	$0.00	$0.00	$356.02		
				Funds Available for CFP (TSWMF -S)			$6.59	$11.24	$32.18	$39.52	$52.40	$38.94	$53.20	$46.80	$25.00	$30.00	$30.00	$365.86		
				Cost-Feasible Projects (CFP)			$0.00	$17.61	$30.19	$38.40	$50.75	$38.31	$52.74	$46.14	$24.77	$29.87	$29.17	$357.95		
				Contingency as a % of TSWFA			27%	-30%	3%	2%	2%	1%	1%	1%	1%	0%	3%	2%		

**** All projects costs shown are escalated or "as-programmed" millions of***

Note 1: District cost estimates are low compared to estimates performed by the Central Office. Central Office estimates are based on the FHWA device unit costs.

Note 2: Unable to advance project utilizing statewide managed funds. Project can be advanced utilizing district allocated funds.

Note 3: Project limits, costs, and the implementation year for fiber project subject to change based on phasing and implementation of FMS projects for the same facility and limits.

Note 4: Also includes non-ITS work such as burdened costs for traffic operations and administrative staff. traffic engineering, telecommunications, and administrative work; office expenses; and travel expenses.

Note 5:SunPass Challenge projects include toll booth construction, ramp widening and other non-ITS projects.

Figure 5.5 – District 2's Ten-Year ITS Cost-Feasible Plan

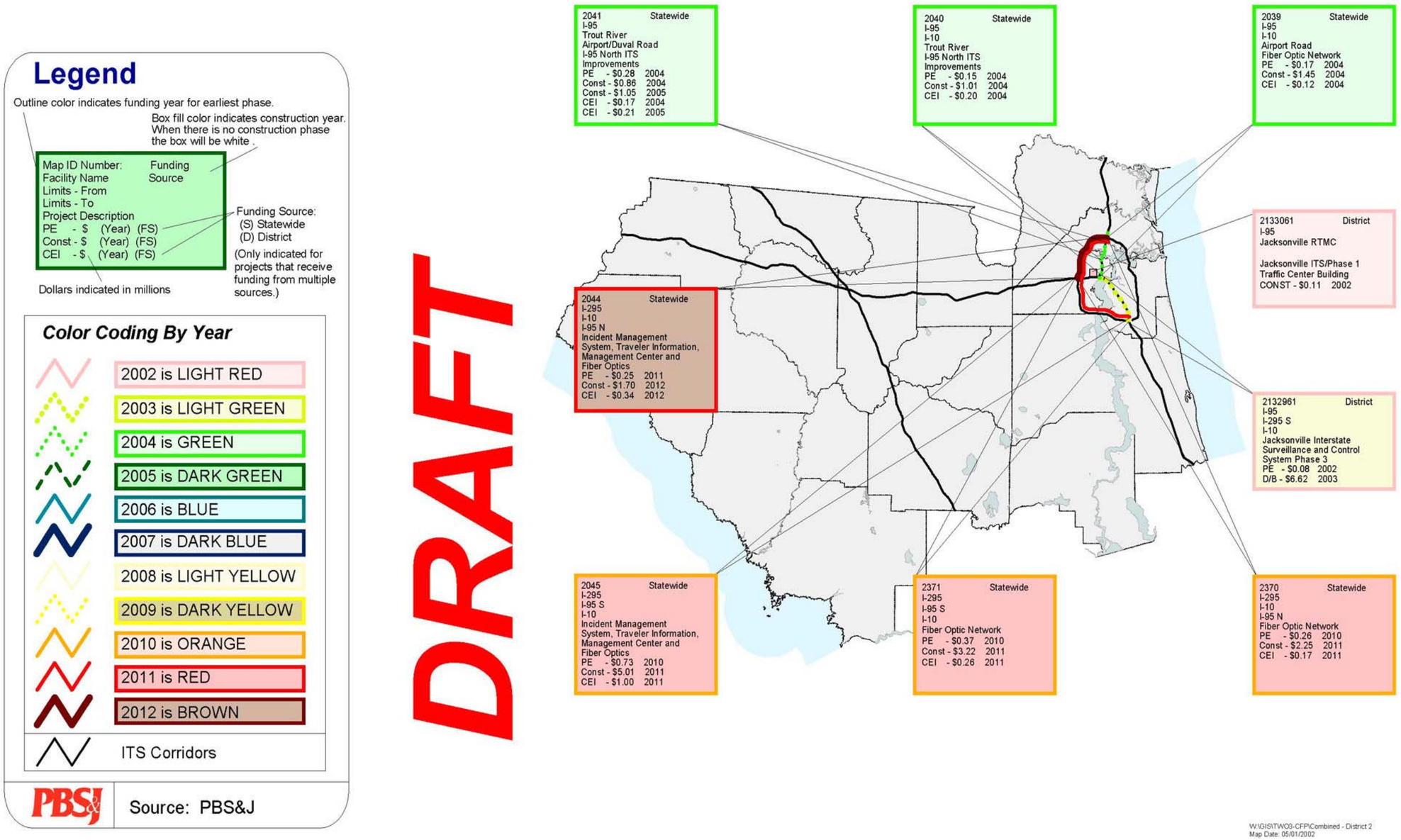
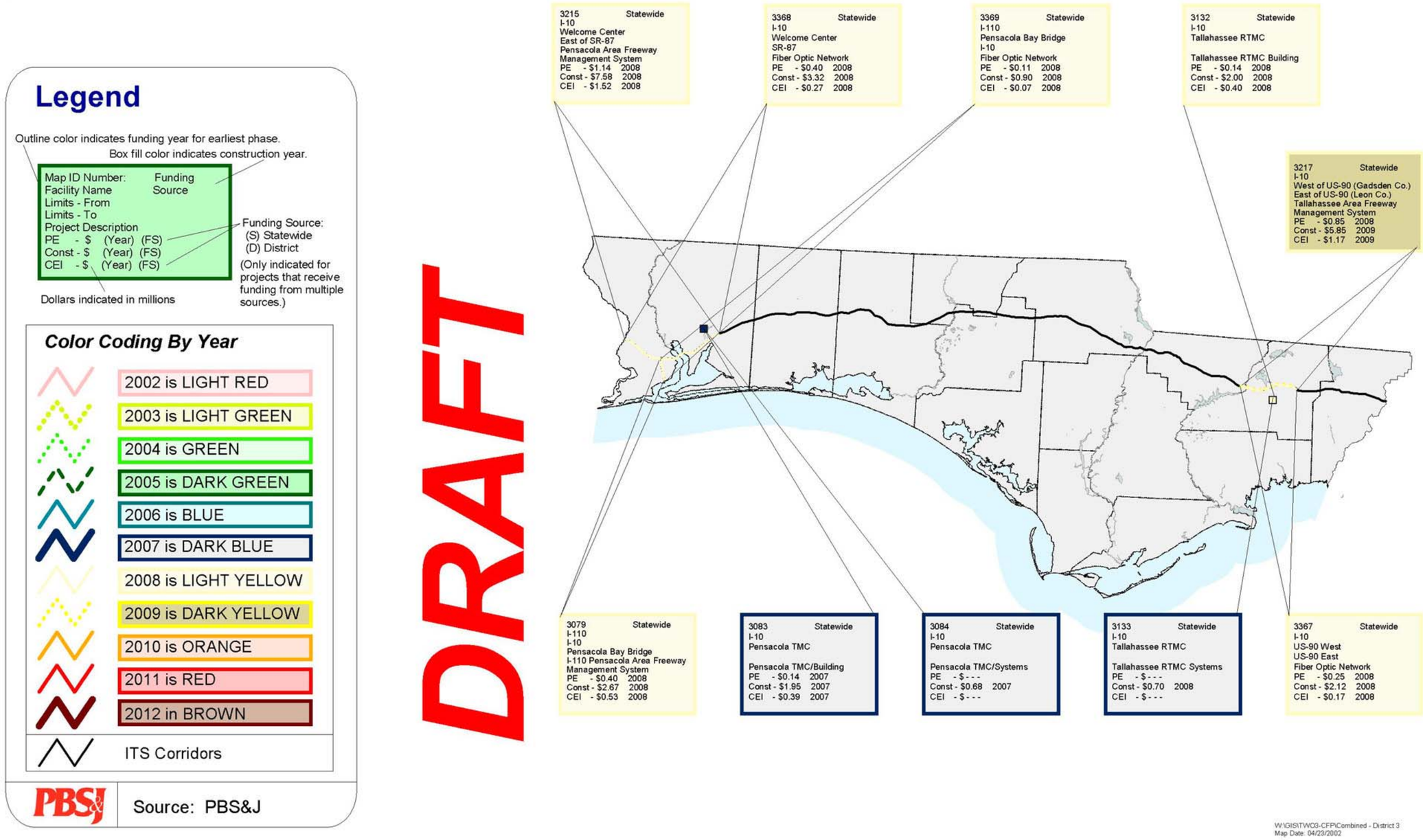


Figure 5.6 – District 3's Ten-Year ITS Cost-Feasible Plan



This phased implementation plan will be included in the *ITS Program Plan* to determine available funding and funding schedules for the deployment of these ITS projects.

5.7.3 Integration with Legacy Systems

As part of the implementation plan, integration with ITS legacy systems should also be considered when recommending the deployment of new ITS projects. It is difficult to determine, address, and resolve the legacy system integration details as the master plan detailed integration analysis must be performed during the design of the ITS project based on the type and location of devices deployed. The integration issues focus primarily on communications protocol and the ability for the legacy system to accommodate new devices. The integration analysis should consider the following issues:

- Can the legacy system accommodate new vendor devices?
- Does the legacy system satisfy all new deployment requirements or can it be upgraded to meet the requirements?
- Can the legacy system accommodate new types of devices [i.e., highway advisory radio (HAR), RWIS]?
- Does the legacy system require specific types of hardware (i.e., multiplexers from center vendors)?
- Does the system have the ability to interface with other TMCs in the region?
- Will it allow data/video and/or control sharing?
- Can existing TMC software and hardware accommodate new devices/zones?
- Do the TMCs have enough trained personnel to monitor and maintain the new devices?
- What type of communications architecture is used (i.e., point-to-point, multi-drop)?
- Can the legacy system control field devices directly or does it require external controllers?
- What communications channels are available for additional devices?
- What is the baud rate support per channel?
- How many devices per channel?
- What is the polling rate for the devices?

If the legacy system and TMC hardware/software cannot be retrofitted to accommodate an enhancement or extension of the system, new deployment plans may include a complete re-deployment of the legacy system.

5.8 Anticipated Impacts

No adverse direct or secondary impacts are anticipated from the deployment of these ITS services. These improvements are eligible for a programmatic categorical exclusion under the 1969 National Environmental Policy Act as implemented by FDOT's Project Development and Environmental Manual.[2] The following summarizes factors to be considered in the application that is being made for these ITS deployments:

- No adverse impacts to local traffic patterns, property access, community cohesiveness, planned community growth, or land-use patterns are anticipated.
- No adverse impacts to air, noise, or water quality are anticipated.
- No wetland involvement is anticipated. There is sufficient flexibility in the siting of field devices in this program that devices can be relocated to avoid any impacts.
- No Coast Guard permits are required.
- No flood plain encroachments are anticipated.
- At the most, an insignificant amount of right-of-way is required for this project. There is sufficient flexibility in the siting of field devices in this program that devices can be relocated to avoid any impacts.
- No residential or business impacts are anticipated.
- No adverse impacts to properties registered as historic are anticipated.
- No contamination involvement is anticipated.
- The project does not require a public hearing or an opportunity for a public hearing.

During design and construction, the specific siting of these field devices will need to be evaluated and relocated, if necessary, to avoid or reduce any impacts. Since all of the deployments are planned to occur on FDOT-owned right-of-ways, no adverse impacts are anticipated.

Additionally, exclusion from the NEPA, as proposed in this issue, does not exempt the project from permitting requirements. Some permitting may be required in instances where ITS devices are located outside of the FDOT-owned right-of-ways.

[2] This eligibility has yet to be formally determined. However, an application for a programmatic categorical exclusion for this project and an issue paper documenting the relevant 23 CFR, 40 CFR, and guidance from the Council on Environmental Quality recommendations were provided to the ITS Office for coordination with FDOT's Environmental Management Office and the FHWA.

