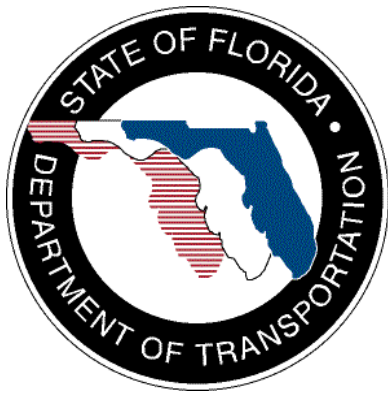# SunGuide®:

Software Requirements Specification

SunGuide-SRS-6.0

Prepared for:

Florida Department of Transportation
Traffic Engineering and Operations Office
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Appendix A: FEAT Requirements

Appendix B: SUB Requirements

List of Acronyms

ATMS ....Advanced Traffic Management System
AVL ....Automatic Vehicle Location
C2C ....Center-to-Center
CCTV ....Closed Circuit Television
CVS...........................Connected Vehicle Subsystem
DA.............................Data Archiving
DD.............................Data Distribution
DFS ....Data Fusion System
DMS..........................Dynamic Message Sign
DOT ....Department of Transportation
EG ....Evacuation Guidance
EH ....Executive Handler
EM.............................Event Management
EM/PM.......................Event Management / Performance Measures
EV ....Event Viewer
FDOT ....Florida Department of Transportation
FEAT..........................Feature Requirement
HAR ....Highway Advisory Radio
IDS ....Incident Detection System
IM...............................Incident Management
IMS ....Inventory Maintenance System
ITS..............................Intelligent Transportation Systems
ITN.............................Invitation to Negotiate
MAS............................Message Arbitration System
ODS............................Operational Data Store
PS ....Pricing System
RMF...........................Ramp Metering Firmware
RMS ....Ramp Metering System
RPG............................Response Plan Generator
RR ....Road Ranger
RS...............................Reporting System
RWIS..........................Road Weather Information System
SB...............................Safety Barrier
SPARR.......................Smart Phone Application for Road Rangers
SRS ....Software Requirements Specification
SUB............................Subsystem Requirement

SwRI ....Southwest Research Institute
TMC...........................Traffic Management Center
TSS.............................Transportation Sensor System
TV ....Toll Viewer
TVT............................Travel Times
VSL............................Variable Speed Limit
XML...........................Extensible Markup Language

REVISION HISTORY

Revision	Date	Changes
1.0.0-Draft	December 22, 2003	Initial Release
1.0.1-Draft	January 27, 2004	Updated based on SRR input and discussion with ITS Central Office
1.0.2	April 2, 2004	Incorporated FDOT comments.
2.0.0-Draft	August 27, 2004	Added requirements for systems in release 2 (EG, HAR, WS, C2C and RMS)
2.0.0	May 4, 2005	Finalized with FDOT comments, new enhancements (from ECO 1.1)
2.0.1	August 11, 2005	Finalized with ECO 1 changes
2.1.0	April 12, 2006	Updated with Release 2.1 requirements
2.2.0	November 17, 2006	Updated with Release 2.2 requirements
2.2.1	November 27, 2006	Updated architecture based on naming nomenclature changes in the EM PM design and implementation
2.2.2	December 4, 2006	Added Ramp Metering firmware and CCTV Scheduler requirements
3.0.0-Draft	April 25, 2007	Added Release 3.0 requirements
3.0.0	May 29, 2007	Requirements updated based on SWAM #11. Added software release versioning information and requirements traceability.
4.0.0-Draft	December 16, 2007	Added Release 3.1 and 4.0 requirements.
4.0.0	February 22, 2008	Updated Release 3.1 and 4.0 requirements based on SWAM #15.
4.3	January 25, 2010	Updated Release 4.2 and 4.3 requirements based on SWAM#20, SWAM#21, SWAM#22 and referenced white papers
5.0	March 5, 2010	Added Release 5.0 requirements
5.1	February 16, 2012	Added Release 5.0.4, 5.0.5, and 5.1 requirements
6.0	February 15, 2013	Added Release 6.0 requirements

1. Scope

1.1 Document Identification

The Software Requirements Specification (SRS) details the requirements for the Statewide Transportation Management Center Software Library System. The requirements are separated into two types; features (FEAT) that were specified in the Invitation to Negotiate (ITN) and new subsystem (SUB) requirements determined during system design.

The requirements for the system are maintained in a database using Rational RequisitePro. This document serves as a starting point for the requirements and discusses how to access, view, and maintain the requirements database. This document is not intended to be a user manual for RequisitePro. For information on using RequisitePro, refer to the hard copy documentation accompanying the product, the RequisitePro online help, or the Rational web site at http://www.rational.com.

1.2 System Overview

The Florida Department of Transportation (FDOT) is conducting a program that is developing SunGuide software. The SunGuide software is a set of Intelligent Transportation System (ITS) software that allows the control of roadway devices as well as information exchange across a variety of transportation agencies. The goal of the SunGuide software is to have a common software base that can be deployed throughout the state of Florida. The SunGuide software development effort is based on ITS software available from the state of Texas; significant customization of the software is being performed as well as the development of new software modules. The following figure provides a graphical view of the software to be developed:
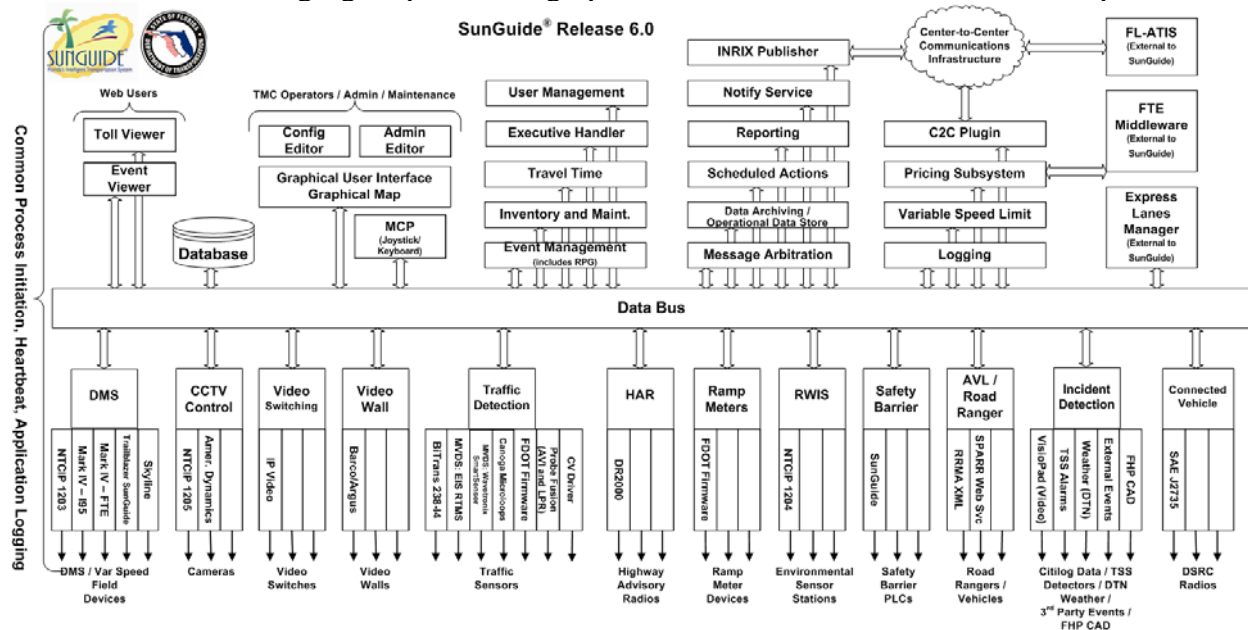

Figure 1-1 - High-Level Architectural Concept

1.3 Related Documents

The following documents were used to develop this document:

- SwRI Qualification Response: *Response to the Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System, Negotiation Number: ITN-DOT-02/03-9025-RR,* SwRI Proposal No. 10-35924, dated: November 18, 2002.

- SwRI Technical Proposal: *Technical Proposal for Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System, Negotiation Number: ITN-DOT-02/03-9025-RR,* SwRI Proposal No. 10-35924, dated: January 31, 2003.

- SwRI Cost Proposal: *Cost Proposal for Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System, Negotiation Number: ITN-DOT-02/03-9025-RR,* SwRI Proposal No. 10-35924, dated: January 31, 2003.

- SwRI BAFO letter: *Southwest Research Institute® Proposal No. 10-35924, "Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System", Reference: Negotiation Number: ITN-DOT-02/03-9025-RR*, dated: May 5, 2003.

- FDOT procurement document: *Invitation To Negotiate (ITN), Negotiation Number: ITN-DOT-02/03-9025-RR, Statewide Transportation Management Center Software Library System*, dated: October 21, 2002.

- FDOT Scope of Services: *Statewide Transportation Management Center Software Library System: Scope of Services,* September 22, 2003.

- FDOT Requirements Document: *Statewide Transportation Management Center Software Library System: Requirements Specification,* June 3, 2003.

- Southwest Research Institute, *TMC Software Study*, November 15, 2001.

- Southwest Research Institute, *Introduction to an Operational Concept For the Florida Statewide Library*, FDOT – OCD – 1.0, March 31, 2002.

- *Standard Written Agreement Modification #21 for SunGuide® Software Release 4.3,* September 30, 2009

- *SunGuide V4.3 Software Requirements for Express Lanes Operations Version 3.13, December 17, 2009.*

- *Floodgate Multi-Set Interface Design Proposal, November 30, 2009*

- *Floodgate Pre-Recorded Messages, June 23, 2009*

- *Standard Written Agreement Modification #22 for SunGuide® Software Release 4.3,5.0* February 11, 2010

- *Standard Written Agreement Modification #23 for SunGuide® Software Release 5.0,* May 7, 2010

- *Standard Written Agreement Modification #24 for SunGuide® Software Release 5.0,* June 20, 2010

- World Wide Web Consortium (W3) website: http://www.w3.org.

- SunGuide Project website: http://sunguide.datasys.swri.edu.

- FDOT Scope of Services: *BDQ69, Standard Written Agreement for SunGuide Software Support, Maintenance, and Development, Exhibit A: Scope of Services.* July 1, 2010.

- Notice to Proceed: Letter to Southwest Research Institute® (SwRI®) for BDQ69, July 1, 2010
- Letter of Authorization 003: Letter to SwRI for BDQ69, August 19, 2010.
- Letter of Authorization 004: Letter to SwRI for BDQ69, October 20, 2010.
- Letter of Authorization 005: Letter to SwRI for BDQ69, November 9, 2010.
- Letter of Authorization 007: Letter to SwRI for BDQ69, December 22, 2011.

1.4 Contacts

The following are contact persons for the SunGuide software project:

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- Tucker Brown, SwRI Software Project Manager, tbrown@swri.com, 210-522-3035

Appendix A:

FEAT REQUIREMENTS

FEAT	SunGuide ID	Name	Requirement Text	Subsystem	Version
FEAT1		General	General requirements not relating to particular subsystems or components.		1
FEAT1.1		Network security			1
FEAT1.1.1	S026	Allow firewall usage	The SunGuide system shall not prohibit the use of a firewall and the identification of what ports and hostnames are used to communicate between processes shall be provided so allowances can be made to pass through a firewall.		2
FEAT1.1.2	NW001	Firewall security policy	A firewall shall provide EAL-4+ certification employing a "default deny" security policy. Both ASCII and binary logging shall be available and enabled on the firewall.		1
FEAT1.1.3	NW002	DMZ model to segment LAN traffic	A multi-layer DMZ model shall be used to segment traffic coming into the transaction server(s) from public LAN connections (if any) by being able to access the database layer.		1
FEAT1.1.4	S012	Operating system workstation security	The SunGuide software shall use windows domain authentication for user login.		1
FEAT1.1.5	WS001	User and user group assignments	The workstation security function shall provide the capability to assign specific users and groups to categories that have specific access to levels of the software functionality.	USER	1
FEAT1.1.6	WS002	Encrypted passwords	The workstation security function shall use encrypted passwords to identify which users or groups can access what levels of software functionality.	USER	1
FEAT1.1.7	WS003	User/group functionality	Each user added to a group shall inherit the functionality of the group.	USER	1

FEAT1.1.8	WS004	Workstations not user-specific	In the event of a workstation failure, users shall be able to log into other workstations and have the same functionality as they would if they were at their own workstation.		1
FEAT1.1.9	WS005	System administrator access	The SunGuide software shall not prevent system administrators from access to the security of the operating system and operating system functionality (access to disk drives, system configuration, etc.)		1
FEAT1.1.10	WS006	Software module access	As the SunGuide GUI is browser-based, no .EXE files shall be placed upon user workstations.		1
FEAT1.1.12	EX011	Data controlled by individual privileges	The ability to enter data into the SunGuide system or alter configuration settings shall be controlled by individual privileges.	EV	3
FEAT1.2		Database and Databus			1
FEAT1.2.1	DB001	Modular abstraction layer	The databus shall be a modular abstraction layer to allow subsystems to retrieve data.	DD	1
FEAT1.2.2	DB001A	Input and output separated	The databus shall have an Interface Control Document (ICD) for client data exchange and an ICD for subsystem data exchange.	DD	1
FEAT1.2.3	DB002	Non-compliant SQL databases	The SunGuide software shall not require third party subsystems to access an SQL database.		1
FEAT1.2.4	DB002A	Data formats	eXtensible Markup Language (XML) shall be used to transmit data to and from the central data repository (databus).		1
FEAT1.2.5	DB003A	Database reports	Reports shall be generated by accessing data in the database directly.		1

FEAT1.2.6	DB004	Historical data	An option shall be provided for FDOT to store historical data for traffic management devices for a specified amount of time programmable at the system administrator level.		2
FEAT1.2.7	S003	Databus architecture	Each subsystem shall ensure the central data repository (databus) contains the most recent data, including equipment status.	DD	1
FEAT1.2.8	UT001	User and device tables	Tables shall exist in the Oracle database for entry of GUI workstation users and parameters to set up, control and communicate with devices such as DMSs, CCTVs, cameras, loop controllers, and other devices.		1
FEAT1.2.9	UT002	Database table update permission	The SunGuide system shall support the specification of field device parameters for the creation and control of field devices such as camera control, DMS message content, video wall control, ramp meters, and other devices.		1
FEAT1.2.10	UT003	Device communication database update	Data collected from device communications software shall update the database tables as soon as data is received.		1
FEAT1.2.11	UT004	Device specification	The SunGuide system shall support the specification of field device parameters for the creation and control of field devices such as camera control, DMS message content, video wall control, ramp meters, and other devices.		1
FEAT1.2.12	UT005	Device status	Table parameters shall provide for current status of such devices and allow for the creation of status lists based on device.		1

FEAT1.2.13	S007	Database clustering	The SunGuide software shall be capable of running in a clustered database configuration.		2
FEAT1.2.14	DB003	RPO shall be less than 0.1%	The SunGuide system shall have a recovery point objective of having less than one-tenth percent (0.1%) difference between the master database and the recovery copy of the database at all times.		1
FEAT1.2.18	SS001B	Automated backup	The system support function shall provide an automated backup component that can be programmed to perform one or more backups throughout the day at a specific clock time.		2
FEAT1.2.19	S007	Database parameters	The SunGuide software shall use configurable parameters for connecting to the database.		1
FEAT1.2.20	CR007	Same information source for content	The content made available by each application for any period of time shall be derived concurrently from the same information source.		3
FEAT1.2.21	OD002D	ODBC drivers and compliant database	Any required ODBC drivers shall be from the same product line as the ODBC-compliant database application.		3
FEAT1.2.22	DB022	Database ID	Database objects that have an ID within the software shall have an internal numeric identifier that is not used for naming of objects by the users of the system	USER	6
FEAT1.2.23	DB023	Business Logic	The software shall implement business logic (not sequences) within the Windows processes (not from within the Database itself)	USER	6

FEAT1.2.23.1	DB023A	Business Logic Exceptions	Exceptions will be made for sequences of primary key/IDs and for exceptionally performance intense operations upon approval by Central Office.	USER	6
FEAT1.2.24	DB024	Supported Databases	The software shall support the use of SQL Server 2012 Standard Edition and Oracle Database Server version 11.1.0.7.0.	USER	6
FEAT1.2.25	DB025	Database Model	The software shall have a database model from which a blank SQL Server and Oracle database can be created using ERWIN, a Commercial off the shelf database modeling tool	USER	6
FEAT1.2.26	DB026	Database Configuration Data	Static configuration data (such as subsystem permissions and system users) shall be included as a versioned data set.	USER	6
FEAT1.2.27	DB027	Database Management	The software shall be equipped with tools to import or export data from any SunGuide database	USER	6
FEAT1.2.27.1	DB027A	Configuable Options	The tool shall be configurable with the following optional parameters: 1) Database schemas to include in the import or export	USER	6
FEAT1.2.28	DB028	High Availability and Disaster Recovery	The software shall support the use of high availability and disaster recovery solutions for both Oracle and SQL Server (i.e. Failsafe/RAC/clustering, and DataGuard, respectively and the SQL Server equivalents)	USER	6
FEAT1.2.29	DB029	Batch Inserts	Periodic data archiving shall use batch inserts to insert data into the database, where possible and appropriate.	USER	6

FEAT1.2.30	DB030	Database Performance	When running against a system with 10,000 detector links configured, with appropriate hardware, the SQL Server database server shall archive TSS data to the database no later than two batch insert time periods following the distribution of the data from TSS.	USER	6
FEAT1.2.31	DB031	Regression Testing Oracle	A regression test of the software using Oracle will be performed after a change to the software is made	USER	6
FEAT1.2.32	DB032	Regression Testing SQL Server	A regression test of the software using SQL Server will be performed after a change to the software is made	USER	6

FEAT1.2.33	DB033	Ceased Use Flag	A database object that can be deleted by a user shall include a flag that signifies the state of the object. This requirement shall apply to the following tables: COUNTY EM_LANEMAP RS_REPORT_MENU RS_COST EM_VEHICLETYPE EM_VEHICLEMODEL EM_REFERENCEPOINT EM_OFFSETTYPE EM_MAILLIST EM_LOOKUP EM_LOCATION EM_LANETYPE EM_INJURYTYPE EM_EVENTTYPE EM_EVENTSTATUS EM_CONTACT EM_CONDITION EM_AGENCY EM_ACTIVITY	USER	6
FEAT1.2.33.1	DB033A	Ceased Use Not Deleted	Records no longer in use shall be flagged to indicate their usage as ceased, but they will not be deleted from the table	USER	6
FEAT1.3		Test Plans			1

FEAT1.3.1	QA001	Provide test plans and procedures	The SunGuide system shall be provided with test plans and test procedures for integration cases and the system acceptance test to ensure that each test is comprehensive and verifies all the features of the function to be tested.	1
FEAT1.3.2	QA001P	Test Plans contents	The following information shall be included in the test plan:· An implementation plan and detailed schedule (PERT and GANTT Microsoft Word format);· Record-keeping procedures and forms;· Procedures for monitoring, correcting, and retesting variances;·Procedures for controlling and documenting all changes made to the SunGuide system after the start of testing;· Block diagram(s) of the hardware test configuration, including Contract Vendor and Department supplied equipment, external communication channels, and any test or simulation hardware;· A list of individual tests to be performed, the purpose of each test segment, and the appropriate functional design specification reference describing the feature being tested;·Identification of special hardware or software tools or test equipment to be used during the test;· Techniques and scenarios used to simulate ultimate system sizings, especially during the peak loading tests;· Copies of any certified test data (i.e. environmental data) to be used in lieu of testing; and;·Alpha and beta test plans (as appropriate);	1

FEAT1.3.3	QA002P	Test procedure objective	Each test procedure shall list the objective of the testing and the specific SunGuide software system requirement(s) that are being verified along with pass/fail criteria for each.	1
FEAT1.3.4	QA003P	Test procedures content	Test procedures shall include the following items:· Function(s) to be tested;· Purpose of each test segment;· Set-up and conditions for testing including ambient conditions;· Step-by-step procedures to be followed;· Pass/Fail criteria for each requirement tested including measurement tolerances;· All inputs and expected results outputs for each test segment; and· Descriptions of all simulation tools and techniques used during the test.	1
FEAT1.3.5	QA002	Test result formats	All SunGuide test results, notes, and observations shall be maintained in both hard copy and softcopy.	1
FEAT1.3.6	QA001R	Test records	The test records shall be keyed to the steps enumerated in the test procedures and reported in the test report for each integration case.	1

FEAT1.3.7	QA002R	Test record content	The following items shall be included in the test records:· Test names and Paragraph numbers;· Dates;· Test locations;· Test specimen serial numbers or other identification;· Additional equipment used;· Test engineers name;· Start and stop times;· Log of events;· Observed test results, including specified computer printouts, photographs, and plots, as applicable, that will be attached to the data sheets;· Description of test anomalies (as applicable),· Recommendations for resolution of any test anomalies;· Provision for comments by FDOT's representative; and · A copy of the master test procedure.	1
FEAT1.3.8	S025	Requirement verification	All hardware and software units, elements, components or subsystems shall be tested to verify they meet the specified requirements prior to statewide deployment.	1
FEAT1.4		Event Logging		1
FEAT1.4.1	EX001R	Event notification	Reporting functions shall include the ability to send event notifications via email and/or pager, and/or telephone as well as visual and audio notifications at the user console.	1
FEAT1.4.2	EX002R	Event notifications stored in database	All event notifications shall be stored in the central database and be tagged with the system time to the nearest second and date of occurrence.	1
FEAT1.4.3	EX007	Executive Handler error logging	The executive handler shall log error conditions as they are detected.	1

FEAT1.4.4	EX001L	Logging levels	The amount of data logged for an error condition shall be able to be adjusted in real time by the user through the GUI without having to restart the application.	1
FEAT1.4.5	EX002L	Separate log files	Separate log files shall be used for each application monitored.	1
FEAT1.4.6	EX003L	Time and origin	Each log file message shall be time stamped and shall provide some indication as to the origin of the message (e.g. what process reported or detected the error).	1
FEAT1.4.7	EX003R	Contact list	Event notifications including alarms shall be sent to a configurable list of people through a primary and secondary contact medium including electronic-mail, telephone, and pager. The contact list shall be tailored to the event or alarm.	1
FEAT1.4.8	TM005R6	Logging messages	All DMS/VSL/HAR messages shall be logged.	3
FEAT1.4.9	EX006L	Error log	The error log shall describe any errors that occurred during the data import process (automated data gathered by sensors along the roadway links) with a time/date timestamp indicating when the error occurred.	3
FEAT1.4.10	EX006L1	Viewable errors list	All errors shall be included as part of a continuously viewable "errors list" in the form of an error log.	3
FEAT1.4.11	EX006L2	Errors list	The error log shall provide for the "errors list" to be updated continuously.	3
FEAT1.4.12	EX006L4	Review change logs	The SunGuide software shall provide a tool to review DMS and VSL change logs (i.e., SunGuide log files).	3
FEAT1.4.13	EX007L	Action log files	Operator and supervisor actions shall be tracked in action log files.	3

FEAT1.4.14	EX007L1	Review operator logs	The SunGuide software shall provide a tool to review operator logs.	3
FEAT1.4.15	EX003A	Resolve issues via log analysis tools	The administrator shall also be provided with the capability of managing system operation and resolving system performance issues via the log file analysis tools.	3
FEAT1.5		TMC		1
FEAT1.5.1	S005	Traffic management	The SunGuide software shall support the collection, assessment and management of real-time traffic data and video for delivery of traffic management information to the motoring public and commercial vehicle operators.	2
FEAT1.5.2	A024	Management of freeway traffic	The SunGuide software shall support the management of traffic along the State freeway system.	1
FEAT1.5.3	A025	Exchange requests between centers	The SunGuide software shall support the exchange of traffic management requests among centers running the SunGuide software.	2
FEAT1.5.4	A026	Software reliability	The SunGuide software shall not require any regularly scheduled down time.	1
FEAT1.5.5	S028	Monitor processes	The SunGuide software shall provide a mechanism for monitoring the health and status of SunGuide software.	1
FEAT1.5.6	A027	Unattended operation	The SunGuide software shall be capable of running unattended for a minimum of eight hours.	1
FEAT1.5.7	A030	Data exchange	The SunGuide software shall support the exchange of data using the center-to-center ICD.	2

FEAT1.5.8	A031	Work zone	The SunGuide software shall support traffic management in a work zone via communication to wireless or wired devices.	2
FEAT1.5.9		TMC categories	The SunGuide software shall support running in multiple TMC configurations.	1
FEAT1.5.9.1	A029	RTMC	The SunGuide software shall support running in a regional TMC.	1
FEAT1.5.9.2	A029	STMC	The SunGuide software shall support a secondary TMC sending command and control requests via center-to-center.	2
FEAT1.5.9.3	A029	VTMC	The SunGuide software shall support operating the center from a remote location.	2
FEAT1.5.9.4	A029	PTMC	The SunGuide software shall support deployment of the system on a laptop.	2
FEAT1.6		Software & Documentation Management		1
FEAT1.6.1	A013	TMC software monitoring	The SunGuide software shall log communication errors and ITS field device failures.	1
FEAT1.6.2	S027	Architecture standards	The SunGuide system shall adhere to open architecture standards.	1
FEAT1.6.3	A014	Configuration management of devices	A configuration management template shall be provided to capture information needed to control ITS devices.	1

FEAT1.6.4	S029	Baseline of software for configuration management	Before any software development begins, off-the-shelf software that will serve to be the foundation of the SunGuide system shall be documented to establish a baseline for configuration management of what software is developed specifically for the SunGuide project including what software is modified and to what degree it has been modified for the project.	1
FEAT1.6.5	S002	Public domain/sector software	The SunGuide system shall consist of public domain/public sector software (object and source code) wherever possible.	1
FEAT1.6.6	S024	Documentation requirements	The SunGuide system shall be provided with a complete documentation package that shall include, but not be limited to, detailed functional and interface description, user/operator manuals, software standards manuals, software test plans and procedures, and all other documentation required to complete the SunGuide project.	1
FEAT1.6.7	S001	Software library modules	The SunGuide system shall provide for a centrally managed set of software modules that completely support all functionality of the RTMCs.	1
FEAT1.6.8	EX008	Recommended responses	The SunGuide system shall provide intelligent software that presents a list of recommended responses in time ordered sequence to different event conditions to the workstation operator.	1
FEAT1.6.9	A028	Future capabilities	The SunGuide software shall provide an ICD for the databus to allow additional subsystems to be added.	1

FEAT1.6.10	S004	Flexible and expandable	The SunGuide software shall provide ICDs for subsystem device drivers to be added.	1
FEAT1.6.11	S011	Automation of system support tasks	The SunGuide software shall support the automation of system support tasks through the use of user modifiable scripts for the following functions:· System scheduler;· System backup;· Data archiving;· Maintenance of system integrity; and· Data links to other FDOT computer systems.	1
FEAT1.6.12	S006	Software function	The SunGuide system shall provide each TMC with the software tools that can be used to reduce congestion and delays while responding to traffic incidents in a rapid, accurate, and effective manner.	1
FEAT1.6.13	A003	Limited access facilities	The SunGuide software shall provide for the management and operations of limited-access facilities during incident management, and peak demand periods and one-way operations during evacuations including control of detour signage.	2