6. Summary

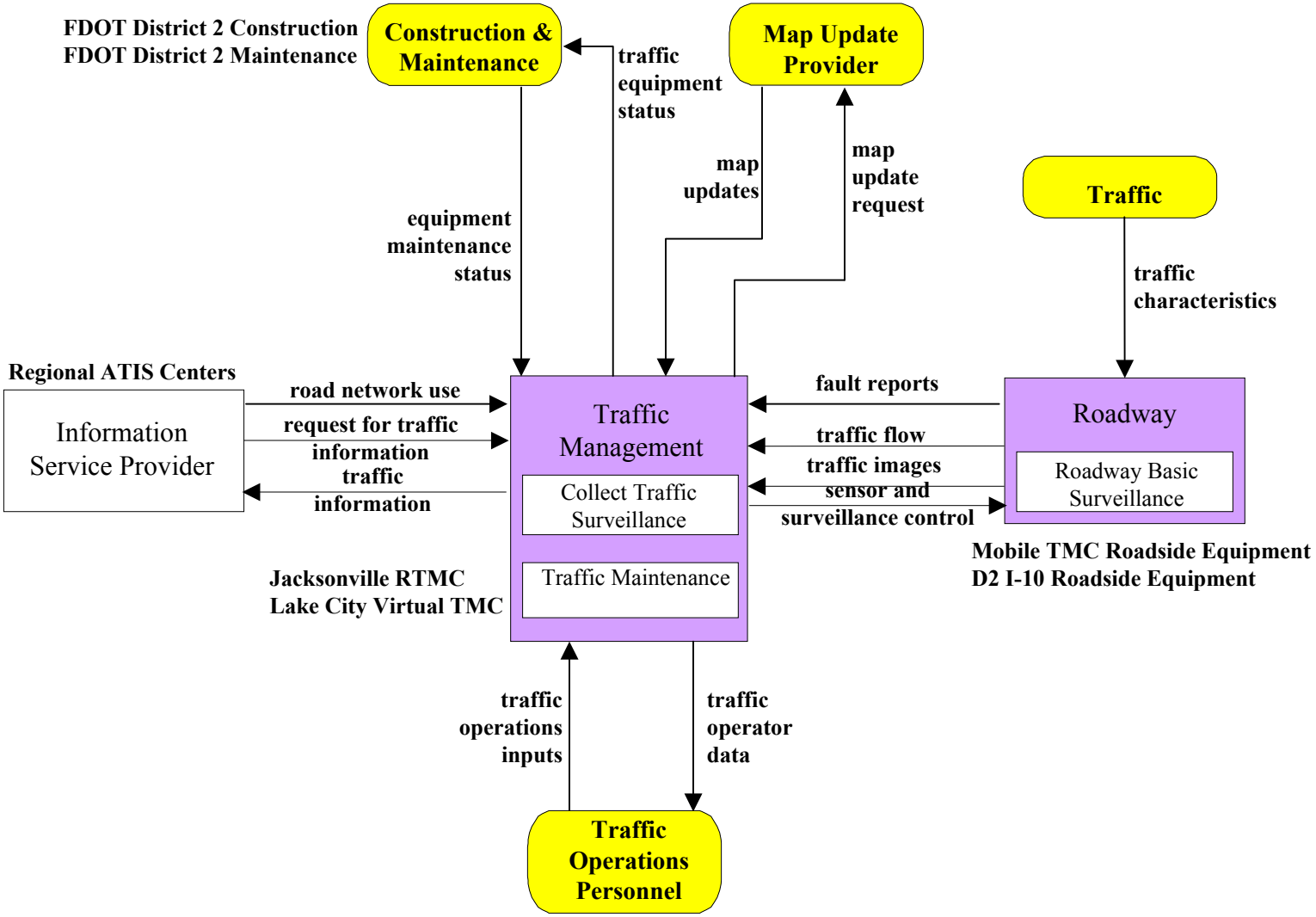
The I-10 corridor is a four-lane rural corridor that traverses the Florida panhandle area and includes the urbanized areas of Pensacola, Tallahassee, and Jacksonville. The corridor accommodates significant truck traffic and traffic volumes within the urban areas and exhibits a number of high accident locations, primarily in the rural areas.

The needs, issues, problems, and objectives established for the FIHS limited-access corridors identify a need to improve mobility, reduce congestion, and enhance safety and evacuation coordination in an efficient, cost effective manner, consistent with the goals of the *Florida Transportation Plan* and the mission and vision developed for statewide ITS deployments. Themes and strategies were recommended for deployment along these corridors that include the deployment of FMS and emergency service patrols, as recommended in the implementation plan.

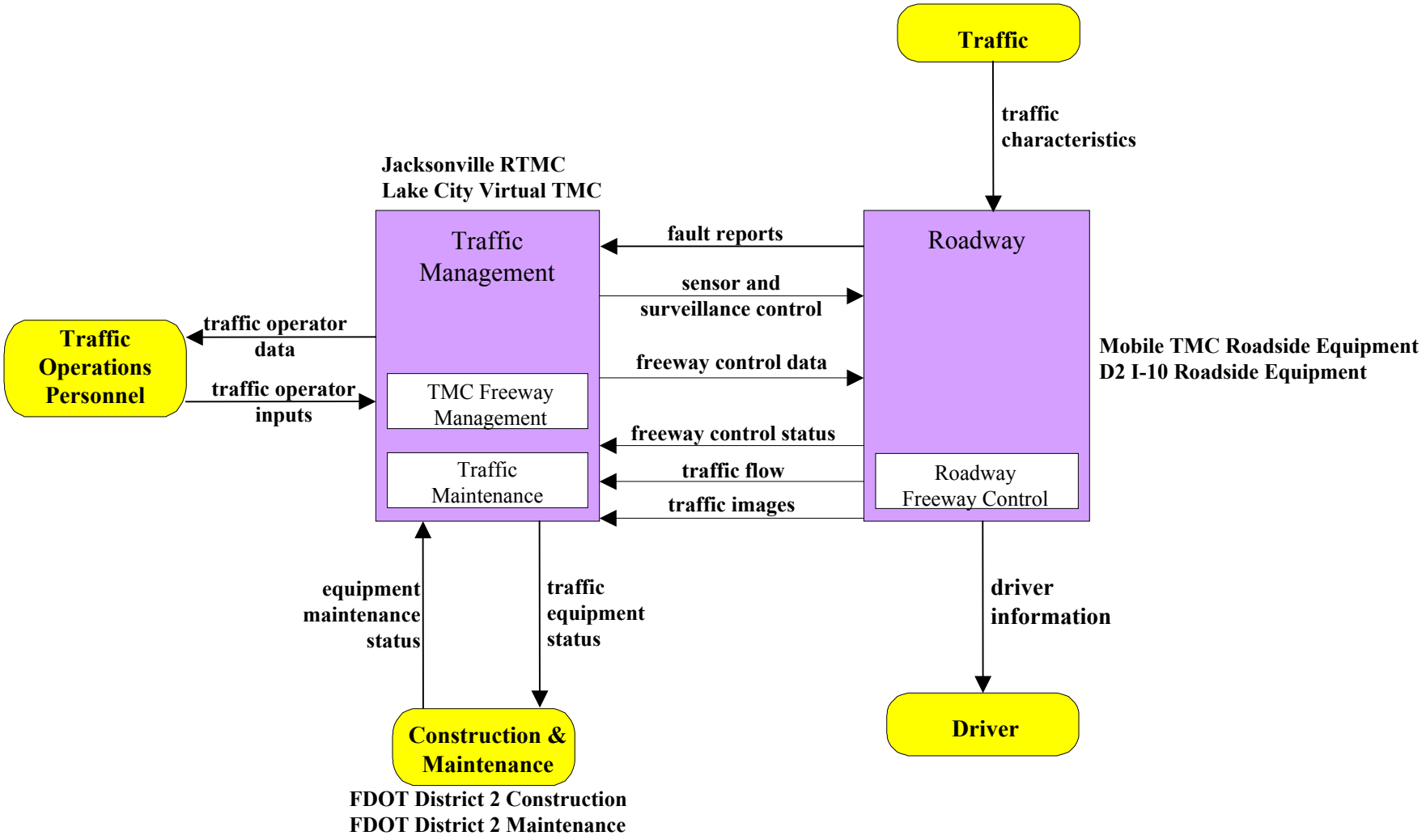
Appendix A

Market Package Diagrams

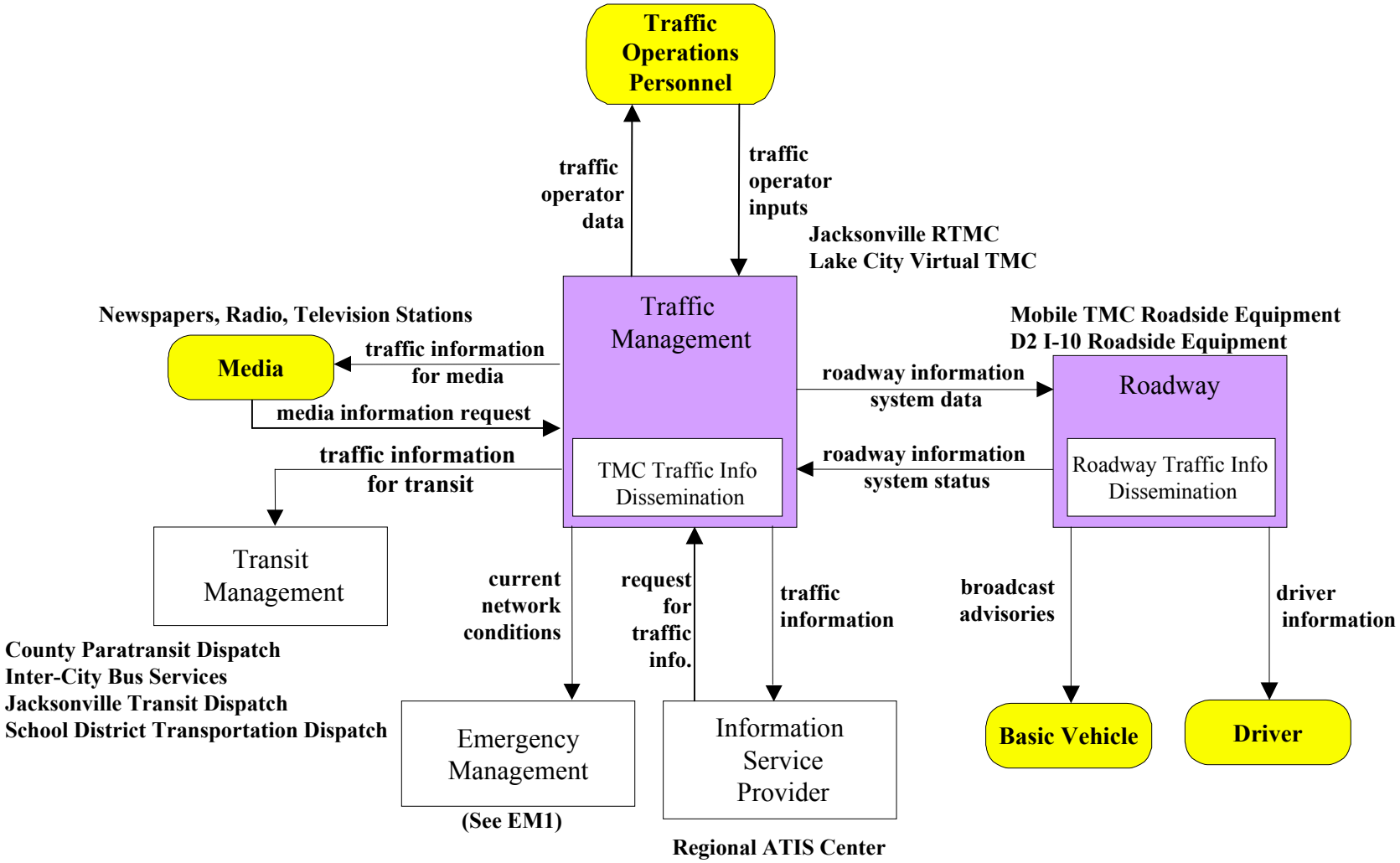
ATMS1 – Network Surveillance Market Package