FEAT1.6.14	A004	Traveler information	The SunGuide software shall provide software for the collection and dissemination of traveler information using dynamic message signs (DMS), trail blazer signs, highway advisory radio (HAR), and advanced traveler information system (ATIS) services (511 telephone services, Internet, commercial radio, television, text messaging, etc.) for freeway operations and where available along other arterial routes independently or through an information service provider (ISP contractor) contract vendor for ATIS. The ATIS capability shall support disseminating information by the Amber Alert program.	2
FEAT1.6.16	A014	Software versions	The SunGuide software shall provide a mechanism to display the versions of the various SunGuide software applications.	1
FEAT1.7		System Misc.		1
FEAT1.7.1	S013	Video wall software	The SunGuide system shall not preclude the operation of video wall control software from a workstation that also has the SunGuide software on it.	1
FEAT1.7.3	A017	Data reporting	The SunGuide software shall provide for the reporting of data; data to be included in the reports shall be provided by FDOT.	1
FEAT1.7.4	A018	Traffic and delay prediction	The SunGuide software shall provide software for traffic and delay prediction to support incident management and performance monitoring (including travel times and travel speeds).	1

FEAT1.7.5	WS001A	Action checklist	The operator workstation shall display a list of actions to be taken in response to specific events that require TMC operator response and can be checked off as they are completed.	1
FEAT1.7.6	WS002A	Interactive response procedures	The list of actions to be taken in response to a specific event detected by the SunGuide software shall be interactive and shall tailor itself to the specific situation. For example, if a major traffic incident is detected on a limited access facility, the operator at a workstation at the RTMC that has responsibility for that sector would be presented with a list in time ordered sequence of who to notify, the proper contact number(s) or other appropriate response. As each step is completed, the software shall highlight the next step.	1
FEAT1.7.8	TB002	Interface to Amber Alert ITS Devices	The SunGuide system shall provide an interface to ITS devices that are used in the Amber Alert program including portable dynamic message signs and the communications links to operate them.	1
FEAT1.7.9	S030	Interface to portable DMS and CCTV.	The SunGuide system shall provide an interface to portable changeable message signs (CMSs) and CCTVs that support work zone management through a minimum of two drivers supporting:· Florida MIB (subset of the NTCIP standard);· Mark IV	1
FEAT1.7.10	S009	Report creation	The SunGuide system shall support the creation of reports by authorized users.	1

FEAT1.7.11	WS007	Print report utility	All reports shall be selected from a print menu on the operator's workstation and shall contain location parameters that indicate roadway segment links. The report will be printed with controls for page setup and for how many copies are printed.	1
FEAT1.7.12	EX009	General device driver	Device drivers shall communicate to the field devices through FDOT networks and perform the following:· Set or check the date and time;· Poll the device on a periodic basis as specified in the database and retrieve device status;· Check the cyclic redundancy check of the device operating parameters and message library against the cyclic redundancy check parameters of the database;· Download operating parameters;· Upload the current operating parameters and display on user's workstation;· Display all database parameters and attributes on the user's workstation as appropriate to the device;· All uploaded information from the device shall be displayed at the user's workstation;· The operator, with proper security, shall be able to display/change database messages and parameters;· A log of all changes shall be maintained by time and operator identification;· Provide test mode set of commands;· Provide a method for restricted access to selected devices based upon incident management criteria;· Provide a log of all communication events to and from the device including the report of device errors; and· Provide the capability to stop and restart the device driver via operator control.	1

FEAT1.7.13	S033	Open architecture	SunGuide shall support the addition of new functionality by third party developers using an open architecture approach that conforms to the current SunGuide-Software Architecture Guidelines document.	3
FEAT1.7.14	TM023	Interfaces for data input	SunGuide shall utilize both an automated interface and an Intranet-oriented operator interface to facilitate data input.	3
FEAT1.7.15	S018	Interface with ITS devices	The SunGuide Software System shall interface with ITS devices through the device drivers that are being developed as part of the SunGuide software.	2
FEAT1.7.16	TD012D	Degradation of data accuracy	SunGuide shall not degrade the accuracy of the data it receives and processes, except for desired data synthesis functions that condense and summarize raw data imports.	3
FEAT1.7.17	DF100	Data source inclusions	Data sources shall include, but are not limited to: incident/event data, traffic sensor data, and weather data.	3
FEAT1.7.18	DF101	Degradation of synthesis functions	The SunGuide shall not degrade the accuracy of the data it receives and processes, except for desired data synthesis functions that condense and summarize raw data imports.	3
FEAT1.7.19	CR005	Single source for time	A SunGuide software installation shall utilize a single source for time and utilize that single source to provide consistent time base throughout the SunGuide software.	3
FEAT1.7.20	DF102	Master clock synchronization	SunGuide shall synchronize all servers/workstations to a Master Clock signal obtained from a universal time standard obtained through the internet.	3

FEAT1.7.21	CR006	Incorporated functions	SunGuide shall incorporate the following functions: -an Automated (Data) Interface, -an Operator Interface that is a web-based browser, and -software to interact with external applications.	3
FEAT1.7.22	CR008	User intervention	When both the primary and redundant systems are operational, the redundant server shall not require any user intervention.	3
FEAT1.7.23	CR009	Continuance of operations	The SunGuide system shall continue to operate in the event that data sources (sensors, external data providers, etc.) fail and report that data as missing or unavailable.	3
FEAT1.7.24	CR010	Publishing data	The SunGuide system shall not publish to internal or external systems data from failed internal or external data sources.	3
FEAT1.7.25	CR012	Availability	The SunGuide Software shall have an availability of at least 99% of the time measured over a 24 hour period that source data systems are operating, measured annually. Operational is defined as that the system is running and not that no errors are occurring.	3
FEAT1.7.26	S036	Data available within one minute	New data shall be available in SunGuide within one minute of being entered by an operator or received by an automated feed.	3
FEAT1.7.27	S037	Software capable of 24-7 operations	SunGuide shall be capable of operating data 24-hours per day, seven days per week, for any contiguous 365-day period, excluding periods when modular or source data systems are down.	3

FEAT1.7.28	DB006	Event info available 99% of the time	SunGuide event information shall be available at least 99% of the time, in whole or part, measured annually, except for service anomalies that are beyond SunGuide control.		3
FEAT1.7.29	UT007	SG scaleable to incorporate other data sources	SunGuide shall be scaleable such that it is capable of accepting data from additional data sources, including both data provided by the FDOT, as well as data from other agencies' facilities.		3
FEAT1.7.30	OD007R1	Traditional screen resolutions	Traditional screen resolutions are defined as a minimum: XGA, 1024x768 pixels, SXGA.		3
FEAT1.8	A011	Coordination of agencies	The SunGuide software shall provide software for coordination with all law enforcement, fire/rescue, and emergency management personnel, coordination with local traffic operation centers, and coordination with county emergency management centers and the State Emergency Operations Center (SEOC) when appropriate. The data will be either available through the Center-to-center interface or through the use of a remote interface terminal.		2
FEAT1.9		Administrative tools		GUI	1
FEAT1.9.1		Administrative Editor		GUI	1
FEAT1.9.1.1	CR013	Creation of users, permissions	The SunGuide administrative editor shall allow the creation of at least 50 users, each user may have a unique set of permissions to access different components of the SunGuide subsystems.	GUI	3
FEAT1.9.1.2	UT009	511 Reporting segments	SunGuide shall provide the ability to add, delete, and modify 511 Reporting Segments	GUI	3

FEAT1.9.1.3	UT010	Configuration file abilities	Configuration files shall provide the ability to add, delete, or modify any road in the state of Florida.	GUI	3
FEAT1.9.1.4	UT003D	Roadway links	SunGuide configuration files shall provide the ability to add, delete, and modify FIHS and Central Florida roadway links.	GUI	3
FEAT1.9.1.5	UT003D1	Reconfiguration of data	Performing reconfiguration of roadway link location data shall alter the roadway links displayed by Florida SunGuide.	GUI	3
FEAT1.9.1.6	UT003D2	Storing data after changes	Upon adding or modifying FIHS and Central Florida roadway links, the SunGuide shall initiate the storing of data, when available, on the new or modified road segments the next time a user logs in.	GUI	3
FEAT1.9.1.7	UT004D	Default list of roadway links	The roadway links specified by the FDOT shall be the default list of road links.	GUI	3
FEAT1.9.1.8	UT004D1	Programming modifications not required	Adding, deleting, or modifying Data Collection roadway links shall not require any programming or database structure modifications.	GUI	3
FEAT1.9.1.9	UT004D3	Link location administrative restrictions	Editing or creating link locations shall be a SunGuide administrative function restricted to an operator with appropriate permissions	GUI	3
FEAT1.9.1.10	UT005D	Links shall be subdivided	Roadway links shall be able to be dynamically subdivided.	GUI	3
FEAT1.9.1.11	UT011	No loss of current or past data	The SunGuide shall allow for the periodic addition, reconfiguration, or redefinition of roadway links including the addition and/or deletion of roads, transit, port facilities, and airport facilities without the loss of current or past data.	GUI	3

FEAT1.9.1.12	UT006	Devices added for any SunGuide device type	The SunGuide Administrative Editor shall allow new devices to be added to the system for any device type that has an existing SunGuide subsystem.	GUI	3
FEAT1.9.1.13	UT013	Probe reader configuration	The Admin Editor shall be able to set and display probe reader configuration parameters such as the reader station IP address, status, and the data polling rate.	GUI	4
FEAT1.9.1.14	UT014	Configurable LPR health monitoring	LPR health monitoring shall be configurable via a systems administration page within the Admin GUI.	GUI	4
FEAT1.9.1.16	ML001A	Rate schedule table support	The Admin Editor shall support the creation, viewing and editing of the Rate Schedule Table.	GUI	3.1
FEAT1.9.1.17		Configuration abilities		GUI	5
FEAT1.9.1.17.1	TM005R10	Configure abbreviations	The Administrative Editor shall provide the ability to add, edit and delete abbreviations	GUI	5
FEAT1.9.1.17.2	TM005R11	Configure device templates	The Administrative Editor shall provide the ability to add, edit and delete device templates	GUI	5
FEAT1.9.2		Configuration Editor		GUI	1
FEAT1.9.2.1	S035	Configuration updates	For each SunGuide Subsystem that may require configuration updates after initial installation of the subsystem in the database or an XML file, an Administrative Editor shall be available to facilitate configuration changes.	GUI	3
FEAT1.9.2.2	UT001D	Configuration file changes	Additions, deletions, or modifications to the configuration file shall not require any database programming or database table structure modifications.	GUI	3
FEAT1.9.2.3	UT002D	Reconfiguration privileges	Editing or adding configuration files shall be restricted to a SunGuide administrator with reconfiguration privileges.	GUI	3

FEAT1.9.3	UT008	Administrator-level user capabilities	Administrator-level users shall have all the capabilities of operator-level users, plus an ability to add, delete, and edit other users' accounts.	GUI	3
FEAT2		Web Server (WS)		WS	1
FEAT2.1	S020	Web server function	The SunGuide system shall provide a web server for private and public dissemination of TMC information.	WS	2
FEAT2.2	PA001	Video server	The web server shall capture and publish video from analog and digital video devices within the system for private and public dissemination via LAN, WAN, and the World Wide Web. The video server shall refresh and update the image at a rate set via parameters by the workstation operator.	WS	1
FEAT2.3	PA002	Access to camera system control functions	The web server shall provide secure access to system control functions of selected cameras as determined by the system administrator for users with high-speed Internet access.	WS	3
FEAT2.4	PA004	Map elements: congestion, incidents, cameras, DMSs	The web server shall provide a map showing traffic information and the location of certain FDOT ITS devices.	WS	2
FEAT2.5		General		WS	1
FEAT2.5.1	PA014	Client site processing times	The web site shall not employ software that requires client site processing resulting in excessive wait times for the entire web site to appear.	WS	3
FEAT2.5.2	PA006U	Home page display time	The Web site home page shall be completely displayed within 15 seconds when using an ADSL connection and no other processes are running.	WS	3

FEAT2.5.3	PA006U1	Hyperlinks use relative paths	Hyperlinks on the website which direct users to other locations within the website shall use relative paths.	WS	3
FEAT2.5.4	PA005U2	Support adding URLs	SunGuide shall support the SunGuide administrator adding URLs (and associated text) to the home page of the web site.	WS	3
FEAT2.5.5	PA016U5	Measurable traffic delays	The iFlorida Web site shall include measurable traffic delays in the Central Florida region.	WS	3
FEAT2.5.6	PA016U6	Display data from C2C interface	The SunGuide website shall display the following data that is available from the SunGuide C2C interface: weather information, road closures, major events, or construction causing significant delays to travelers.	WS	3
FEAT2.5.7	PA016U8	Legends on map	The web site shall contain a legend of all color-coding and traffic-related icon descriptions on the same page as the map or at such other location specified by the FDOT.	WS	3
FEAT2.5.8	PA005	Dissemination of FIHS data	The SunGuide FIHS data shall be disseminated via a FIHS Internet-based traveler information Web site.	WS	3
FEAT2.5.9	PA006	Comply with ADA	There shall be a text-only version of the Web site such that it complies with Section 508 of the American Disabilities Act (ADA).	WS	3
FEAT2.5.10	PA008	Help page link	The iFlorida Web site shall provide a link to a Help Page offering information in text and/or graphic format on the basic use of the Internet Web site, and listing types of content available on the site.	WS	3
FEAT2.5.11	PA014U	Webmaster e-mail link	The Web site shall have an e-mail link that will enable users to send a message to the Webmaster (Customer Service).	WS	3