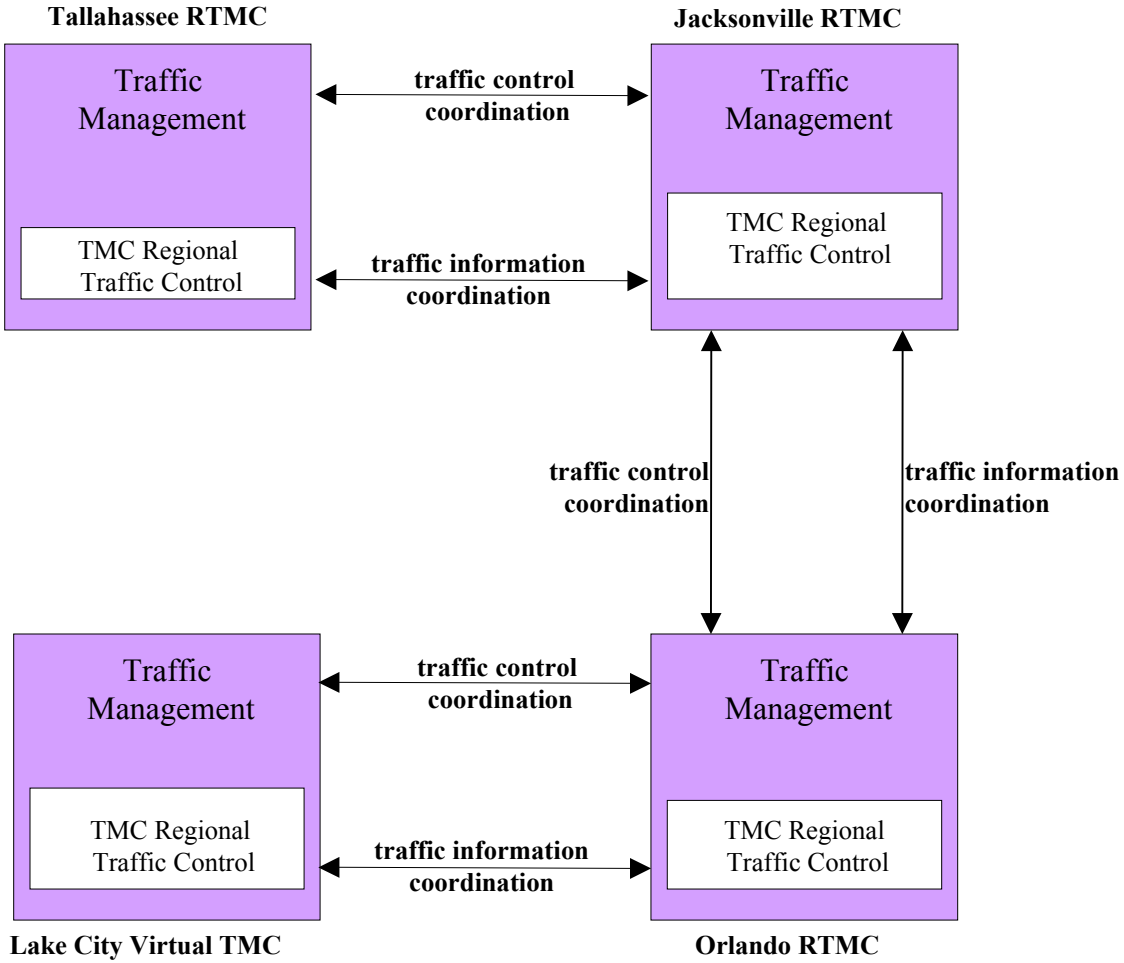
ATMS4 – Freeway Control Market Package



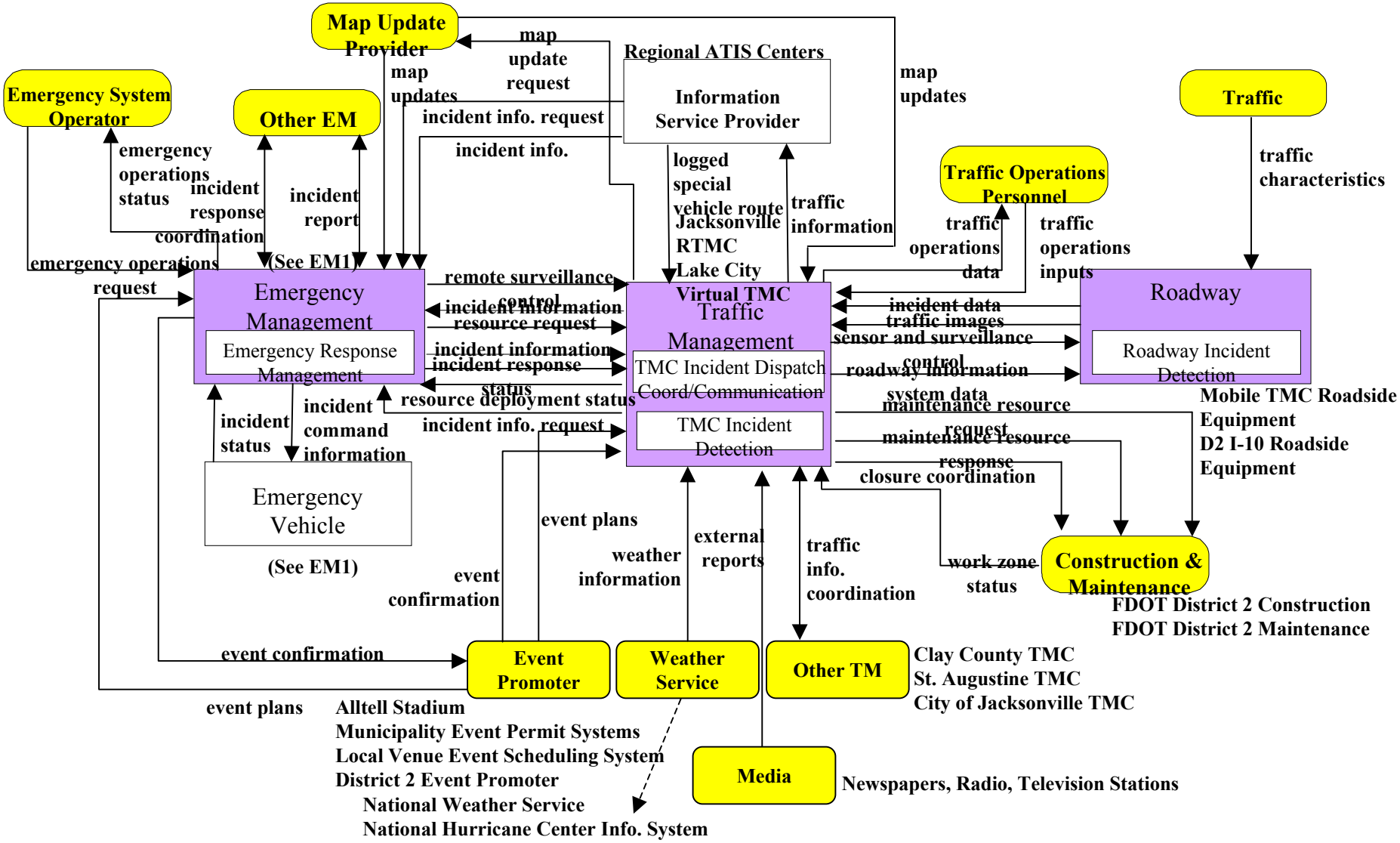
ATMS6 – Traffic Information Dissemination Market Package



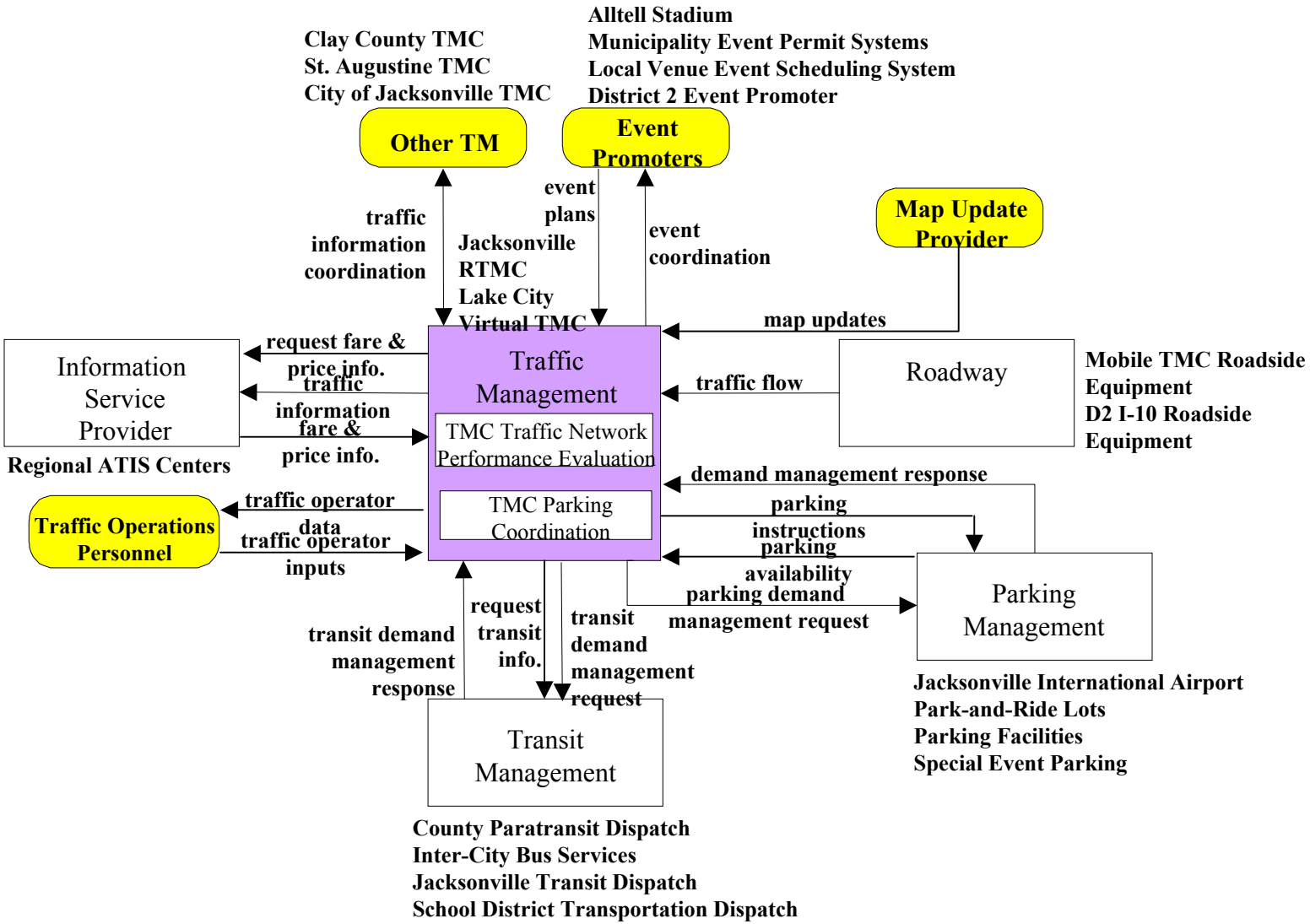
ATMS7 – Regional Traffic Control Market Package



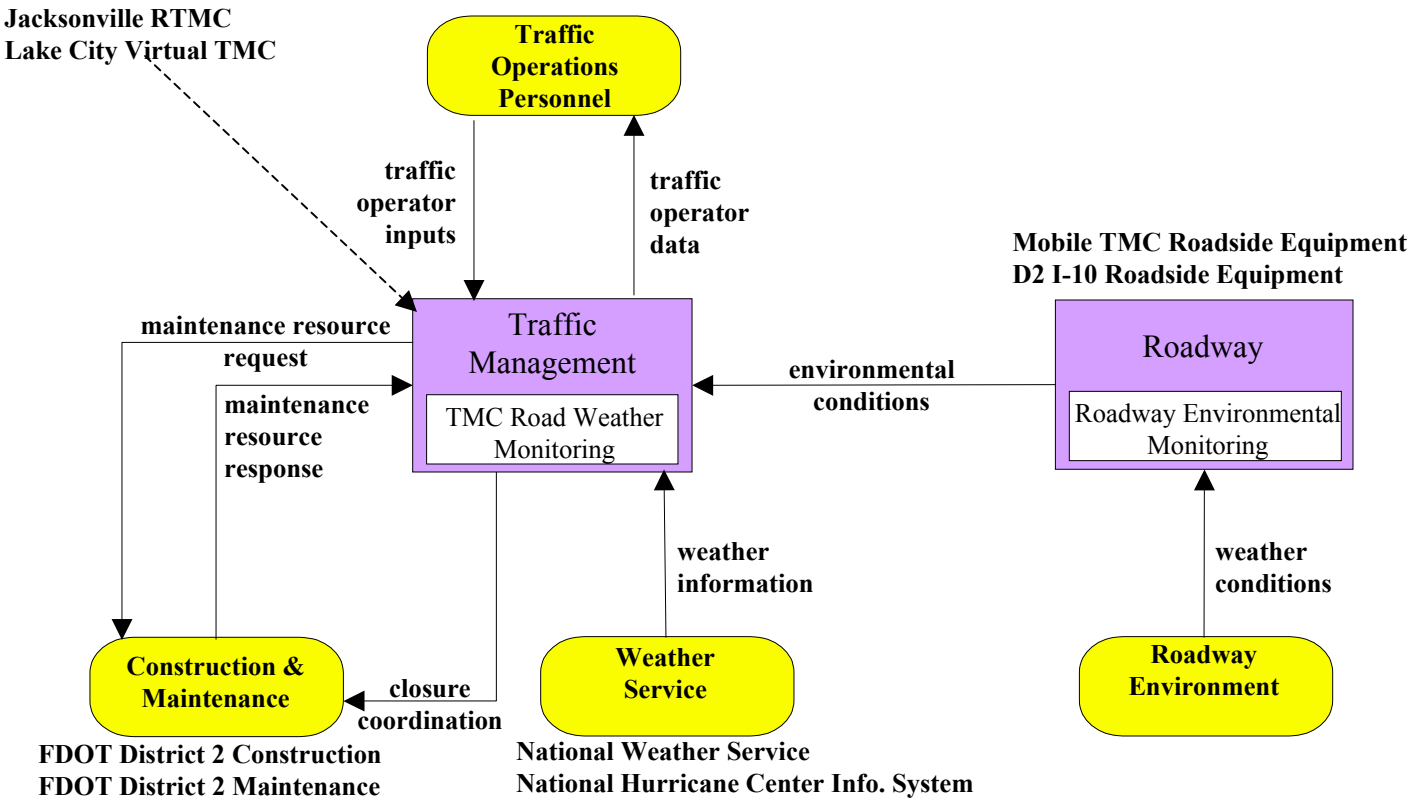
ATMS8 – Incident Management System Market Package