FEAT2.5.12	PA012U	Access information within two mouse clicks	From the Home Page, the user shall be able to access information for a requested event with no more than two "clicks" of the mouse, unless one of these "clicks" takes them "out" to one of the regional Web sites.	WS	3
FEAT2.5.13	PA012	Delivery of understandable messages	Messages delivered through the Internet Web site shall be formatted in brief, non-technical language that is readily understandable by a user with a minimum education level of 9th grade.	WS	3
FEAT2.5.14	PA005U1	Internal web site capable of displaying maps	The Web site shall be an Internet Web site that is capable of displaying a map of the state and also has the capability to link to the metropolitan areas in Florida where regional Web sites are available.	WS	3
FEAT2.5.15	PA020U	Links to state traveler information systems	iFlorida Website shall include links to all other metropolitan area traveler information systems in the state. Links to be provided by the FDOT.	WS	3
FEAT2.6		Roadway data		WS	1
FEAT2.6.1	PA003U1	Travel conditions link	The Web site shall provide details on roadway link travel conditions, either through opening a pop-up window or by opening a new web page with the additional information, whenever a user clicks on a given event icon (generally including information on incidents, special events, construction, etc.).	WS	3
FEAT2.6.2	PA003U2	No data indications	The website shall report that no data is available on a specified roadway segment if the SunGuide operator or the automated traffic sensors are reporting no data.	WS	3

FEAT2.6.3	PA003U3	Roadway event naming	Roadway event naming shall use the roadway names configured in the SunGuide Administrative editor.	WS	3
FEAT2.6.6	PA016U4	Web site inclusions	The Web site shall include planned construction/closing lanes, near-term inclement weather conditions (e.g., within 60 minutes), slowing traffic, or any abnormal road conditions and/or alerts that do not qualify as an urgent event.	WS	3
FEAT2.6.7	PA016U7	Included considitions	The website shall include current severe weather conditions (to include but not limited to tornadoes, severe thunderstorms, hurricanes) road closures, major incidents or construction.	WS	3
FEAT2.6.8	PA016U9	Display C2C travel time data	The web site shall display travel time data received from the Center-to-Center interface.	WS	3
FEAT2.7		Icons		WS	1
FEAT2.7.1	PA013U	Changing program code	The website program code (HTML, ACTIVEX code) shall not be changed to modify icons with the exception of adding new icons associated with new functionality.	EV	3
FEAT2.7.2	PA016U	Adhere to color-coding/icons	The Web site shall adhere to color-coding schemes and/or icons specified by the FDOT.	WS	3
FEAT2.7.3	PA016U2	Icon storage/modification	The web site shall use icons stored as individual files on the web site so that colors and shape can be modified using an icon editor.	WS	3
FEAT2.7.4	PA016U3	Urgent event icons	The iFlorida Web site shall include urgent event icon shapes and conspicuous color/shading to be specified by the FDOT.	WS	3

FEAT2.7.5	PA007U1	Pop-up window capabilities	Clicking on the icon on the Web site shall open a pop-up window capable of displaying a variety of items, including text providing relevant information.	WS	3
FEAT2.8		Maps		WS	1
FEAT2.8.1	PA005U	Add URLs to links page	The SunGuide administrator shall be able to add URLs (and associated text) to the links page of the web site	WS	3
FEAT2.8.2	PA007U	Select FIHS event	The Web site shall have statewide maps that allow users to select a given FIHS event, by clicking on the event icon in order to view its current event report.	WS	3
FEAT2.8.3	PA009U	Clickable regions	The map on the web server shall have a minimum of 6 clickable regions configurable by the system administrator.	WS	3
FEAT2.8.4	PA009U1	Regions linked to traffic conditions	The website shall present a map of Florida with clickable regions linked to traffic conditions in those regions.	WS	3
FEAT2.8.5	PA009U2	Metro area map	For the Central Florida region, the web map shall present a metro area map so that users have the ability to select their desired region from a drop-down menu.	WS	3
FEAT2.8.6	PA009U3	Access to event categories	The Central Florida region map shall provide tabs that give access to different event categories, for example: critical incidents, traffic, weather, and roadwork.	WS	3
FEAT2.8.7	PA013	Automatically update	The web site map, including the color-coded segments, shall automatically update after configurable amounts of time with the default being 5 minutes.	WS	3
FEAT2.9		511 service		WS	1

FEAT2.9.1	PA009	Promote 511 service	The Web site shall promote use of the 511-telephone service by displaying the 511 logo on every page with the option to display additional text explaining or promoting the 511 telephone service.	WS	3
FEAT2.9.2	PA011U	Information for 511 usage	The iFlorida Web site shall have a page that shall include information pertaining to the use of the 511-telephone service, including, at a minimum, a listing of all commands (both voice and touch-tone) available to users for retrieving information from these services.	WS	3
FEAT2.10		Banner		WS	1
FEAT2.10.1	PA007	Display emergency information	The web site Home Page shall display a banner message above the state map, that provides emergency information and/or serious/major conditions affecting the entire state or a large portion of Florida (e.g., hurricane, etc.).	WS	3
FEAT2.10.2	PA008U	Operator can modify banner	The SunGuide operator shall be capable of making, adding to, deleting, or otherwise modifying the statewide Web site banner.	WS	3
FEAT3		Executive Handler (EH)		EH	1
FEAT3.1	S008	Executive handler function	The SunGuide system shall have an executive function that handles all monitoring and reporting of the status of external devices and internal processes.	EH	1
FEAT3.2	EX001	Minimum functionality	As a minimum the executive handler shall provide:· Process initiation/termination;· Process status and monitoring;· Error logging.	EH	1

FEAT3.3	EX002	Start, stop, and restart processes	The executive handler shall be capable of automatic and manual initiation, termination and re-initiation of system processes.	EH	1
FEAT3.4	EX003	Scheduled process control	The executive handler shall have the capability to add scheduled process control for subsystems and drivers	EH	1
FEAT3.5	EX004	Group dependencies	The executive handler shall notify personnel if an application fails or is restarted if the personnel have registered for notifications.	EH	1
FEAT3.6	EX001F	Process start order	In the case of a failure, the executive handler shall start processes in the same order that they originally started.	EH	1
FEAT3.7	EX002F	Restart safeguards	In the case of a process failure due to unavailable resources, the executive handler shall have safeguards to prevent the unrestrained cyclical restart of failed applications.	EH	1
FEAT3.8	EX005	Initialize individual components	The executive handler shall have the ability to initialize individual components as well as subsystem groups.	EH	1
FEAT3.9	EX006	Monitor, report and display status	The executive handler shall be capable of monitoring, reporting, and displaying the status of all subsystems, subsystem components, and network communications links and components.	EH	1
FEAT3.10	EX001D	Hierarchal view	The executive handler shall provide a hierarchical view of the system allowing the user to drill down from a subsystem level to an individual component level.	EH	1

FEAT3.11	EX001M	Monitor key data	Monitoring shall include pertinent system information such as the current system state, as well as historical information such as system performance, uptime, and error logs.	EH	1
FEAT3.12	EX002M	Database storage of information	All information collected shall be capable of being stored in the database.	EH	2
FEAT3.13	EX004L	Status log query multiple files	Status log viewer shall support queries across multiple log files.	EH	1
FEAT3.14	EX005L	Status log delete aged log files	The system shall delete log files when they age beyond a configurable number of days.	EH	1
FEAT3.15	EX003F	Configurable number of restarts	It shall be possible to configure the maximum number of retries that the executive handler shall perform when attempting to restart a failed application. It shall also be possible to configure the number of minutes over which the retry counter is maintained.	EH	1
FEAT3.16	EX010	Use windows credentials	The executive handler application shall utilize windows credentials to verify rights to execute.	EH	1
FEAT3.17	EX001G	Internal status data	The SunGuide shall gather internal status data concerning its operation and make this information available to the user.	EH	3
FEAT4		Inventory Management System (IMS)		IMS	2
FEAT4.1		System		IMS	2
FEAT4.1.1	S022	Interface to maintenance and inventory tracking software	The SunGuide system shall be provided with an interface to a software system that tracks the inventory of all ITS equipment and the status of equipment repair(s) and maintenance (i.e. life-cycle asset management software system).	IMS	2

FEAT4.1.2	IM002	Index by equipment type	The inventory/maintenance software database shall index by equipment type for the purpose of reporting and updating the inventory.	IMS	2
FEAT4.1.3	IM001D	Vendor name referenced by equipment type ID.	The vendor name shall be referenced by the equipment type identification.	IMS	2
FEAT4.1.4	IM001R	Reports provided by type ID	Reports shall be provided by type identification for all equipment according to equipment status.	IMS	2
FEAT4.1.5	IM002D	View and print vendor table	The workstation operator shall be capable of viewing and printing the complete vendor table or the vendors according to a specific type identification.	IMS	2
FEAT4.1.6	IM003D	Location data	The inventory/maintenance software shall maintain warehouse locations, repair shop locations, and installation locations, with a GUI screen to add/edit/delete such locations.	IMS	2
FEAT4.1.7	IM005D	Equipment status categories	The equipment status shall be:· In inventory;· Installed; or· In repair/test.	IMS	2
FEAT4.1.8	IM004	Record status of equipment	The inventory/maintenance software shall provide the operator the capability to record the status of equipment that has failed and is in the process of being repaired.	IMS	2
FEAT4.1.9	IM006D	Equipment status tracking	The inventory/maintenance software shall support tracking the status of the equipment being tracked as follows:· Failed at site;· At repair depot;· In repair at depot;· In testing at depot; and· In inventory.	IMS	2

FEAT4.1.10	IM005	Save repair information	The inventory/maintenance software shall contain repair information on the equipment to include the dates of failure and repair, the repair technician, the time to repair, parts utilized by part number and comments.	IMS	2
FEAT4.1.11	IM006	Repair history	The inventory/maintenance software shall maintain a history of the equipment repairs and may be reported via GUI to the operator or may be printed.	IMS	2
FEAT4.2		GUI		GUI	1
FEAT4.2.1	IM001	Add/edit/delete equipment GUI	The inventory/maintenance software shall provide a GUI display screen for the operator to add/edit/delete inventory equipment information. The equipment information shall at a minimum include:· Type identification and description;· Model identification and description;· Manufacturer information; · Serial number;· Firmware version;· Location description;· Date installed;· Status (inventory/installed/repair);· Location geographic reference; and · Quantity by type identification on hand.	GUI	2
FEAT4.2.2	IM003	Add/edit/delete vendor information GUI	The inventory/maintenance software shall provide a GUI for the operator to add/edit/delete vendor information. The vendor information shall at a minimum include the following:· Vendor name;· Vendor contact;· Address/ information including city, state, and zip code;· Telephone and facsimile numbers; and· Web address for purchase.	GUI	2

FEAT4.2.3	IM002R	Print reports GUI	All printed reports of the inventory software shall be selected via a GUI menu.	GUI	2
FEAT4.2.4	IM004D	Equipment history GUI	History of the equipment transfer and its inventory status shall be maintained and reported via GUI to the workstation operator or printed.	GUI	2
FEAT4.2.5	ID001W	Displays	The congestion report display shall result from a comparison between all possible sources of data derived from real-time data, operator input or historical data as determined by the algorithm.	GUI	2
FEAT4.2.6	IM007	Repair status display	The repair status of a specific piece of equipment shall be displayed to the operator.	GUI	2
FEAT5		Incident Management (IM)		IM	1
FEAT5.1		General		IM	1
FEAT5.1.1	TM002	Minimum functionality	The incident management subsystem shall acquire data from the vehicle detection subsystem and include the following functionality at a minimum:· Incident verification;· Motorist information;· Response;· Site management;· Traffic management; and· Incident clearance.	EM	1
FEAT5.1.2	TM003W	Incident type	The incident management function shall support operator entry of the incident type such as HAZMAT spills.	EM	1
FEAT5.1.3	A009	Video verification	The SunGuide software shall provide software for video verification of messages posted on DMS to the extent possible due to physical configuration in the field of the camera and sign.	EM	1

FEAT5.1.4	TM001	Minimize keystrokes	The SunGuide system's incident management function shall minimize the number of key strokes for the entry of traffic incidents while providing drop-down menus, check boxes, and data interfaces with subsystems such as the road weather information systems (RWIS), vehicle detection, motorist aid, vehicle detection, motorist aid (AVI), DMSs, and CCTVs.	EM	1
FEAT5.1.5	DM008D	Limit to one phase messages	The system shall have a configuration setting that specifies only one phase messages will be generated.	EM	3
FEAT5.1.6	DM009D	Replacement words for messages	Message library shall contain a prioritized list of words and replacements to be used in limiting messages to one phase messages.	EM	2
FEAT5.2		Detect		IM	1
FEAT5.2.1	A001	Incident detection	The SunGuide software shall provide software for incident detection along the limited-access facilities.	EM	1
FEAT5.2.2	ID001	Automatic detection of incident or congestion	The SunGuide system shall support the detection of incidents or congestion, via a software algorithm, that determines occupancy, volume, or speed and makes a determination based on user-defined thresholds.	IM	1

FEAT5.2.3	ID002	View congestion report	The SunGuide system shall provide the ability to view a congestion report for all roadway segments in the system. The congestion report shall include a graphical display and the following information for each roadway segment in the system:· Roadway segment identifications;· Source of the incident or congestion information;· Reported speeds [in miles per hour (MPH)]· Historic speeds (in MPH);· FDOT's LOS;· Congestion cases (i.e. closed, heavy, moderate, none, or free flow); and· Other recommended parameters.	IM	1
FEAT5.2.4	ID003	View incident or congestion raw data	The workstation operator shall have the ability to view an incident or congestion raw data report for all links in the system.	IM	1
FEAT5.2.5	ID004	Manual incident entry	The workstation operator shall have the ability, via a menu and the selection of a link on a map, to enter manual incident or congestion information. The incident or congestion information the user may enter shall include:· Congestion case (i.e. closed, heavy, moderate, none, or free flow);· Incident types;· Roadway weather conditions; and· Incident duration (i.e., the amount of time incident the will last).	IM	1
FEAT5.2.6	ID002W	Graphical displays	The congestion report shall include graphical displays and the following information for each roadway segment in the system· Roadway segment identifications;· Roadway segment geometries;· Source names (determined by the algorithms);· Reported speed, volume, and occupancy; and· Congestion case.	IM	1