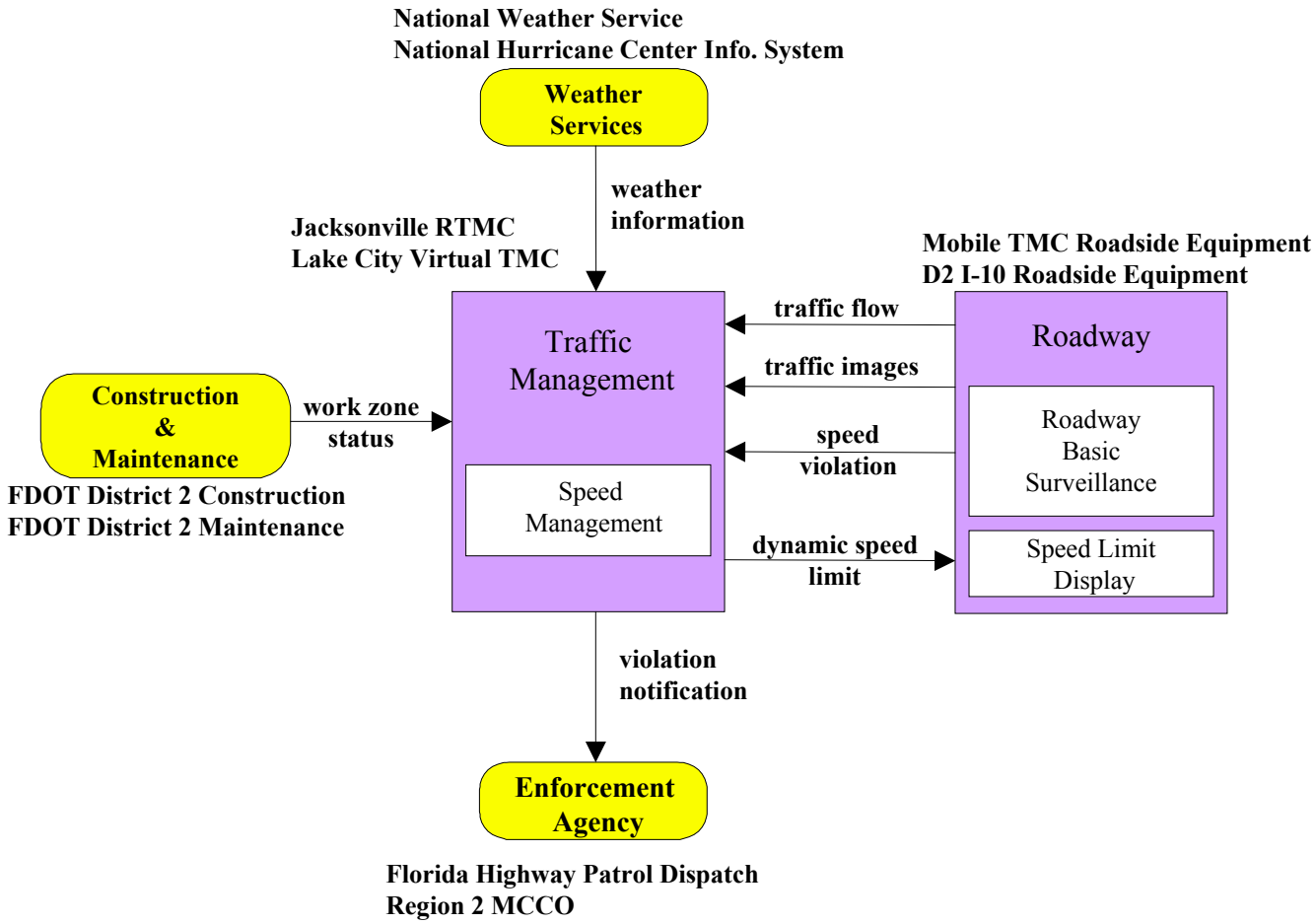
ATMS9 – Traffic Forecast and Demand Management Market Package



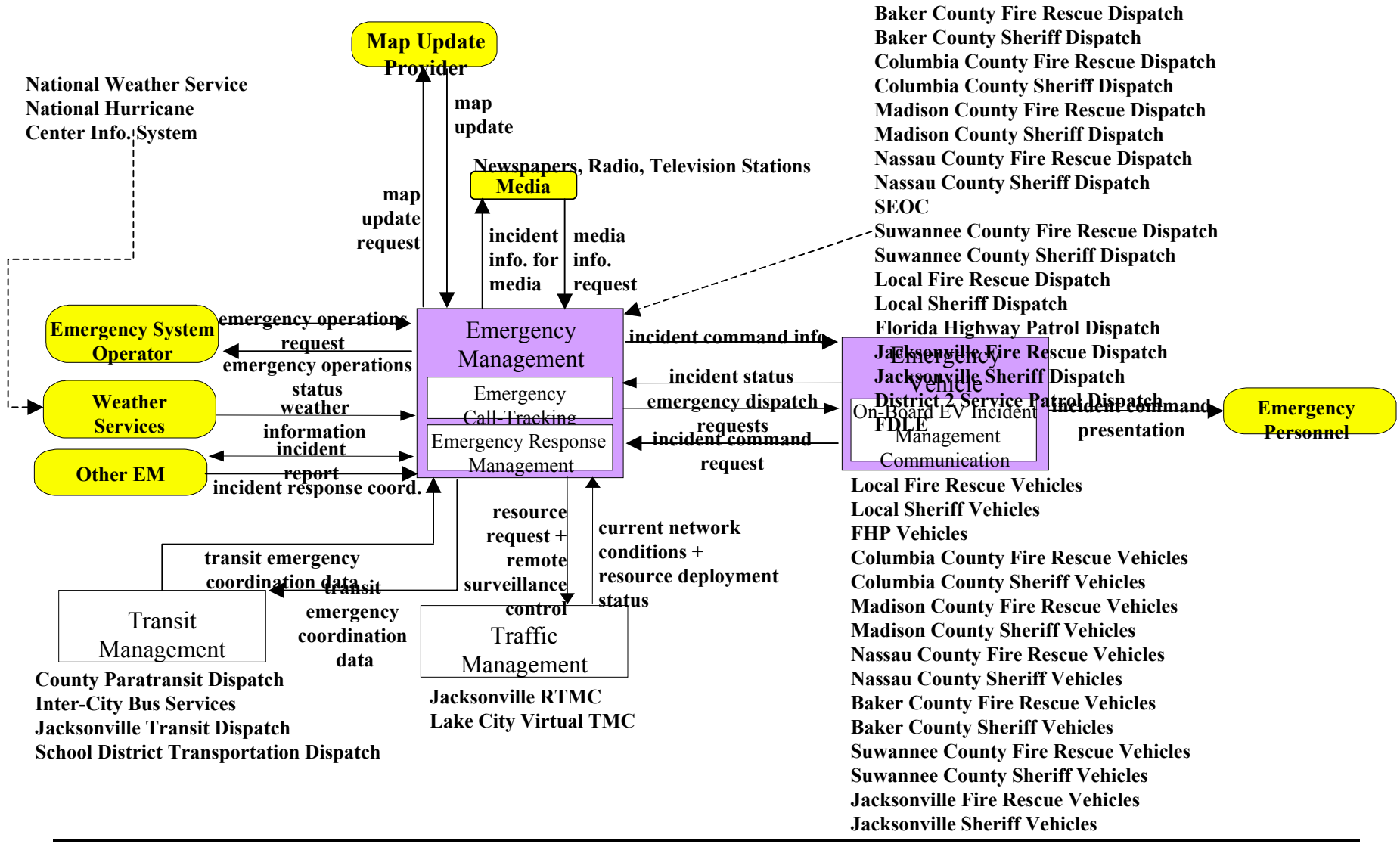
ATMS18 Road Weather Information System Market Package



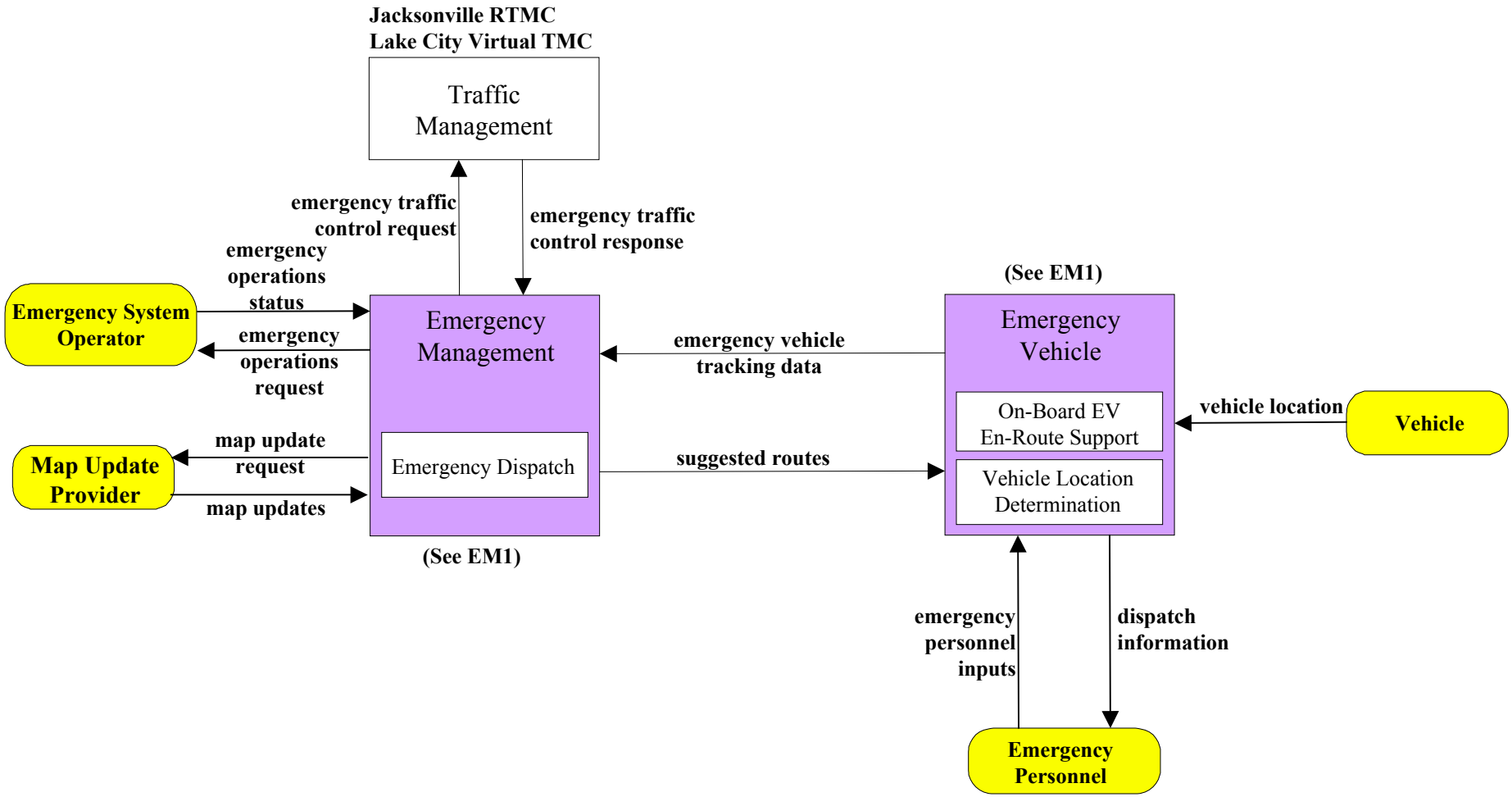
ATMS20 – Speed Management Market Package



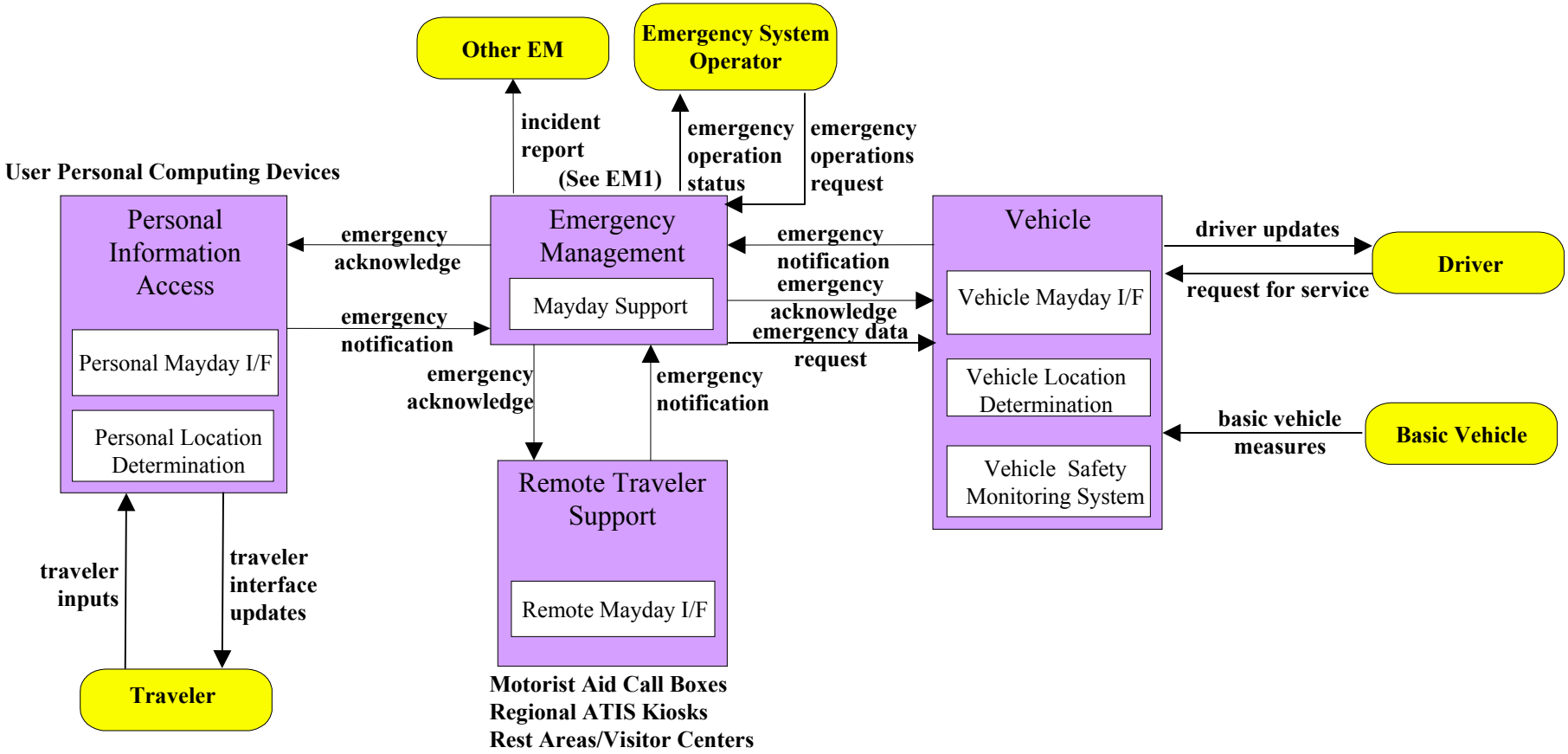
EM1 – Emergency Response Market Package for Service Patrol Providers