FEAT5.3		Manage		IM	1
FEAT5.3.1	TM001R	Geographic personnel lists	The personnel list shall be on a geographic basis and, at a minimum, shall include.· Response personnel/and contacts;· Geographic agency responsibilities;· Talk list (i.e., responders contact list);· Radio frequencies;· Phone/ and facsimiles numbers; and· Pager numbers.	EM	1
FEAT5.3.2	TM002R	Messaging	The incident management software will provide the ability to redirect incident information to standard message services (such as FAX, email, pagers).	EM	1
FEAT5.3.3	TM003R	Cataloging of incident management teams/resources	The incident Management function shall support the cataloging of incident management teams and resources with a listing of equipment, material, and the available personnel who possess special skills.	IM	1
FEAT5.3.4	TM005R	Recommend DMS/HAR locations and messages	The incident management response function shall recommend a set of DMS locations and messages for the workstation operator to select. In addition, HAR messages shall be activated.	EM	1
FEAT5.3.5	TM006R	Recommend a set of HAR messages	The incident management response function shall recommend a set of HAR messages to be activated.	IM	2
FEAT5.3.6	TM007R	Recommend alternate routes	The incident management response function shall recommend alternate routes in response to incidents that are blocking roadways.	EM	1
FEAT5.3.7	TM008R	Select alternate maps	In response to incidents requiring alternate route(s), the workstation operator shall be able to select alternate maps via drop down menus.	EM	1

FEAT5.3.8	TM009R	Communicate with detour message signs	When appropriate, the incident management response function shall communicate with detour message signs that are supported by the SunGuide software and TMC communications network capability indicating recommended alternate routes.	EM	2
FEAT5.3.9	TM010R	Hierarchy of traffic management activities	The incident management response function shall support a hierarchy of traffic management activities and display these activities for review by RTMC managers.	EM	1
FEAT5.3.10	TM005	Personnel lists and contact numbers	The incident management function shall provide the workstation operator with personnel lists and contact numbers as well as a catalog of agency resources via drop-down menus.	IM	1
FEAT5.3.11	TM004	Distribute information	The incident management function shall distribute video feeds, traffic flow, and incident information, and traffic event data until the incident is cleared and the traffic flow is back to normal.	EM	1
FEAT5.3.12	TM001I	Format for dissemination	The incident management function shall format information for distribution to the following dissemination media:· HAR;· Commercial radio broadcast;· Internet Web servers;· DMSs;· 511 Telephone systems;· Commercial and public televisions;· Facsimile machines and pagers; and· Additional dissemination mechanisms provided by the dissemination function.	EM	1
FEAT5.3.13	TM004R	Quick click interface to GIS	The incident management function shall provide a quick click interface to the GIS maps for the display and location of resources, i.e. fire hydrants.	IM	1

FEAT5.3.14	TM006	Incident status GUI	The incident management function shall provide the workstation operators with GUI screens that record accurate information regarding the incident's current status, the overall progress towards clearance and the equipment required to complete the process.	EM	1
FEAT5.3.15	TM007	Traffic control procedures	The incident management function shall support the RTMC with traffic control procedures that include, at a minimum, point traffic control at the scene, managing the roadway space, and deploying personnel to better manage the traffic by improving traffic flow past incident sites and on alternate routes.	EM	1
FEAT5.3.16	TM008	Incident removal resources	The incident management function shall provide support to the incident clearance process by the cataloging of resources for the removal of the all types of incidents.	EM	1
FEAT5.3.17	TM011R	Catalog of FDOT resources	Included in the catalog shall be the resource, location, cost of service, and availability of related equipment and resources.	EM	1
FEAT5.3.18	A006	Construction work zones	The SunGuide software shall provide for the identification of construction work zones and activities to support operations and management of these work zones and, where smart work zone management is provided, integration of the smart work zone management into freeway management systems (FMS) and incident management systems (IMS).	EM	1

FEAT5.3.19	ID005	Map display	The system shall have a map display of the current incident or congestion for each segment. The map shall change the color of the roadway segment based on the current condition. An algorithm will determine the congestion case.	IM	1
FEAT5.3.20	A010	Incident data archiving	The SunGuide software shall provide software for incident data archiving. The data archived currently includes;· Location· Start and end times· Response plan	EM	2
FEAT5.3.21	A012	Management and dispatch of RR Service Patrols	The SunGuide software shall provide software for the management, dispatch, and coordination of Road Rangers Service Patrols.	RR	3
FEAT5.3.22	A015	Coordination of freeway incident management team	The SunGuide software shall provide software for coordination with a freeway incident management team involving major stakeholders.	EM	2
FEAT5.3.23	A022	Diversion routes	The SunGuide software shall provide software for the maintenance of a list of diversion routes for management of traffic during incidents and evacuations. The software shall tie in with construction updates to avoid detours into construction areas.	EM	1

FEAT5.3.24	A023	Lane or road closures	The SunGuide software shall provide software for the management of lane or road closures during natural or manmade disasters or evacuations and integration with computer-aided dispatch (CAD) systems for incident detection with regional communications centers (RCCs) and emergency operations centers (EOCs) through co-location, Center to Center Communications or the provision of operator stations in the TMC.	EM	2
FEAT5.3.25	TM010R1	Severity levels	The IM subsystem shall support three severity levels of incidents that will have a configurable distance (in miles) for which devices for messages will be selected: level 3 (most severe), level 2, level 1 (least severe).	EM	1
FEAT5.3.26	TM014R	Milepost entry	An incident record shall contain a text field for entry of milepost location information.	EM	3
FEAT5.3.27	TM015R	Roadway association	Incidents shall always be associated with a roadway defined in the SunGuide network.	EM	1
FEAT5.3.28	TM005R1	Devices on roadways	The incident response plan shall suggest all DMS/HAR devices on roadways leading to the incident location within the distance specified with the severity level of the incident.	EM	1
FEAT5.3.29	TM012	Incident ID	When a new incident is created, it shall automatically be assigned a sequential incident ID number. This number shall appear along with the textual incident ID in every place that it appears. The ID shall roll over when it exceeds 4,294,967,296.	EM	1

FEAT5.3.30	DM011M	Response plan priority levels	SunGuide shall provide a mechanism for prioritizing messages placed by the IM subsystem based on distance from the incident, with messages on signs closer to the incident being given higher priority.	RPG	1
FEAT5.3.31	TM014	Cancel response plan	When an incident is closed, the response plan associated with the incident shall be cancelled.	EM	1
FEAT5.3.32	TM016R	Remove response plan messages	When a response plan is cancelled, all messages that were part of the response plan shall be removed from the queues of the devices in which they were placed.	EM	1
FEAT5.3.33	DM016M	Response plan C2C devices	SunGuide shall provide a mechanism to include DMS devices from available list through C2C interface when generating an IM response plan.	IM	2.1
FEAT5.3.34	TM001P	Fonts in response plan messages	The incident management function shall use each DMS' font characteristics to determine response plan messages.	RPG	2.1
FEAT5.3.35	DM005M6	Number of templates	SunGuide shall provide a minimum of one (1) and no more than thee (3) message templates for each DMS device in the District's inventory (not to exceed 512 signs).	RPG	2.1
FEAT5.4		Incident ownership		IM	1
FEAT5.4.1	IM008	Ownership property	An incident, exclusive of construction or planned events, shall have ownership characteristic in that the person who is managing the incident shall be identified as the owner of the incident and the owner shall be displayed when incident status is displayed.	EM	1

FEAT5.4.2	IM007O	Remove owner on logoff	When an operator logs off of SunGuide all incidents that are owned by the operator shall be marked as no owner.	EM	1
FEAT5.4.3	IM007O1	Log ownership changes	All ownership changes need to be logged to the IM database.	EM	1
FEAT5.4.4	IM001O	Only owner can modify incident	Only the "owning" operator shall be able to make changes to an incident.	IM	1
FEAT5.4.5	IM003O	Take ownership of incident	There shall be a "Take Ownership of Incident" privilege that allows an operator with this privilege to take ownership of any incident.	EM	1
FEAT5.4.7	TM002B	Permission to modify event without ownership check	The incident management subsystem shall allow an operator with appropriate permissions to modify an event only after first obtaining ownership.	EM	3
FEAT6		Data Distribution (DD)		DD	1
FEAT6.1	S010	Distribute data in real time.	The SunGuide system shall provide a function to distribute data in real time. Data shall include but not be limited to:· Travel time data;· Speed data; · Video images; and· Amber Alert data.	DD	1
FEAT6.2	DD001	Retrieving real time data from the database	The data distribution function shall be capable of retrieving data from the database and updating user workstations with the data as soon as it is received into the database.	DD	1
FEAT6.3	DD002	Data selection	The user shall be capable of selecting the data to be displayed by the data distribution function.	DD	1
FEAT7		Graphical User Interface - General (GUI)		GUI	1
FEAT7.1	TM003	Entry of location and direction of travel data	Workstation GUI screens shall support the entry of the exact location and direction of travel data as efficiently as possible.	GUI	1

FEAT7.2		Map based		GUI	1
FEAT7.2.1	S014	GIS software interface	The SunGuide system shall provide a GIS interface that displays shape files.	GUI	1
FEAT7.2.2	GS001	GIS data	The SunGuide GIS function shall translate shape files containing GIS-formatted data such as traffic speed, incidents, message sign data, and device status.	GUI	1
FEAT7.2.3	GS002	Viewable from PTMCs, VTMCs, RTMCs and FDOT central office	Data such as traffic speed, incidents, message sign data, device status, and other data shall be viewable from PTMCs, VTMCs, RTMCs and the FDOT Central Office.	GUI	2
FEAT7.2.4	GS003	Geographical map display	The SunGuide graphical map shall display a graphic depicting a map of the selected geographic area with associated roadways, device icons for supported devices and other geographic or ITS features.	GUI	1
FEAT7.2.5	GS004	Remote viewing	The GIS function shall support remote viewing of data through a TCP/IP connection at a minimum speed of 1.544 million bits per second.	GUI	1
FEAT7.2.7	GS009C1	Color selection dialog	All color choices shall be made using a standard color selection dialog similar to what is provided by Microsoft Windows.	GUI	2
FEAT7.2.8	WS015	Map views	SunGuide shall provide two map views, one called the FIHS Conditions Map and the other called the Central Florida Conditions Map.	GUI	3
FEAT7.2.9	WS001M	Roadway links options	SunGuide shall provide a map option that will display all FIHS roadway links on the FIHS Conditions map and all Central Florida roadway links on Central Florida Conditions map.	GUI	3

FEAT7.2.10	WS001Z	Reporting map scale	The Operator Interface shall provide ability to increase the scale of the conditions reporting map (called zoom) by drawing a box with the mouse around the portion of that map that is to be displayed on the full workstation screen.	GUI	3
FEAT7.2.11	WS002M	Conditions map	The FIHS Conditions map shall be similar to the statewide map provided on the statewide FIHS Web site.	GUI	3
FEAT7.2.12	WS002Z	Largest scale selectable	The largest scale selectable shall include a statewide view that includes the entire FIHS incident/event data.	GUI	3
FEAT7.3		General		GUI	1
FEAT7.3.1	WS010	Behavior on duplicate login	A user who is already logged in on another workstation and tries to log in on another workstation shall be automatically logged off the first machine and a message shall be displayed explaining what happened.	GUI	1
FEAT7.3.2	WS009	Display login name	The system shall display the currently logged on username somewhere in the browser window or in the title bar of the window.	GUI	1
FEAT7.3.3	GS009C	Configurable colors for icons	The colors associated with device status icons shall be configurable.	GUI	2
FEAT7.3.4	WS008	Display error messages	If any device control commands issued by the operator fails, the failure shall be indicated by a "error" warning message in the status message window, this include errors caused by authorization failures.	GUI	1
FEAT7.3.5	GS010	Display color legend	The operator workstation display shall be able to display a legend indicating the color chosen for each color-configurable item.	GUI	2

FEAT7.3.6	WS011	Display all driver data	The GUI shall provide a way to display all data available from the device driver for each device.	GUI	2
FEAT7.3.7	AV007L3	Roadway display	Mousing over any roadway displayed on the SunGuide map shall display the street name.	GUI	3
FEAT7.3.8	TD009	Data inclusions	SunGuide data shall include, but are not limited to: incident/event data, traffic sensor data, and weather data.	GUI	3
FEAT7.3.9	WS002M1	Conditions map displays	FIHS Conditions map shall be capable of displaying all available data, not simply the data that is available to the public via the FIHS Web site.	GUI	3
FEAT7.3.10	WS002M2	Event icons	Event icons and/or color coded roadways shown on the SVG GUI SunGuide maps shall be color-coded and clickable.	GUI	3
FEAT7.3.11	S039	Collect, process, display data	SunGuide shall collect, process and display traffic data, center-to-center data, data from selected field devices, and operator-entered incident/event data.	GUI	3
FEAT7.3.12	DF104	Distribute raw/stored data	SunGuide shall be able to distribute raw and stored data to registered end-users.	GUI	3
FEAT7.3.14	DF019G	GUI to define instrumented road segments	The GUI component shall support a SunGuide operator with appropriate permissions to define the instrumented road segments to be used to calculate travel times.	GUI	4
FEAT7.4		TSS		GUI	1
FEAT7.4.1	ID001A	Audible alerts	The GUI shall provide audible notification of congestion alerts for logged-on operators.	GUI	1

FEAT7.4.2	GS009	Detector icons	The system map shall display icons at the location provided by FDOT of each detector sensor itself. The sensor icon shall change color to indicate the detector's operational status. The colors associated with "operational" and "failed" status shall be configurable.	GUI	1
FEAT7.4.3	GS008	Detector icons2	The map shall display icons at the location of each detector station. The icon shall change color to indicate the detector station's operational status. The status colors shall be configurable.	GUI	1
FEAT7.4.4	IM008O1	Flash unacknowledge lane alarms	Lane segments associated with unacknowledged alarms shall flash on the map.	GUI	1
FEAT7.4.5	WS016	Graying of icon or segment	The loop detector icon and/or road segment shall go "gray" when the system determines that no data are available at a loop detector station or a supervisor intentionally disables the data collection links for public dissemination purposes.	GUI	3
FEAT7.4.6	WS017	View directional conditions differences	SunGuide GUI shall provide the capability to view the difference in directional conditions on instrumented roadways on the conditions map (FIHS and Central Florida).	GUI	3
FEAT7.4.7	WS003M	Showing link based speeds	SunGuide link based speeds shall be shown as link information, not as point data.	GUI	3
FEAT7.4.8	WS004M	Operator interface displays	The operator interface shall display the most current traffic conditions for monitored roadways.	GUI	3

FEAT7.4.9	WS004M1	Map refresh rate	The SunGuide web site shall have an administrator configurable value that will allow the map refresh rate to be set in (measured in seconds).	GUI	3
FEAT7.4.10	WS018	Data available through single map	All data shall be available on the SunGuide operator GUI through a single map so that an operator would not have to access several maps to obtain information on a roadway segment.	GUI	3
FEAT7.4.11	WS019	Login screen	The Operator Interface shall provide users with a login screen on which they will be required to enter their user name and password.	GUI	3
FEAT7.5		DMS		GUI	1
FEAT7.5.1	DM006D	Message library sorting	Message library entries shall be sorted in alphanumeric order within a library.	GUI	1
FEAT7.5.2	DM007D	Keystroke selection	When choosing a message from a message library, the system shall accept letters typed by the operator, and scroll the message list to the first message matching these letters.	GUI	1
FEAT7.5.3	DM003D2	Display errors	If any errors (including but not limited to pixel, lamp, temperature or fan errors) are reported during the regular polling of a DMS device, the system shall: generate an operator alert, change the color of the icon for the DMS device on the map to a configurable color.	GUI	1
FEAT7.5.4	DM003D3	Display extended status	The DMS status form shall provide a way to request and display the following extended status information from the signs: fan status, pixel errors, sign temperatures, power supply status.	GUI	1

FEAT7.5.5	DM012M	Manual DMS message permission	The system shall have a permission field (per user) for typing a manual message for a DMS.	GUI	2
FEAT7.5.6	DM005M5	GUI characteristics	The SunGuide GUI in all operator viewable screens shall show the correct number of characters per line but will not use proportional font spacing.	DMS	2.1
FEAT7.5.7	DM015	DMS Conflict Dialog	Conflicts arising from posting DMS messages will be handled in a single dialog regardless of the number of conflicts.	GUI	5
FEAT7.5.7.1	DM015A	DMS Conflict Approval	The DMS conflict dialog shall contain options to approve multiple messages at the same time.	GUI	5
FEAT7.5.7.2	DM015B	DMS Conflict Approved Word Addition	The DMS conflict dialog shall contain an option to add non-approved words to the approved words list, provided the operator has appropriate permission.	GUI	5
FEAT7.6		MAS		GUI	1
FEAT7.6.1	DM008M	Manual message priority	The system shall allow the operator to specify a priority level when activating a message manually.	GUI	1
FEAT7.6.2	DM009M	Default manual message priority	The default priority level for manual message activation shall be the highest priority level.	GUI	1
FEAT7.6.3	DM010M	Default sequence message priority	The default priority level for messages included in an automatic sequence shall be the lowest priority level.	GUI	1

FEAT7.6.4	TM013R	GUI functionality	The queue status screen shall provide the following: 1) a display of the contents of the message queue, including message, priority, and associated incident ID, if any, for each message in the queue. 2) the ability to remove individual messages from the message queue. 3) a "blank" button that removes all the messages from the queue 4) Ability to change priority of messages on the queue.	GUI	1
FEAT7.6.5	DM014M	Edit MAS message permission	The system shall have a permission field (per user) for editing the message in a device queue.	GUI	2
FEAT7.6.6		Override Spelling Conflicts	MAS shall allow for a configuration setting in the SunGuide configuration file to override all spelling conflicts	GUI	5
FEAT7.6.6.1		MAS to tell DMS of Override	If MAS has been configured to override spelling conflicts, MAS shall add a flag to all requests made to DMS to post a message to indicate that DMS should override any spelling conflict if one exists.	GUI	5
FEAT7.7		IM		GUI	1
FEAT7.7.1	TM009	Response time	It shall be possible to create an incident, enter required basic information (listed below) and select appropriate signs and/or HARs within 60 seconds of when the operator confirms the incident. Required basic information consists of: ·Incident Description ·Route ·Direction ·Cross Street ·Lane Configuration	GUI	1

FEAT7.7.2	TM001W	Prefilled fields	When an incident is created from a congestion alert associated with a detector link, or when manually created by an operator clicking on a detector link, the following information in the incident form shall be filled in automatically: Route (main road), direction, cross street, lane configuration, milepost number.	GUI	1
FEAT7.7.3	TM001W1	Default date	When a data field in an incident form requires entry of a time and/or date, the current time and/or date shall appear as the default entry, if appropriate for the field.	GUI	1
FEAT7.7.4	GS007	Relocate incidents	It shall be possible to relocate incident icons using a drag-and-drop methodology.	GUI	1
FEAT7.7.5	IM002O	Read-only access of incidents	Operators shall be able open incidents that they do not own with read-only access.	GUI	1
FEAT7.7.6	IM004O	Display of owner	Ownership of each incident shall be displayed in the incident list.	GUI	1
FEAT7.7.7	IM005O	Filter incidents by owner	It shall be possible to filter the incident list by owner.	GUI	1
FEAT7.7.8	IM008O	Audible alarm for unowned incidents	The icons for incidents with no owners shall flash on the map and sound an audible alarm with the exception of construction or planned event incidents.	GUI	1
FEAT7.7.9	IM008O1	Audible alarm on workstations	The system shall periodically sound an audible alarm at all logged-on workstations if there is any active incident without an owner.	GUI	1
FEAT7.7.10	IM006O	Alarm reoccurrence timer	The audible alarm shall sound for 5 seconds and then shut off for a programmable period of time from 5 seconds to 2 minutes.	GUI	1
FEAT7.7.11	TM004A1	Edit IM message permission	The system shall have a permission field (per user) for editing an incident generated message.	GUI	2

FEAT7.8		CCTV		GUI	1
FEAT7.8.1	TV003D1	Camera menu activation	The CCTV GUI shall support activating and operating camera menus for NTCIP CCTV devices.	GUI	2
FEAT7.8.2	TV001D2	Configurable joystick buttons	The GUI shall allow user configuration of joystick button functions	GUI	2
FEAT7.8.3	DF021G1	Block video from public dissemination	The status of the "block video" flag for a CCTV device shall be included with the CCTV status data when transmitted over C2C.	GUI	4
FEAT7.9		SB		GUI	2
FEAT7.9.1	TM017R1	Display SB status	SunGuide software operator shall be able to display the latest status from each safety barrier sensor.	GUI	2
FEAT7.9.2	GS011	SB PLC location	SunGuide map shall display the location of the safety barrier PLCs .	GUI	2
FEAT7.9.3	GS011S	SB icon flashing	The icon associated with the sensor reporting a breakaway switch activation shall flash until a user acknowledges the alarm.	GUI	2
FEAT7.10		HAR		GUI	2
FEAT7.10.1	DM013M	Manual HAR message permission	The system shall have a permission field (per user) for typing a manual message for a HAR.	GUI	2
FEAT7.11		EM/PM		GUI	2
FEAT7.11.1	TM003B	Login to subsystem type of "URL"	The SunGuide GUI shall permit a user to log into a non-specific subsystem with a subsystem type of "URL" that is connected to the data bus when SunGuide is operating with a SMART software interface.	GUI	2
FEAT7.12		SAS		GUI	2
FEAT7.12.1	TV001G	CCTV icon color for applied schedule	The CCTV icon color shall change when the schedule activates and return to its normal color when the schedule no longer applies.	GUI	2.2.2

FEAT7.12.2	TV001G1	CCTV icon color for associated schedule	An operator with appropriate permissions for the CCTV subsystem shall be able to designate a color for the CCTV icon when it is associated with a schedule.	GUI	2.2.2
FEAT7.12.3	TV001G2	CCTV icon color same for locks	The CCTV icon color shall remain the same when an operator takes control of the camera (e.g. locks it).	GUI	2.2.2
FEAT7.12.4	TV005C	Display currently active sequences	An operator with appropriate permissions shall be able to display the currently active sequences and schedules on the operator map GUI.	GUI	2.2.2
FEAT7.12.5	TV007C3	Suspend/resume schedule	The operator shall be able to suspend and resume the schedule for a specific camera or cameras through the use of the CCTV GUI.	GUI	2.2.2
FEAT7.13		AVL		GUI	3
FEAT7.13.1	EM018G1	Map position	A "Find on map" option shall be provided from the list, which will re-center the SunGuide map to the current position of the vehicle icon.	GUI	3
FEAT7.13.2	EM010	Create new incident	An operator shall be able to invoke the incident management window, with location information pre-filled by right-clicking on an AVL icon and choosing "create new incident at vehicle location".	GUI	3
FEAT7.13.3	AV002V	Use SVG icon	The vehicle icon symbol for each vehicle shall be an SVG icon.	GUI	3
FEAT7.13.4	AV005V	Icon color	Vehicle icon color shall be configurable.	GUI	3
FEAT7.13.5	AV006V	Tooltip for summary	When an operator hovers the mouse cursor over an AVL icon on the SunGuide map, SunGuide shall display a "tooltip" like status box that shows the vehicle summary data.	GUI	3

FEAT7.13.6	AV010V	Icon appearance	The relevant AVL Icon shall appear different in shape and color, depending on the availability status reported by data feed from the vehicle.	GUI	3
FEAT7.13.7	AV011V	Show detailed status	An operator shall be able to bring up a detailed vehicle status window by right-clicking on an AVL icon and selecting "show detailed status".	GUI	3
FEAT7.13.8	AV011V1	Floating window display	The "Detailed Vehicle Status" window shall be a floating window similar to other SunGuide Status windows.	GUI	3
FEAT7.13.9	AV011V3	Display vehicle information	The operator can display information about a different vehicle in the Detailed Vehicle Status window by clicking on any other visible AVL icon.	GUI	3
FEAT7.13.10	AV001T	Viewing vehicle status	The operator shall be able to view the vehicle status via the SunGuide GUI Map.	GUI	3
FEAT7.13.11	AV003T	Replay options	The operator with appropriate permissions shall be able to right click on the SunGuide map in an area without any symbols and get a menu of "AVL Replay" options to generate a historical track of a selected vehicle.	GUI	3
FEAT7.13.12	AV006	Vehicle icon relocation	The icon representing the vehicle on the GUI be relocated to show its new position when a position report is received for that vehicle.	GUI	3
FEAT7.13.13	AV008V	Refreshing vehicle display	The SunGuide display of vehicles shall be refreshed whenever a new position report is available for display.	GUI	3

FEAT7.13.14	AV008V1	Displaying new positions	If a position report is not displayed on the SunGuide map before a new position is received, the newer position will be displayed but the older one will be maintained in the track history and available for replay.	GUI	3
FEAT7.13.15	AV008V2	Map positioning	A "find on map" option shall be provided in the Vehicle List window that will re-center the SunGuide map to the position of the selected vehicle.	GUI	3
FEAT7.13.16	AV007	Turn off display option	The operator shall be able to turn off the display of vehicle position information on the SunGuide map.	GUI	3
FEAT7.13.17	AV012V	Noticeable icon	A "more noticeable" icon (e.g., flashing, larger, exclamation) shall be used when a vehicle stops or leaves the geo-fenced area without justification (non-patrolling status entered into the road ranger tablet).	GUI	3
FEAT7.14		EM		EM	3
FEAT7.14.1	AV007L4	Road ranger assignment	A "pop up window" advising of Road Ranger Status shall appear on the GUI if the operator selects a Road Ranger vehicle that is already assigned to another incident.	GUI	3
FEAT7.14.2	EM010G2	Filter and sort	The operator shall be able to filter/sort events by county, operator, district, roadway, type, Road Ranger beat(s), and any other data fields contained in the event list.	GUI	3
FEAT7.14.3	EM010G3	Save filter/sort	The operator shall have the option to save the filter/sort as a default associated with the operator login and ID.	GUI	3
FEAT7.14.4		Responder audit		GUI	3

FEAT7.14.4.1	EM020G	Use existing permissions and authentication methods	A Responder Audit screen shall be incorporated into the existing audit feature of the SunGuide GUI, using the existing permissions scheme and user authentication methods of the SunGuide GUI.	GUI	3
FEAT7.14.4.2	EM020G2	Operator can leave fields blank	The operator shall be able to leave any of the fields blank in case that information is not available, except that a record must have at least one timestamp entered.	GUI	3
FEAT7.14.4.3	EM020G6	Enter time activity performed	The software shall require the operator to enter the time that an activity was performed, however the software shall also require the timestamp to fall within the arrival and departure timestamps for the vehicle record.	GUI	3
FEAT7.14.4.4	EM020G7	Timestamp warning	The GUI shall warn the user when a timestamp is entered which is earlier than the event start time or later than the event closed time.	GUI	3
FEAT7.14.4.5	EM020G9	Summary of response times and activities	The GUI shall display a summary of all the agency response times, the detailed vehicle response time records, and all the activities performed.	GUI	3
FEAT7.14.4.6	EM020G10	Display event information	The GUI shall display the event location, event number, and blockage history for an event.	GUI	3
FEAT7.14.4.7	EM020G11	Event chronology summary/report	The GUI shall provide an event chronology summary window with the ability to generate a report.	GUI	3
FEAT7.14.4.8	EM021G	Enter free-text data	A comments field shall be provided for the operator to enter free-text data.	GUI	3