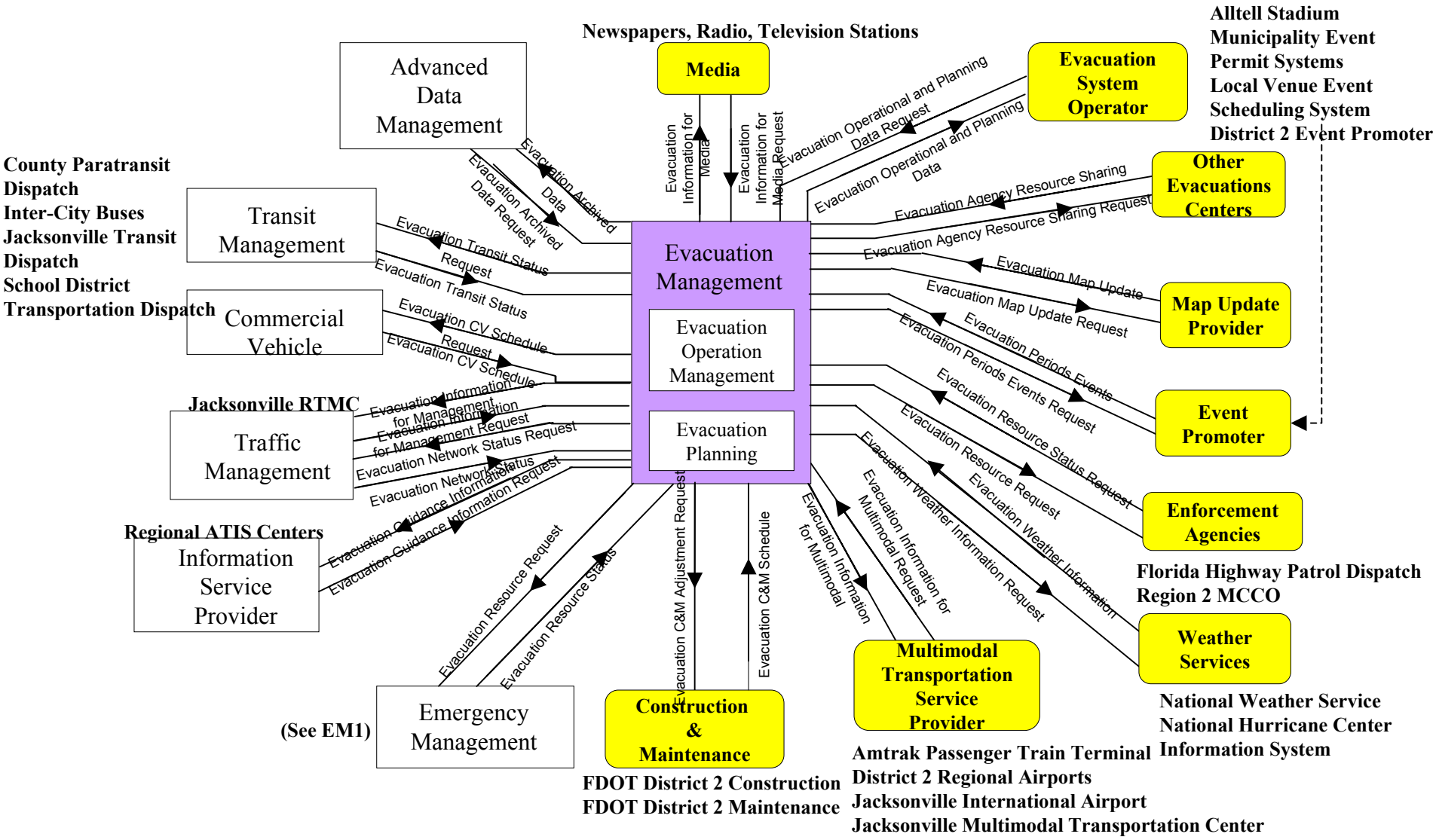
EM2 – Emergency Routing Market Package



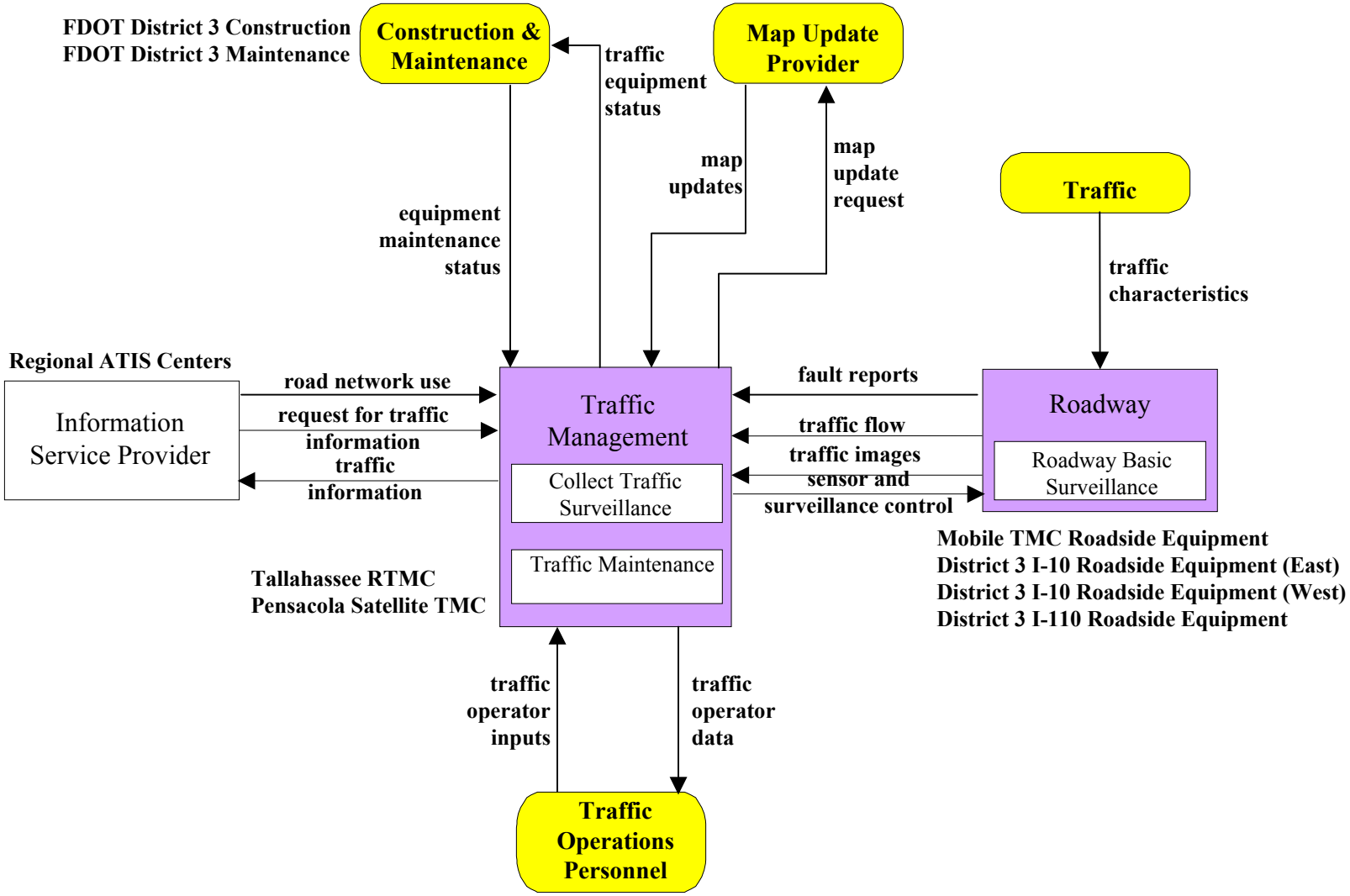
EM3 – Mayday Support Market Package



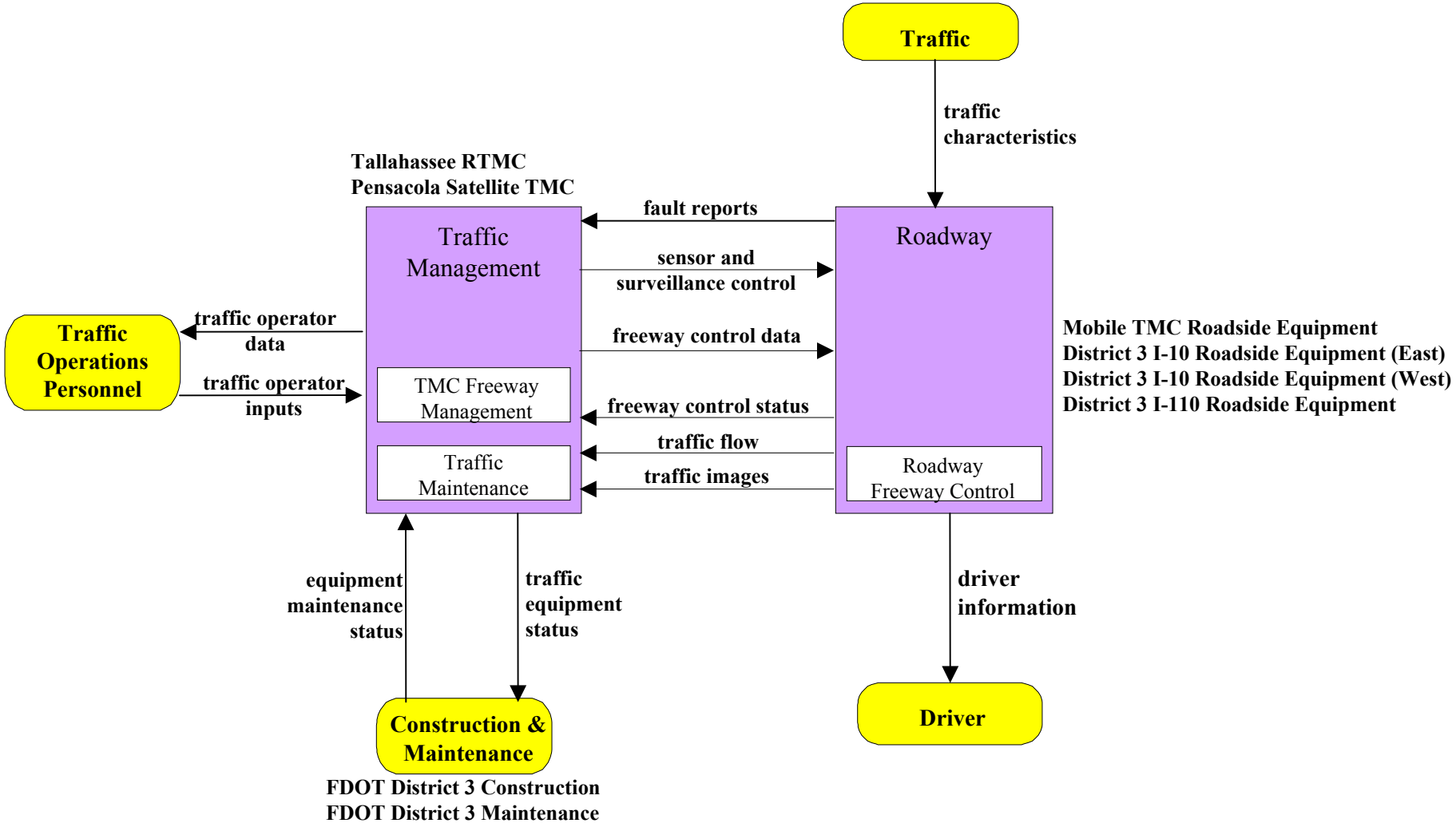
EM4 – Evacuation Management Market Package