FEAT7.14.5	EM004U	Selecting an event	The operator shall have at least two ways to select an event: (1) selecting from the list of active events, or (2) selecting from a filtered list of all events.	GUI	3
FEAT7.14.6	EM004U1	Filtering events	The operator shall be able to filter events by month, location, type, blockage, or responding agency involved.	GUI	3
FEAT7.14.7	DF020G	Alert for potential conflicts	The GUI shall alert the operator to potential conflicts when an alert is selected to be processed.	GUI	4
FEAT7.14.9	DF004G1	Event located with road and cross street	An event may be geographically located at a point location by selecting a main road and the nearest cross street from a drop down menu of covered roads.	GUI	4
FEAT7.14.10	DF004G2	Event located as a section of roadway	A congestion event may be geographically located as a section of roadway by selecting a starting EM location and an ending EM location.	GUI	4
FEAT7.14.11	DF004G3	Event located by geographic area	An event may be geographically located in an area location by selecting an EM location from a drop down list of configured EM locations. The comments field of the event shall be used to indicate a region wide event effecting traffic.	GUI	4
FEAT7.14.12	DF005G	Icons for traveler information events	The icons for events that have been marked as "publishable as Traveler information" shall be modified to visually depict that the event is being publised to the traveler information providers.	GUI	4

FEAT7.14.13	DF006G	Display interpreted text for traveler info message	A window on the SunGuide GUI shall display the interpreted text of the traveler information message that will be sent to the IDS based on the SunGuide selected FDOT modified SAE J2540 codes and EM reference locations upon operator request.	GUI	4
FEAT7.14.14	DF007G	Select duration field for traveler info event	An event created by the SunGuide operator for the traveler information shall have a field where the operator can enter into a text box how long the event is expected to last.	GUI	4
FEAT7.14.16	DF010G	Same ownership rules for traveler information	Ownership rules shall apply to events created by the operator for the traveler information function.	GUI	4
FEAT7.14.16.1	DF010G1	Event creator identified in event information	The operator who created an event shall be identified in the event information available through the SunGuide GUI.	GUI	4
FEAT7.14.17	DF010G2	Events owned by logged-in SunGuide operators	Any events owned by an operator when they log out shall continue to be owned by the operator after they log out.	GUI	4
FEAT7.14.19	DF010G4	Only event owner can edit/delete event	Only the owner of an event can edit or delete the event.	GUI	4
FEAT7.14.20	DF009G	Operators may enter severity level	The Graphical User Interface component shall allow a SunGuide operator to enter the severity level for the event created for the Data Fusion Component.	GUI	4
FEAT7.14.20.1	DF009G1	Event severity values	Event severity shall be one of the following values: Severe, Moderate, Minor, or Unknown.	GUI	4
FEAT7.14.21	DF021G	Events to be marked for selective dissemination	The GUI component shall allow an operator to mark events for selective dissemination to the public.	GUI	4

FEAT7.14.23	EM029	Performance Measure Popup	The Event Details dialog shall alert the operator if they attempt to close an event where one of the following conditions: "Timestamps are not set oTMC Notification oTMC Verification oFirst Responder Arrival oLane Clearance Time oLast Responder Departure "Time Spans oInitial notification 15 minutes after TMC notification oTMC notification 15 minutes after TMC verification oTMC verification 15 minutes after first responder arrival oFirst responder arrival 15 minutes after lane clearance oLane clearance 15 minutes after last responder departure Responder arrived at an event but never departed.	GUI	5
FEAT7.14.24	EM030	"Distance" Template Tag	SunGuide shall allow a user to include a DISTANCE tag as part of a DMS response plan template	GUI	5
FEAT7.14.25	EM031	Distance Suffix	SunGuide shall allow a user to configure a standard suffix for use when displaying distances of one or more miles on a DMS	GUI	5
FEAT7.14.26	EM032	Distance string for less than one mile	SunGuide shall allow a user to configure a standard text string for use when displaying distances of less than one mile.	GUI	5

FEAT7.14.27	EM033	Distance calculation	When generating a response plan message for a DMS, SunGuide shall replace a DISTANCE tag in the template with text determined by the distance from the DMS to the incident the message relates to, as determined by the device linking configuration	GUI	5
FEAT7.14.27.1	EM033A	Distance string for less than one mile usage	If the DMS is calculated to be less than one mile from the incident, SunGuide shall replace the DISTANCE tag with the configurable less than one mile text string.	GUI	5
FEAT7.14.27.2	EM033B	Distance calculation	If the DMS is calculated to be one mile or more from the incident, SunGuide shall replace the DISTANCE tag with the integer portion of calculated distance (the mathematical floor) followed by the configurable distance suffix text.	GUI	5
FEAT7.14.27.3	EM033C	Invalid distance Calculation	If the distance between the DMS and the incident cannot be calculated, SunGuide shall remove the DISTANCE tag from the suggested message.	GUI	5
FEAT7.14.28		DMS in Event Chronology	When a DMS message belonging to an event's response plan is posted to a DMS, EM shall enter a record of the message in the event's chronology	GUI	5
FEAT7.14.28.1		DMS Blanking in Event Chronology	When a DMS message belonging to an event's response plan is removed from a DMS, EM shall enter a record of the message in the event's chronology.	GUI	5
FEAT7.14.29	EM040	Affected Area head/tail	When a Construction, Special Event, Bridge Work, Visibility, Weather or Flooding event is created, the user shall have the ability to set the head and tail of the affected area.	GUI	6

FEAT7.14.30	EM041	Populate Event Contact Phone Number	When an event contact is selected and a phone number for that contact has been configured, the software shall automatically populate the contact phone number field	GUI	6
FEAT7.14.31	EM042	Nearest CCTV Camera	When an event location is selected, the Nearest CCTV Camera will be set to the geographically closest camera to the event.	GUI	6
FEAT7.14.31.1	EM042A	Changing Nearest CCTV Camera	When changing an event location, if the Nearest CCTV Camera is not the geographically closest camera, the Nearest CCTV selection will not change.	GUI	6
FEAT7.15		511		GUI	3
FEAT7.15.1	DF204R1	Record incident link reports	SunGuide operator interface shall support the recording of Incident Link Reports by SunGuide operators.	GUI	3
FEAT7.15.2	DF207G	Display of 511 routes	SunGuide Operator Interface shall display a list of 511 reporting routes defined as the entire table of currently applicable routes that are shared by the Statewide 511 and SunGuide.	GUI	3
FEAT7.15.3	ID203G3	Alerts sent when WAV file creation exceeds 1 minute	SunGuide shall alert an operator who is recording or composing a WAV file when the duration of the WAV file exceeds 60 seconds indicating the WAV file will not be saved.	GUI	3

FEAT7.15.4	ID203G6	WAV file recording indication for time left	The SunGuide Operator Interface for recording WAV files shall provide the operator with an indication of how much time a WAV file recording is taking and alert the operator as the elapsed recording time approaches 60 seconds. An example would be to provide a 60 second count down clock display that turns yellow when the time remaining is 15 seconds or less and turns red when the time remaining is 5 seconds or less.	GUI	3
FEAT7.15.5	DF029G	Select floodgate message from statewide naming convention	The SunGuide floodgate GUI shall allow the operator to select a Floodgate message to edit based on the FDOT statewide Floodgate naming convention.	GUI	4
FEAT7.15.6	DF028G	Support two sound files and banner messages	The SunGuide floodgate GUI shall support two sound files and two banner messages for each floodgate message.	GUI	4
FEAT7.16		RPG		GUI	3
FEAT7.16.1	TM005R9	Display recommended messages for signs	SunGuide shall display on the operator's workstation recommend messages for signs to manage traffic as part of a response plan.	GUI	3
FEAT7.17		VSL		GUI	3
FEAT7.17.1	DM006V	Display recommended VSL changes	The operator interface shall have the capability to display the current contents of all VSL and recommended changes to them and displaying the current contents of all DMS.	GUI	3
FEAT7.17.2	DM009V	Display for VSL Plan Group	SunGuide shall display an empty menu for the VSL Plan Group when no VSL group is selected. There is no VSL group selected when the VSL window is initially opened or after an new plan is set for a previously selected group.	GUI	4.2

FEAT7.18		TVT		GUI	4
FEAT7.18.1	TM001G	Display travel times	Travel times shall be displayed on the SunGuide Graphical User Interface.	GUI	4
FEAT7.18.2	TM005G1	Data updated on GUI	Data shall be updated on the GUI at the same rate that it is generated by the travel time module/posted to the DMS Module.	GUI	4
FEAT7.18.3	TM003G1	Identify devices associated to routes/segments	The SunGuide operator shall be able to identify which DMS are associated with which routes or segments for which travel time is calculated for.	GUI	4
FEAT7.18.4	TM005G	TVT segments displayed in tabular format	The SunGuide GUI shall enable viewing of current travel times for different segments in a tabular format.	GUI	4
FEAT7.18.5	TM006G	Display number of vehicles used for travel time	The SunGuide GUI shall allow the operator to display the number of vehicles used to calculate the current probe travel time for a segment.	GUI	4
FEAT7.18.6	TM013T2	Display multiple travel times for each segment	SunGuide shall be able to display on the SunGuide GUI, for comparison purposes, the multiple Travel Times for each roadway segment if different data sources are used to calculate it and indicate what data source was used to calculate the travel time.	GUI	4
FEAT7.18.7	TM001G2	Data updated at same rate as availability for TVT display	Data shall be updated on the GUI at the same rate that it is generated by travel time function and available for display by a DMS.	GUI	4
FEAT7.19		DFS		GUI	4
FEAT7.19.1	DF005	Quality checks and ability to modify input	SunGuide shall support the capability for the operator to validate or alter event data received from external sources after the external event data is incorporated into a locally managed event.	GUI	4.2

FEAT7.19.2	DF019	DFS controlled/managed via SunGuide GUI	The Data Fusion subsystem shall be controlled and managed through the SunGuide graphical user interface.	GUI	4
FEAT7.19.4	DF027	Selectively filter traveler info going to the IDS	The Data Fusion subsystem shall allow an operator with appropriate permissions to selectively filter traveler information going to the IDS.	GUI	4
FEAT7.19.5	DF031	Create floodgate message via SunGuide GUI	The Operator shall be able to create a floodgate message using the SunGuide GUI which will be distributed on the SunGuide C2C infrastructure.	GUI	4
FEAT7.19.5.1	DF031A	Creation/storage of floodgate message	SunGuide shall provide the ability for an operator to create a floodgate message and store the floodgate message for later use.	GUI	4.3
FEAT7.19.5.2	DF031A1	Create unique name for message	SunGuide shall provide the ability for an operator to create a unique name for the message.	GUI	4.3
FEAT7.19.5.3	DF031B	Activate message	SunGuide shall provide the ability for an operator to select a previously created and stored floodgate message and "activate" that message.	GUI	4.3
FEAT7.19.5.4	DF031B1	Display list of messages	SunGuide shall display a tree display of previously stored floodgate messages, organized by teh defined folder structure, to the operator for selection.	GUI	4.3
FEAT7.19.5.5	DF031B2	Sort options for floodgage messages	SunGuide shall provide teh ability for an operator to organized stored floodgate messages	GUI	4.3
FEAT7.19.5.6	DF031C	Delete options for floodgate messages	SunGuide shall provide the ability for an operator to delete previously stored floodgate messages	GUI	4.3
FEAT7.19.5.7	DF031D	Organize Messages	SunGuide shall provide the ability for an operator to manage an organization folder structure for storing floodgates	GUI	4.3

FEAT7.19.5.8	DF031D1	Manage Organization	SunGuide shall allow an operator to create, rename, move, and delete folders.	GUI	4.3
FEAT7.19.5.9	DF031D2	Manage Messages - Delete	SunGuide shall allow an opeator to move a previously stored floodgate message from one folder to another.	GUI	4.3
FEAT7.19.5.10	DF031E	Floodgate Multi-Set	SunGuide shall allow a opeator to set an identical message to multiple Floodgates with a single operation.	GUI	4.3
FEAT7.19.5.11	DF031E1	Multi-Set Display	SunGuide shall indicate to an operator which Floodgates share identical messages	GUI	4.3
FEAT7.19.5.12	DF031E2	Expand Floodgate	SunGuide shall allow an operator to select a message which is currently on a single Floodgate slot and apply it to other Floodgates slots	GUI	4.3
FEAT7.19.5.13	DF031E3	View Floodgate Text	SunGuide shall allow an operator to view the text of a Floodgate message or web banner as part of an overview.	GUI	4.3
FEAT7.19.5.14	DF031E4	Use first open slot for multiset	SunGuide shall automatically select the first open slot number for each selected Floodgate when a message is set to multiple Floodgates as a single action.	GUI	4.3
FEAT7.19.5.15	DF031E5	Abort if no open slots	SunGuide shall abort any attempt to set a message to multiple Floodgates if one or more of the selected Floodgates do not have any open slots.	GUI	4.3
FEAT7.19.5.16	DF031E6	Notify operator if duplicate	SunGuide shall indicate to an operator who has selected multiple Floodgates to set a message to if the given message already exists in one of the slots of any of those Floodgates.	GUI	4.3

FEAT7.19.5.17	DF031E7	Notify operator no open slots	SunGuide shall indicate to an operator who has selected multiple Floodgates to set a message to if one or more of the selected Floodgates does not have an open slot for the message to use.	GUI	4.3
FEAT7.19.7	DF001G1	Block video from third parties	The GUI component shall allos a SunGuide operator with appropriate permissions to be able to set a "block video" flag for CCTV devices.	GUI	4
FEAT7.19.8	DF025G	Access designation to third party feeds	The Data Fusion component shall use Center-to-Center configuration to regulate what data is available to third party users	GUI	4.2
FEAT7.19.9	DF012G	Select data to archive	The Graphical user interface shall allow a system administrator to indicate what data is to be archived.	GUI	4
FEAT7.19.10	DF015G	Support system configuration and administration	The Graphical User Interface component shall support the configuration and administration of the system.	GUI	4
FEAT7.19.14	DF011G1	Alert when wind gusts exceed threshold	The GUI shall alert the operator when the DTN weather data feed indicates a weather alert has occurred.	GUI	4
FEAT7.19.15	DF011G2	View/edit weather information received	A response plan with an entry to publish to 511 must be activated for a weather event before the weather event information shall be transmitted to the IDS.	GUI	4
FEAT7.19.16	DF013G	Indicate operational boundaries on GUI map	The Graphical User interface map shall be configured to indicate operational boundaries to guide the operators in managing traveler information for their operational area.	GUI	4