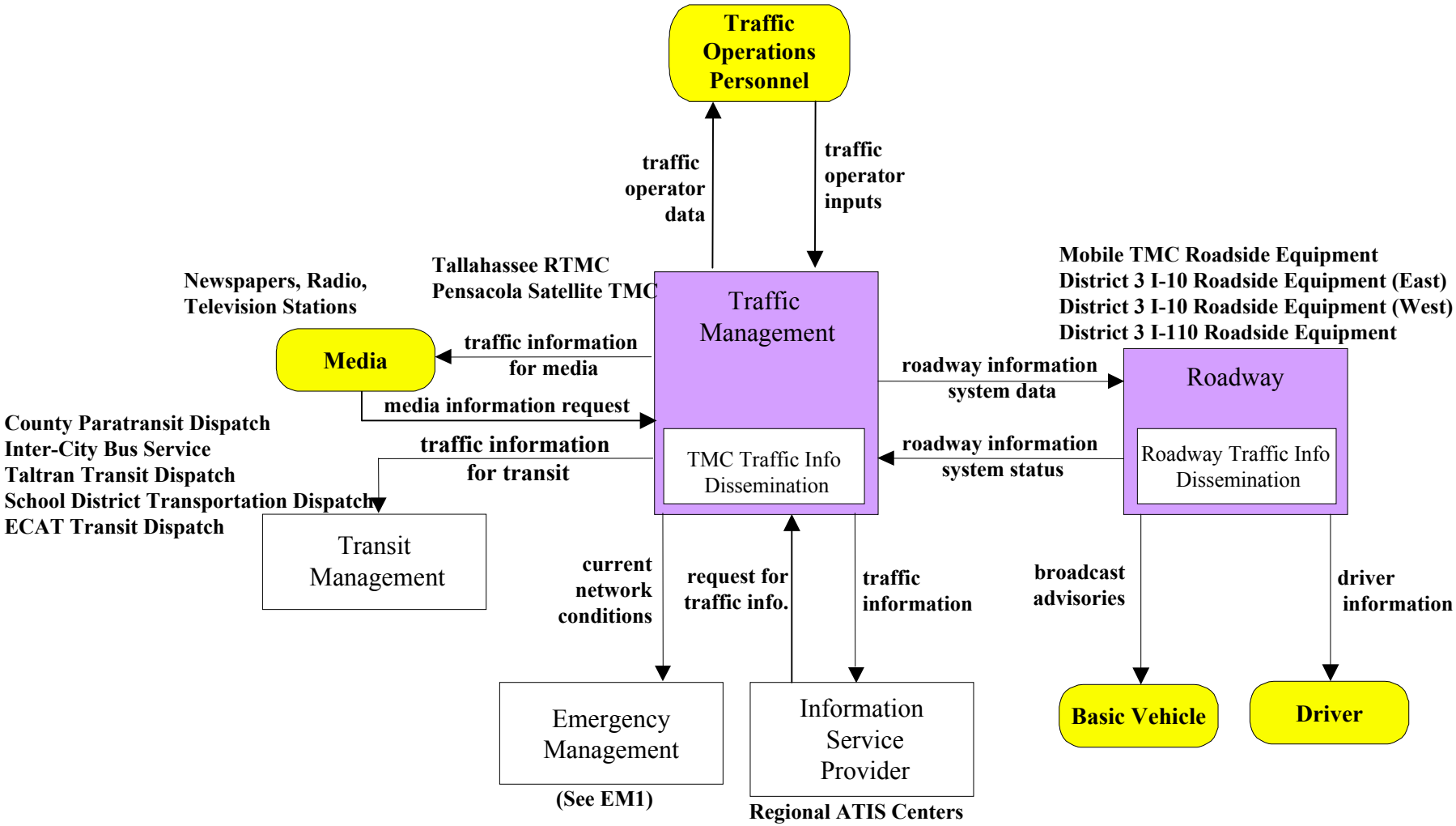
ATMS1 – Network Surveillance Market Package



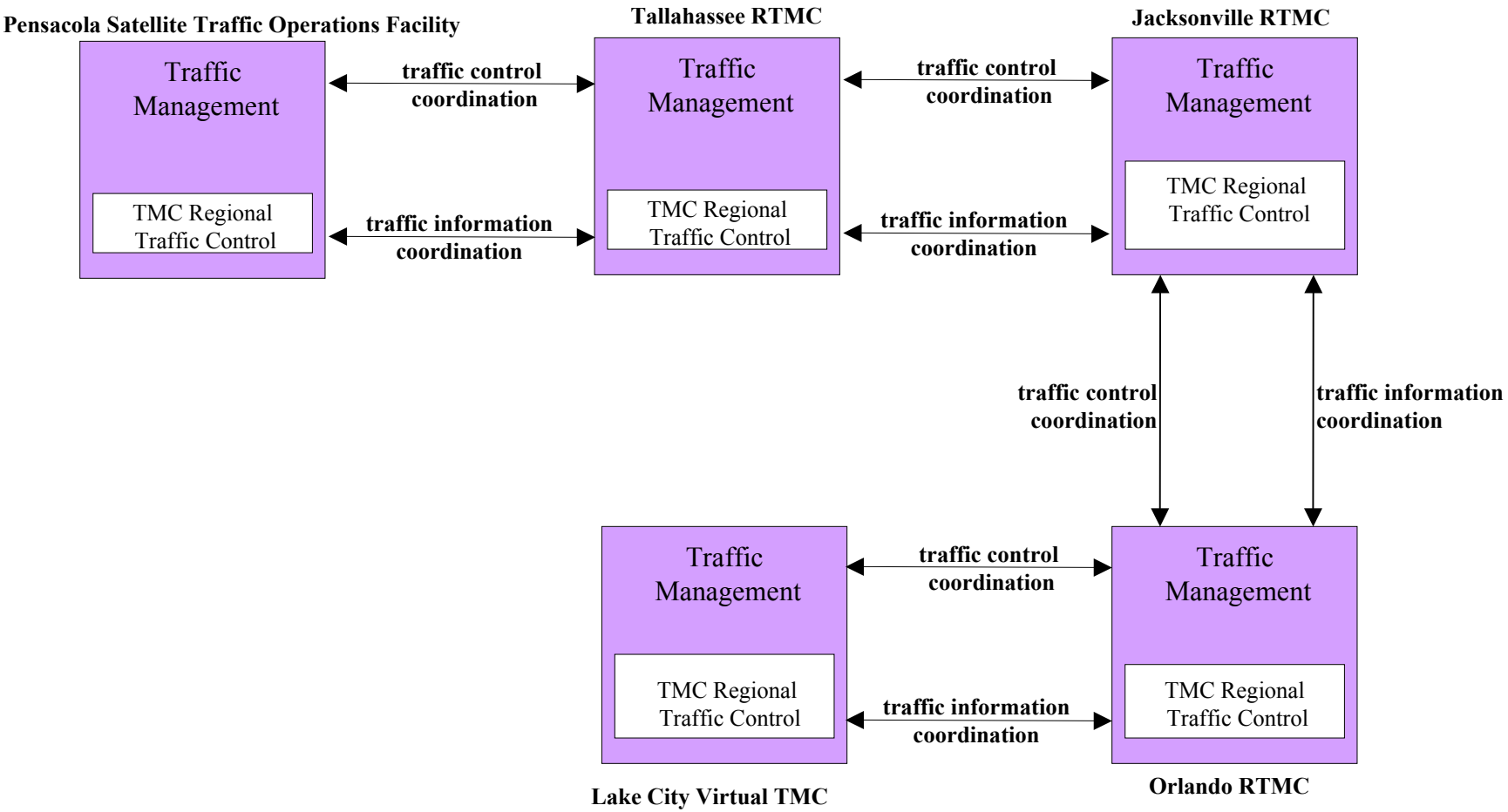
ATMS4 – Freeway Control Market Package



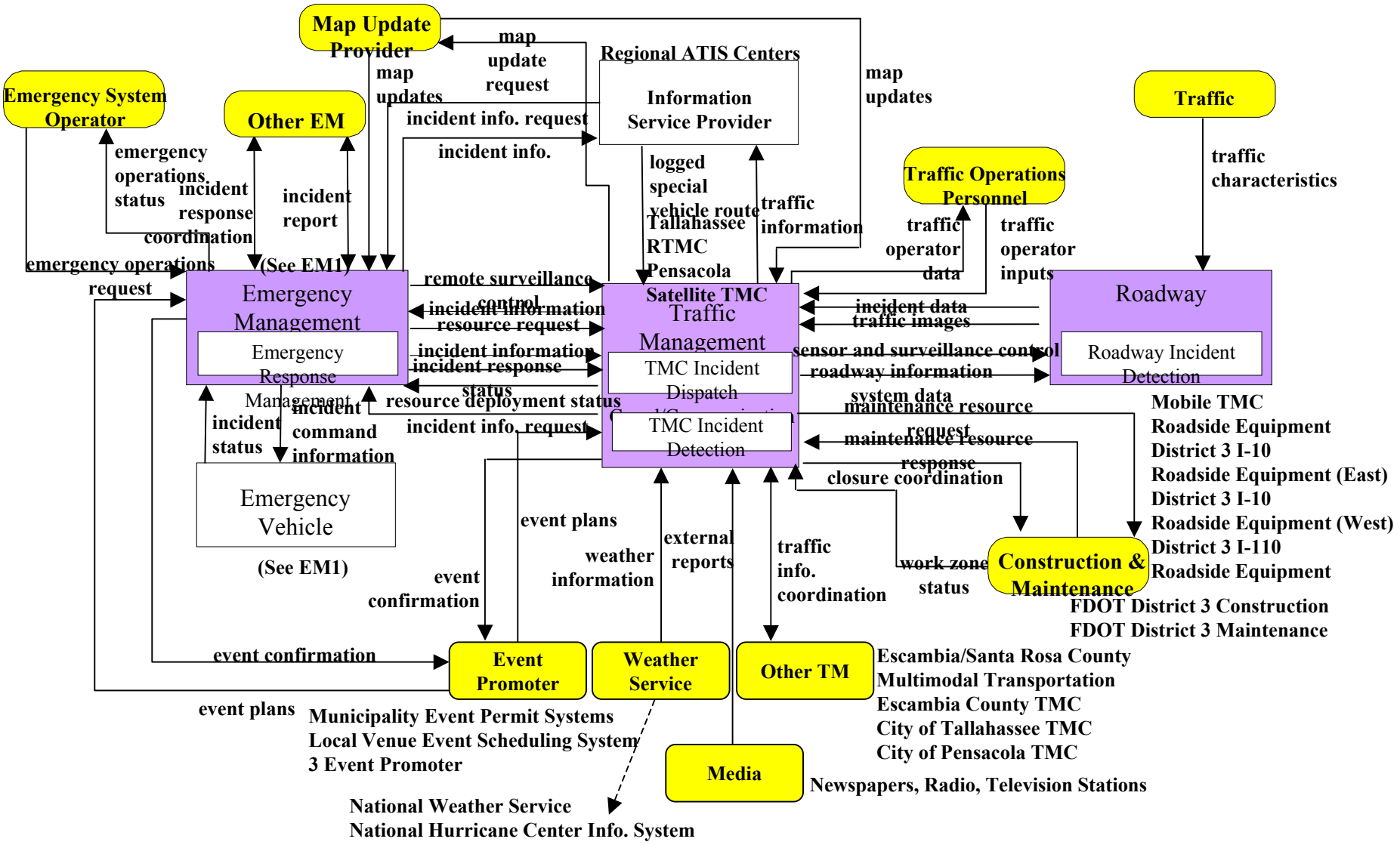
ATMS6 – Traffic Information Dissemination Market Package



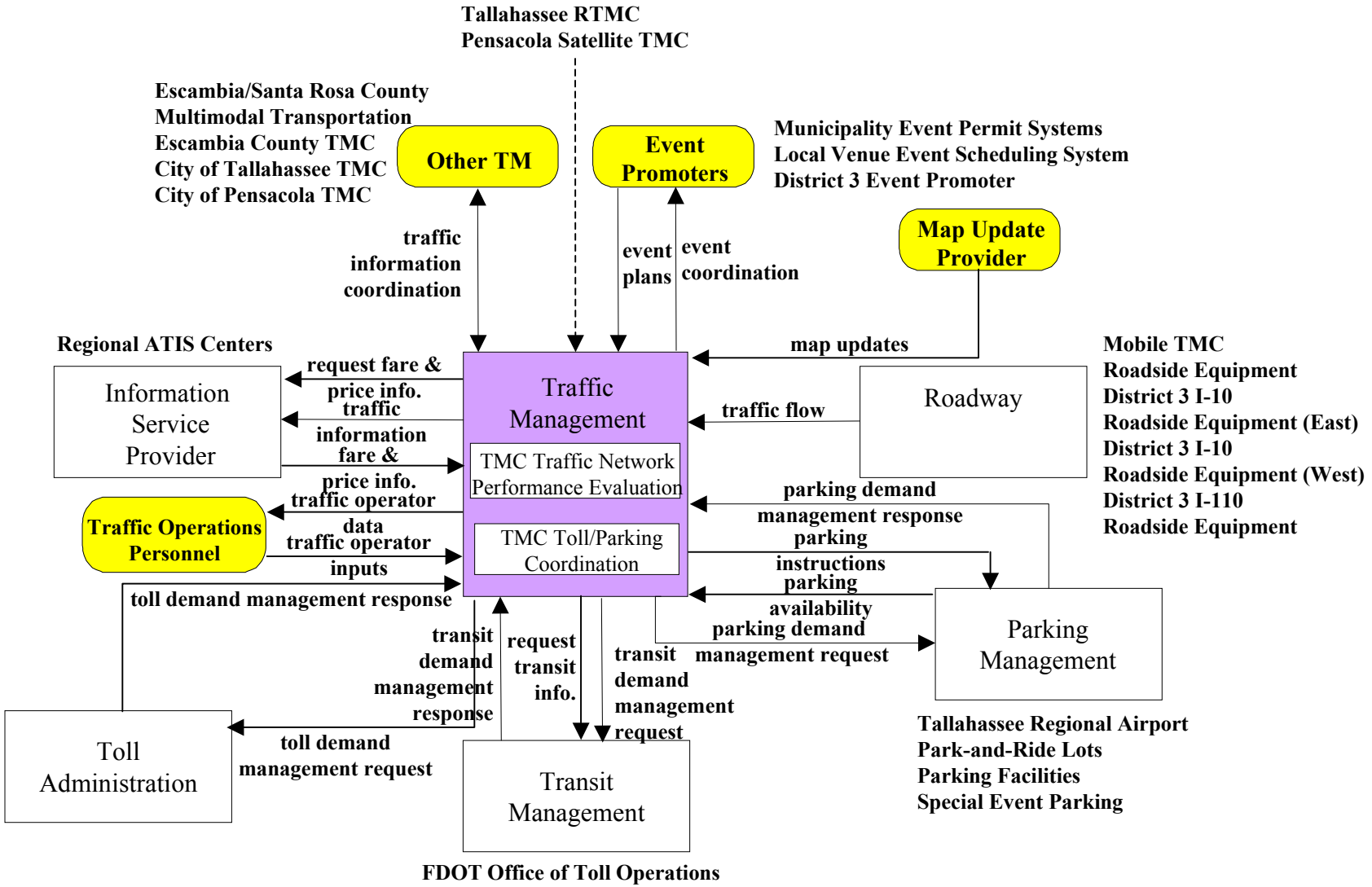
ATMS7 – Regional Traffic Control Market Package



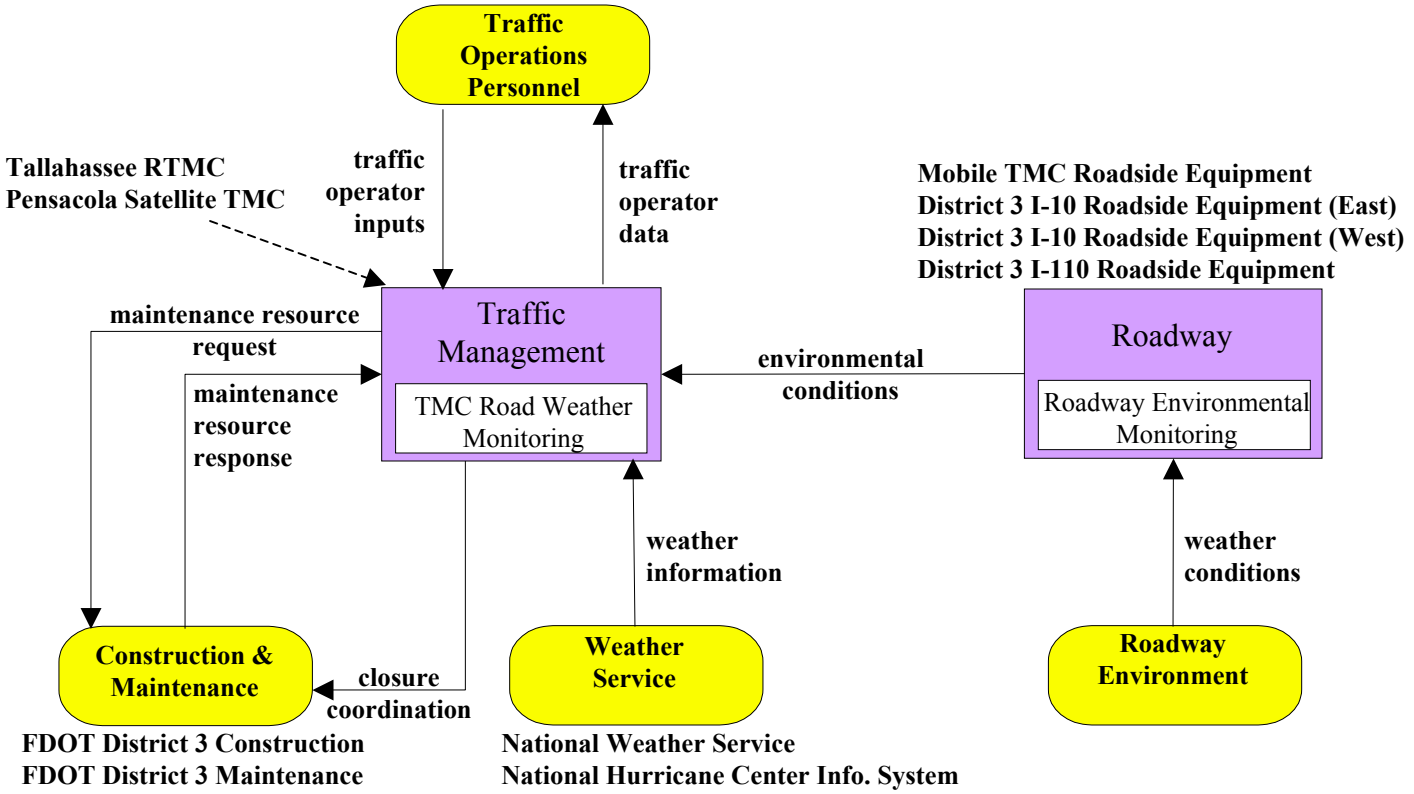
ATMS8 – Incident Management System Market Package



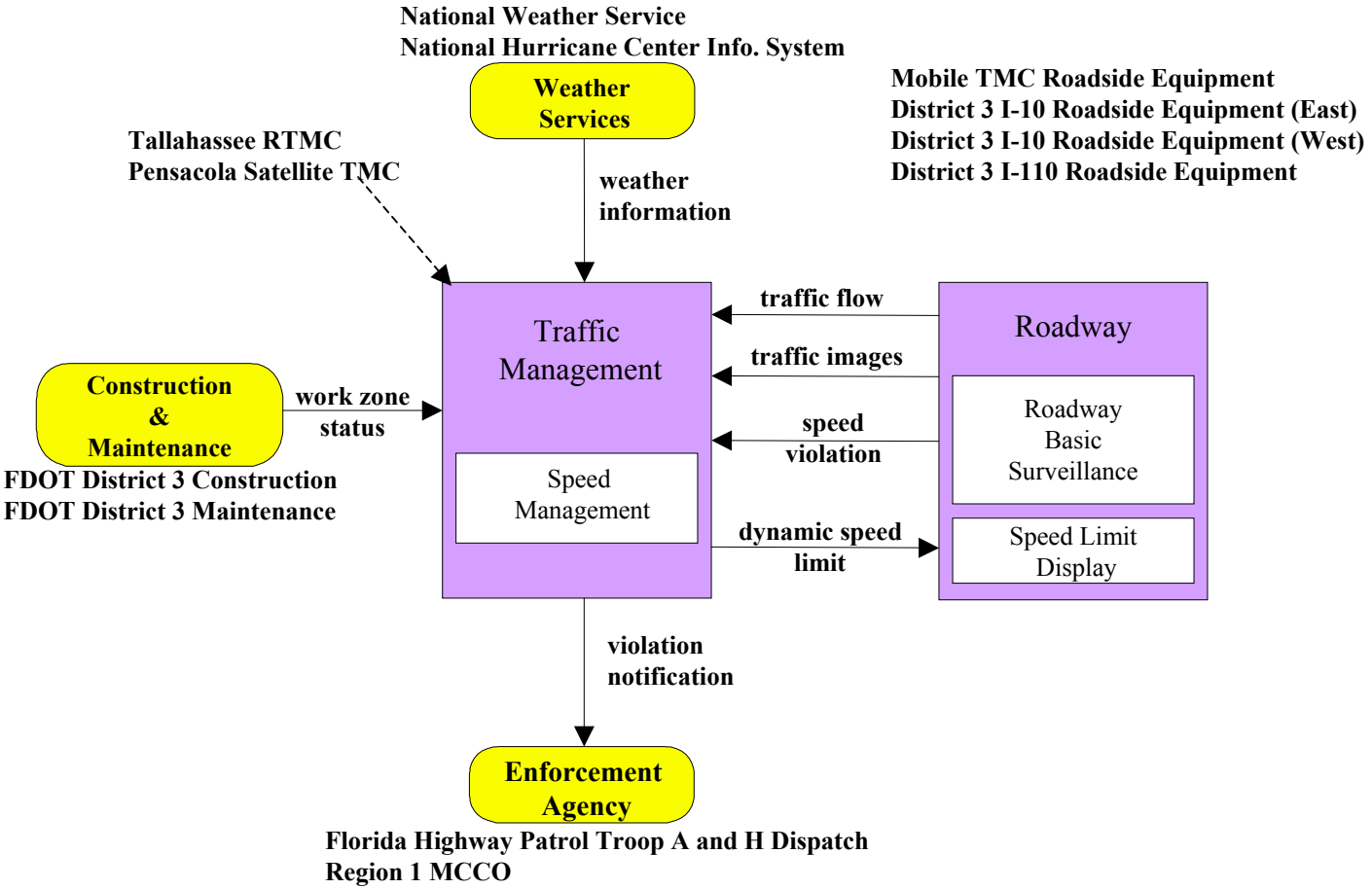
ATMS9 – Traffic Forecast and Demand Management (ATMS9) Market Package



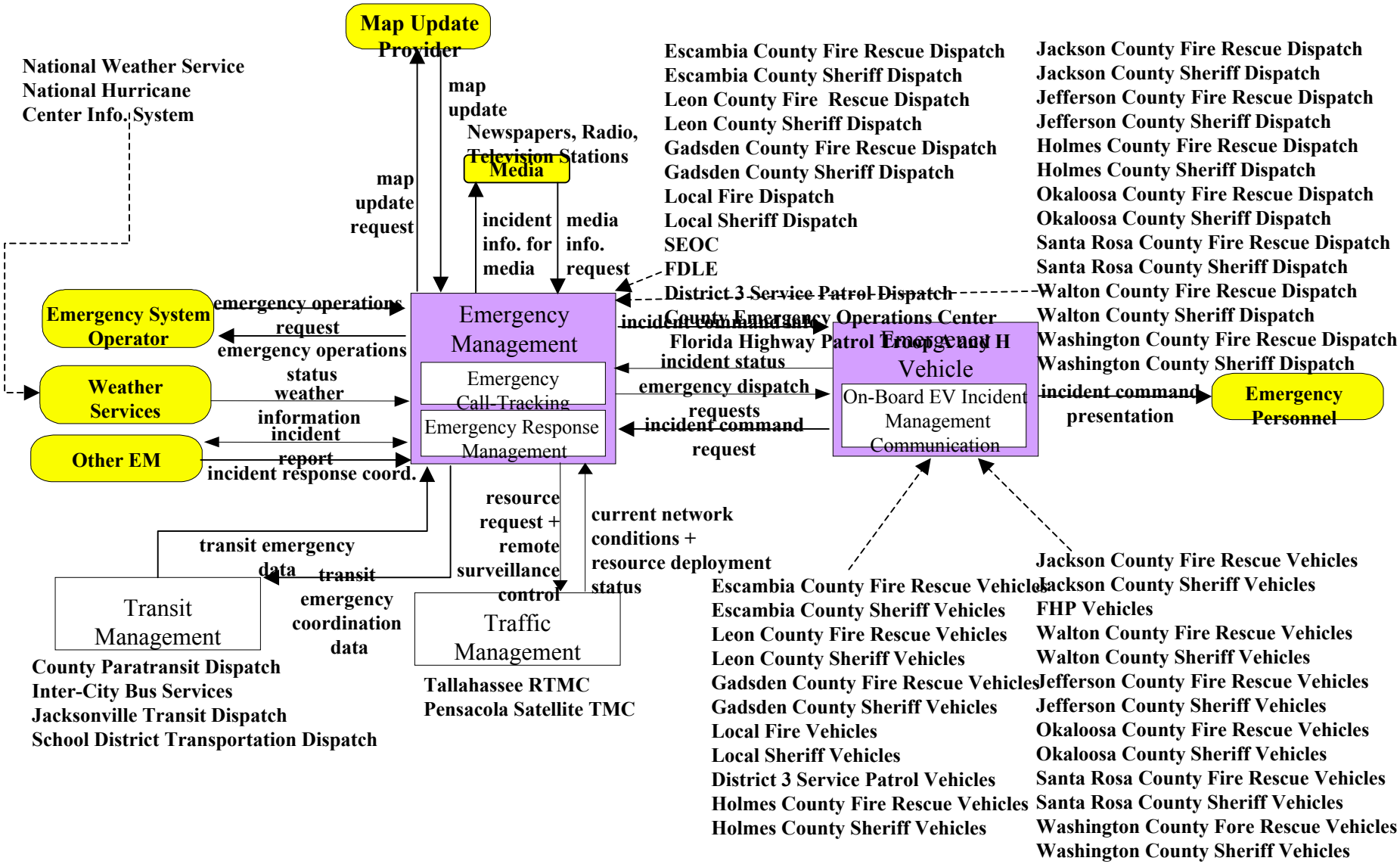
ATMS18 – Road Weather Information System Market Package



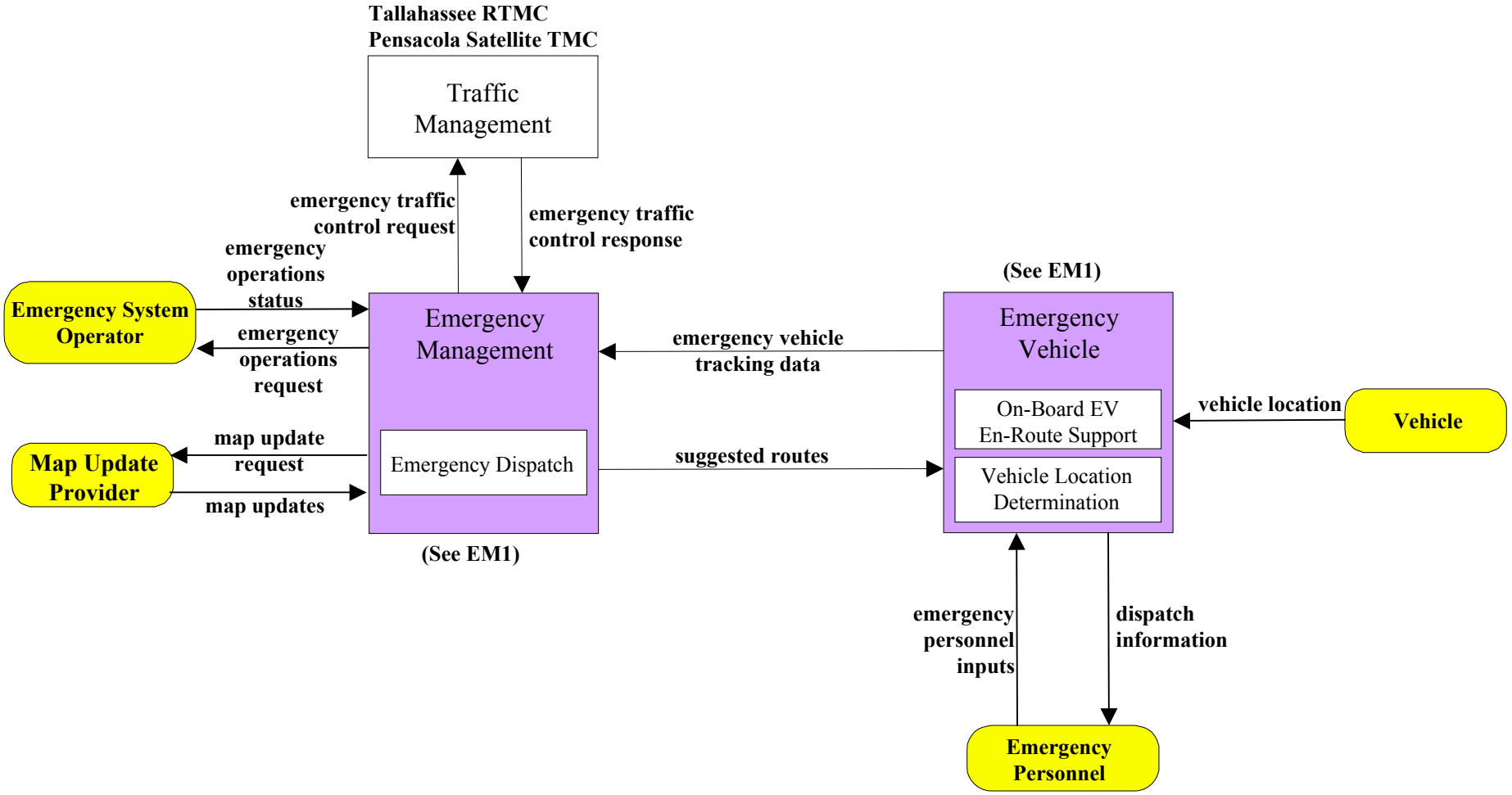
ATMS20 – Speed Management Market Package



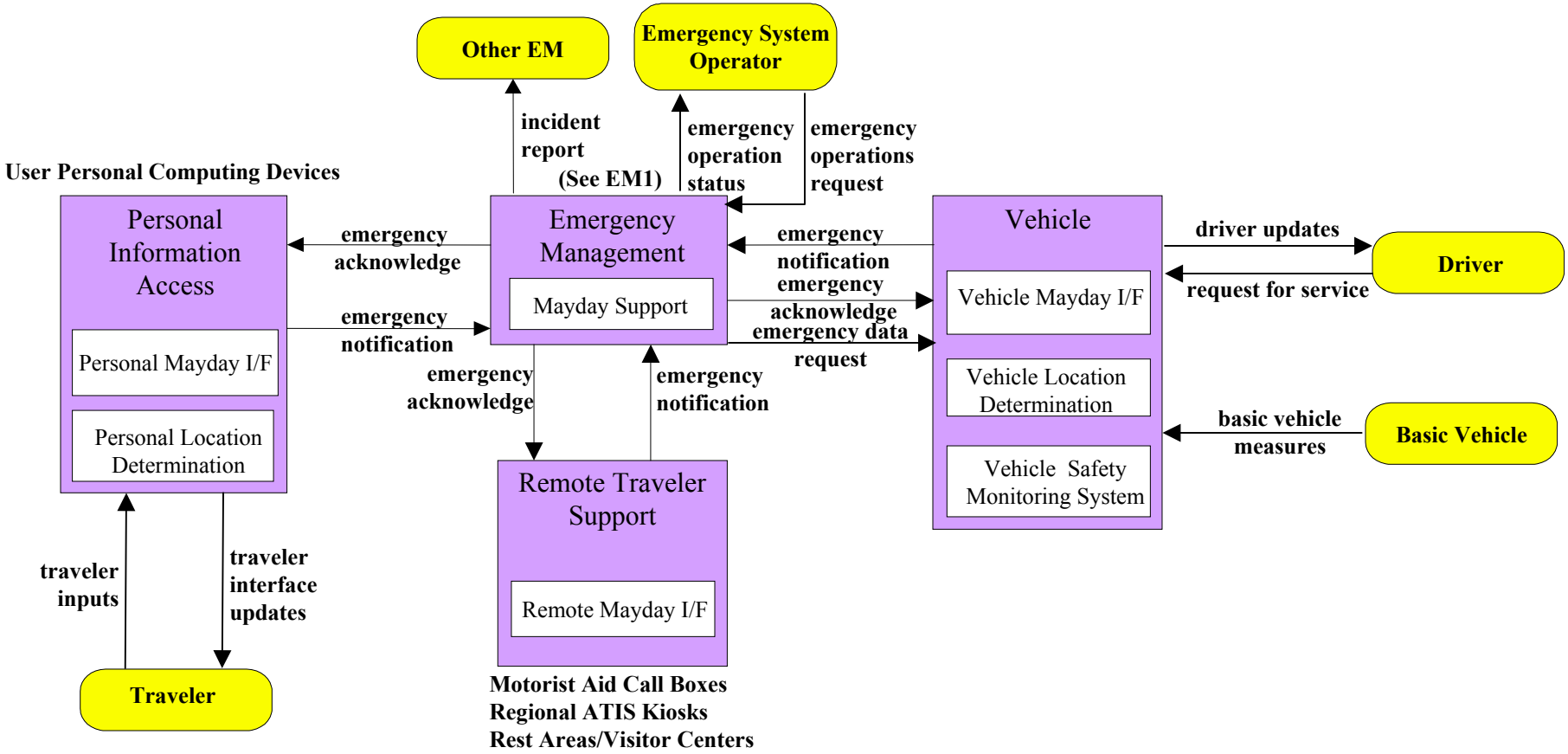
EM1 – Emergency Response Market Package



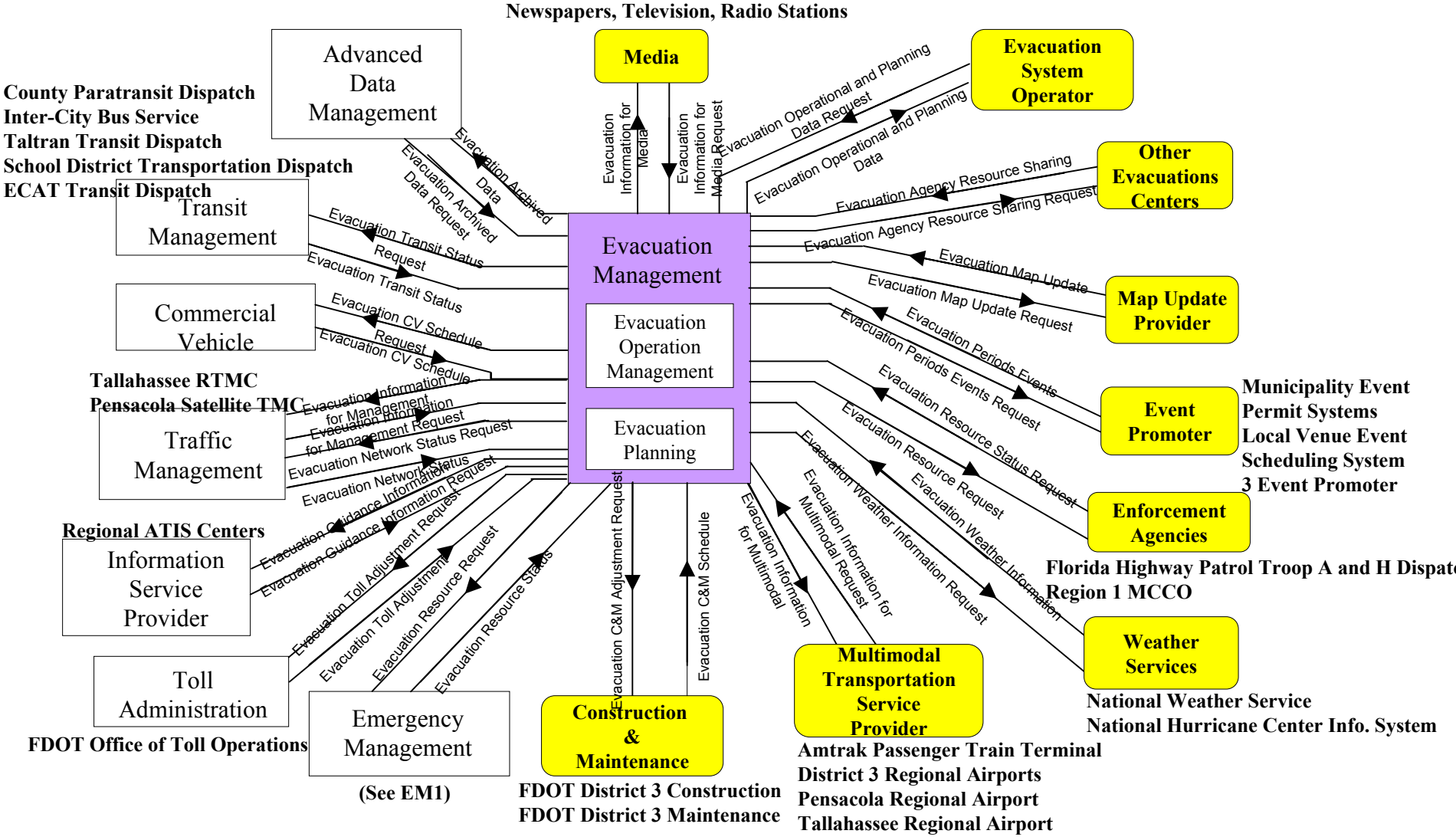
EM2 – Emergency Routing Market Package



EM3 – Mayday Support Market Package



EM4 – Evacuation Management Market Package



Appendix B

ITS Unit Cost

DBCode	DeviceType	Life Cycle	Unit	Construction	O&M Costs	Decription
CCTV	CCTV	10	each	$48,000.00	$2,350.00	Installation including CCTV camera with PTZ control, CODEC mounting, camera tower and mounting and utilities
DMS	DMS1	10	each	$272,500.00	$11,600.00	Total costs include structure and utlilities for overhead structure spanning one direction of travel (six lane facility assumed)
	DMS2	10	each	$372,500.00	$13,600.00	Total costs include structure and utlilities for overhead structure spanning one direction of travel (six lane facility assumed)
	VMS	10	each	$272,500.00	$11,600.00	Used DMS 1
	AVMS	10	each	$272,500.00	$11,600.00	Used DMS 1
DTBL	DTBL	10	each	$75,000.00	$4,000.00	Based on FHWA Unit Costs Database for flashing beacon sign
LD	IL/LD	10	each	$1,850.00	$162.50	Cost per loop - Based on FHWA Unit Costs Database.
	TTMS	10	each	$18,000.00	$1,000.00	Guess - hold for Harshad's response
RTMS	RTMS	10	each	$6,000.00	$400.00	Based on FHWA Unit Costs Database
	CC	10	each	$1,850.00	$162.50	Used IL/LD
	VD	5	each	$40,785.45	$300.00	Capital cost estimate based on Amtech probe sensors, data collection, processing and ISP connection per site from I-4 corridor study. O&M costs estimated from the FHWA Unit Cost Database
VIDS	VIDS	10	each	$30,000.00	$400.00	Based on FHWA Unit Costs Database
	VID	10	each	$30,000.00	$400.00	License plate reader system with same price as VIDS

DBCode	DeviceType	Life Cycle	Unit	Construction	O&M Costs	Decription
Call Boxes	CCB	10	each	$4,000.00	$50.00	Assume all new boxes are cellular.
	MCB	10	each	$7,500.00	$150.00	
ESS	AIS/ESS			$20,000.00	$1,000.00	Basis from D7 Plan
RWIS	RWIS	10	each	$52,000.00	$3,500.00	Environmental sensor consisting of pavement temperature sensor, subsurface temperature sensor, preciptation sensor, wind sensor, air temperature and humidity sensor and visibility sensor
RMS	RMS	5	each	$56,000.00	$3,500.00	Per meter (on-ramp) basic assembly from FHWA (50k), plus loop detectors(2 @ 6k)
HAR	HAR	10	each	$32,000.00	$1,000.00	
Fiber	FON	20	each	$230,000.00	$1,000.00	roadway, 1/2 mile spacing on pull boxes, within right-of-way, Inside plant every 2 miles based on SONET nodes with multiplexers, support equipments, utilities and installation
	TOWER	20	each	$150,000.00	$1,700.00	Microwave system tower, unit cost from FDOT needed.
AL	AL	20	each	$70,000.00	$400.00	Standard twisted copper wire installation.
HUB	HUB	10	each	$107,500.00	$1,000.00	Based on SONET node with multiplexer, support equipment, utilities and installation per site, typical spacing 2 miles
	HUR	20	each	$300,000.00	$6,000.00	Per on-ramp along corridors with one-way operations
	VWIM	10	each	$344,000.00	$109,750.00	Per location per direction, includes electronic clearance, overheight and overwidth detection
Detector Area	Detector Area	10	each	$1,850.00	$162.50	Same as loop detector.