FEAT7.19.17	DF016G	Display current floodgate message	A monitoring display shall display the current Floodgate (or recorded message) status for each "slot", allowing the operators to see which slots have messages and their status (barge-in on/off) as well as any other parameters that they might be able to set.	GUI	4
FEAT7.19.18	DF016G1	Access to traveler info based on SunGuide permissions	SunGuide operator access to traveler information to manage the information shall be based on permissions and level of access the same as SunGuide Transportation Management Center software.	GUI	4
FEAT7.19.19	DF011G	Weather info included by operator selection	Weather information shall be included by operator verification of weather alerts and weather event creation and shall pertain to specific counties/roadways in Florida and specific EM locations.	GUI	4.2
FEAT7.19.21	DF018G	Allow operators to edit location tables	The GUI component shall allow an operator with appropriate permissions to edit the District FDOT location tables without having to stop the system.	GUI	4
FEAT7.19.22	DF019G1	Provide travel times and delays for travel time links	SunGuide shall provide travel times for Travel Time links	GUI	4.2
FEAT7.19.23	DF022G	Select reports to generate	Users shall be able to select the reports to be generated based on a drop down list from a separate archive data page.	GUI	4
FEAT7.19.24	DF023G	Alert operator for data source conflicts	SunGuide shall display a list of nearby active events in a dialog to the operator when a new external event is received.	GUI	4
FEAT7.19.24.1	DF023G1	Provide sufficient event conflict information	The pop up box or similar mechanism shall contain sufficient information about the event conflict to allow an operator to resolve the conflict.	GUI	4

FEAT7.19.26	DF028G	Floodgate sound files and banner messages	The SunGuide floodgate GUI shall support two sound files and two banner messages for each floodgate message.	GUI	4
FEAT7.19.28		ATIS Severity	Sunguide shall allow the operator to create new incident severity criteria specially for FLATIS	GUI	4.3
FEAT7.19.28.1	DF040	ATIS Severity	The software shall allow an operator to set the ATIS Severity.	GUI	4.3
FEAT7.19.28.2	DF040S	ATIS Severity Values	The software shall allow an operator to set the ATIS Severity to Unknown, Minor, Intermediate, or Major.	GUI	4.3
FEAT7.19.28.3	DF040E	ATIS Severity Suggestion	The software shall suggest a new ATIS Severity level when an operator has changed the lane blockage for the event.	GUI	4.3
FEAT7.19.28.4	DF040E1	ATIS Severity Calculation	The software shall suggest an ATIS Severity level by calculating the total percentage of all travel lanes and off ramps blocked.	GUI	4.3
FEAT7.19.28.5	DF040E2	ATIS Severity Calculation Minor	The software shall suggest an ATIS Severity level of Minor when the total percentage of all travel lanes and off ramps blocked is less than or equal to the configured Minor threshold.	GUI	4.3
FEAT7.19.28.6	DF040E3	ATIS Severity Calculation Intermediate	The software shall suggest an ATIS Severity level of Intermediate when the total percentage of all travel lanes and off ramps blocked is less than or equal to the Intermediate threshold and greater than the Minor threshold.	GUI	4.3
FEAT7.19.28.7	DF040E4	ATIS Severity Calculation Major	The software shall suggest an ATIS Severity level of Major when the total percentage of all travel lanes and off ramps blocked is greater than the Intermediate threshold.	GUI	4.3

FEAT7.19.28.8	DF041	ATIS Severity Suggestion Change	The software shall provide visual clues to the operator if the ATIS Severity level suggested is different than the last saved ATIS Severity level.	GUI	4.3
FEAT7.19.28.9	DF042	ATIS Severity Event Chronology	The software shall track changes to the ATIS Severity via the Event Chronology every time a changed ATIS Severity level is saved.	GUI	4.3
FEAT7.19.28.10	DF043	ATIS Severity Sent to ATIS	The software shall make the ATIS Severity level available to external clients via Center-to-Center.	GUI	4.3
FEAT7.19.28.11	DF044	ATIS Severity Default	The software shall default the ATIS Severity level to Minor for all new events.	GUI	4.3
FEAT7.19.28.12	DF045	ATIS Limits Configuration	The software shall allow an administrator to set the Severity threshold percentage for both Minor and Intermediate severity levels in the SunGuide configuration file.	GUI	4.3
FEAT7.19.28.13	DF045S	ATIS Limit Configuration Default	The software shall default the Severity threshold percentages if those in the configuration file were invalid. Default values are Minor = 0; Intermediate = 25;	GUI	4.3
FEAT7.20		PS		GUI	3.1
FEAT7.21		Operator Map		GUI	5
FEAT7.21.1	MA001	Tile-based map	The Operator Map shall display map tiles created by the SunGuide Map Tile Generation application that represent the state of Florida.	GUI	5
FEAT7.21.2	MA002	Multiple zoom levels supported	The Operator Map shall provide multiple zoom levels with the level of detail increasing as the zoom increases.	GUI	5
FEAT7.21.2.1	MA002A	Rubber-band zoom	The operator map shall provide a rubber-band zoom capability.	GUI	5
FEAT7.21.2.2	MA002B	Select zoom level displayed	The operator map shall have a control that allows zoom level to be selected.	GUI	5

FEAT7.21.2.3	MA002C	Ability to zoom by mouse scroll wheel	The operator map shall provide the ability to zoon the map by use of the mouse scroll wheel	GUI	5
FEAT7.21.3	MA003	Pan in multiple directions	The Operator Map shall provide the ability to pan the map in multiple directions.	GUI	5
FEAT7.21.4	MA004	Display default view	On logging in, the Operator Map shall display the default map view of the operator, if one was defined.	GUI	5
FEAT7.21.5	MA005	Display TSS Links	The Operator Map shall display the TSS links managed in the SunGuide Link Editor.	GUI	5
FEAT7.21.5.1	MA005A	Links displayed with lane level detail	The TSS links shall be drawn with lane level detail.	GUI	5
FEAT7.21.5.2	MA005B	Links color coded	The TSS lanes shall be color coded to indicate their current status.	GUI	5
FEAT7.21.6	MA006	Icons displayed	The Operator Map shall display icons for SunGuide devices at the latitude and longitude recorded for the devices.	GUI	5
FEAT7.21.6.1	MA006A	Display CCTV status icons	The Operator Map shall display CCTV icons with their current status color coded for the CCTV devices configured in the SunGuide Admin Editor.	GUI	5
FEAT7.21.6.1.1	MA006A1	Locked CCTV icons	The Operator Map shall display an icon overlay on CCTV icons when they are locked by a user.	GUI	5
FEAT7.21.6.1.2	MA006A2	VisioPaD CCTV icons	The Operator Map shall display an icon overlay on CCTV icons when they are being used for VisioPaD event detection.	GUI	5
FEAT7.21.6.2	MA006B	Display DMS status icons	The Operator Map shall display DMS icons with their current status color coded for the DMS devices configured in the SunGuide Admin Editor. (Note This includes general purpose DMS, VSL, trailblazers, lane status DMS, toll rate DMS, and toll gantry DMS.)	GUI	5

FEAT7.21.6.3	MA006C	Display HAR status icons	The Operator Map shall display HAR icons with their current status color coded for the HAR devices configured in the SunGuide Admin Editor.	GUI	5
FEAT7.21.6.4	MA006D	Display Ramp Meter status icons	The Operator Map shall display Ramp Metering icons with their current status color coded for the Ramp Metering devices configured in the SunGuide Admin Editor.	GUI	5
FEAT7.21.6.5	MA006E	Display RWIS status icons	The Operator Map shall display RWIS icons with their current status color coded for the RWIS devices configured in the SunGuide Admin Editor.	GUI	5
FEAT7.21.6.6	MA006F	Display Safety Barrier status icons	The Operator Map shall display Safety Barrier icons with their current status color coded for the Safety Barrier devices configured in the SunGuide Admin Editor.	GUI	5
FEAT7.21.6.7	MA006G	Display TSS status icons	The Operator Map shall display TSS detector icons with their current status color coded for the detectors configured in the SunGuide Admin Editor.	GUI	5
FEAT7.21.6.8	MA006H	Display Event status icons	The Operator Map shall display Event icons based on Event Type for the Events currently maintained in the Event Management subsystem.	GUI	5
FEAT7.21.6.8.1	MA006H1	Display Event overlay icons	The Operator Map shall display an icon overlay on Event icons which are published via FL511 ATIS.	GUI	5
FEAT7.21.6.8.2	MA006H2	Do not show Closed Event Icon	The Operator Map shall not show icons for events that have been closed.	GUI	5
FEAT7.21.6.9	MA006I	Display C2C status icons	The Operator Map shall display C2C devices with their current status color coded for the C2C devices currently being received from a Center-to-Center Extractor.	GUI	5

FEAT7.21.6.10	MA006J	Display AVL status icons	The Operator Map shall display AVL vehicle icons with their current status color coded for the vehicles currently active.	GUI	5
FEAT7.21.6.11	MA006K	Display SAS overlay icons	The Operator Map shall display an overlay icon on devices which have scheduled activities through the SAS.	GUI	5
FEAT7.21.6.12	MA006L	Selection of icons	The Operator Map shall allow device icons to be selected.	GUI	5
FEAT7.21.6.12.1	MA006L1	Display CCTV Status GUI	The CCTV status GUI shall be displayed when a CCTV device is selected.	GUI	5
FEAT7.21.6.12.2	MA006L2	Display DMS Status GUI	The DMS status GUI shall be displayed when a DMS device is selected.	GUI	5
FEAT7.21.6.12.3	MA006L3	Display Event Details Status GUI	The Event Details GUI shall be displayed when an event icon is selected.	GUI	5
FEAT7.21.6.12.4	MA006L4	Display HAR Status GUI	The HAR status GUI shall be displayed when a HAR device is selected.	GUI	5
FEAT7.21.6.12.5	MA006L5	Display C2C Status GUI	The C2C status GUI shall be displayed when a C2C device is selected.	GUI	5
FEAT7.21.6.12.6	MA006L6	Display AVL/RR Status GUI	The AVL/RR status GUI shall be displayed when a RR device is selected.	GUI	5
FEAT7.21.6.12.7	MA006L7	Display RWIS Status GUI	The RWIS status GUI shall be displayed when a RWIS device is selected.	GUI	5
FEAT7.21.6.12.8	MA006L8	Display Safety Barrier Status GUI	The Safety Barrier status GUI shall be displayed when a SB device is selected.	GUI	5
FEAT7.21.6.12.9	MA006L9	Display VSL Status GUI	The VSL status GUI shall be displayed when a VSL device is selected.	GUI	5
FEAT7.21.6.12.10	MA006L10	Display TSS Detector Status GUI	The TSS detector status GUI shall be displayed when a detector is selected.	GUI	5
FEAT7.21.6.12.11	MA006L11	Display Link Speed Status GUI	The Link Speed GUI shall be displayed when a TSS lane is selected.	GUI	5
FEAT7.21.6.12.12	MA007C9B	Select icon types in map view	An operator shall be able to select which icon typs are visible in their map view	GUI	5

FEAT7.21.6.12.12.1	MA007C9B1	Customize icon	Each operator shall be able to customize which icons appear for their login credentials	GUI	5
FEAT7.21.6.12.14	MA007CF	Display of abandoned vehicle icon	The display of the abandoned vehicles icon shall be an option that can be toggled in the icon configuration menu	GUI	5
FEAT7.21.6.12.15	MA007CG	Display of disabled vehicle icon	The display of the disabled vehicles icons shall be an option that can be toggled in the icon configuration menu	GUI	5
FEAT7.21.6.12.16	MA007C9C	Customize appearance of icons	An operator shall be able to customize the appearance of icons.	GUI	5
FEAT7.21.6.12.16.1	MA007C9C1	Customize icon colors	Each operator shall be able to customize icon colors for their login credentials.	GUI	5
FEAT7.21.7	MA007	Map Menu	The Operator Map shall have a menu that changes context based on where the mouse right clicks.	GUI	5
FEAT7.21.7.1	MA007A	Limit menu options based on authentication	Menu options which are not available because the user is not authenticated to the corresponding subsystem shall either appear but be disabled, or not appear at all.	GUI	5
FEAT7.21.7.2	MA007B	Limit menu options based on permissions	Menu options which are not available because the user does not have sufficient permissions to perform the action of that menu option shall either appear but be disabled, or not appear at all.	GUI	5
FEAT7.21.7.3	MA007C	Display menu with mouse click	A menu to access subsystems shall be displayed when the mouse right clicks on the map where no ITS devices are displayed; the menu will vary based on what subsystems the operator has authenticated to for data.	GUI	5
FEAT7.21.7.3.1	MA007C1	Camera submenu	The Operator Map main menu shall provide a "Cameras" submenu.	GUI	5

FEAT7.21.7.3.1.1	MA007C1A	Camera submenu blocking	The Cameras submenu shall provide a "Camera Blocking..." option to launch the combined cameras tabular display.	GUI	5
FEAT7.21.7.3.1.2	MA007C1B	Camera submenu control	The Cameras submenu shall provide a "Camera Control..." option to launch the CCTV control dialog.	GUI	5
FEAT7.21.7.3.1.3	MA007C1C	Camera submenu scheduler	The Cameras submenu shall provide a "Scheduler" submenu.	GUI	5
FEAT7.21.7.3.1.3.1	MA007C1C1	Camera submenu SAS launch	The Scheduler submenu shall provide a "Schedules..." option to launch the SAS schedules dialog.	GUI	5
FEAT7.21.7.3.1.3.2	MA007C1C2	Camera submenu SAS scheduler	The Scheduler submenu shall provide a "Schedules..." option to launch the SAS schedules dialog.	GUI	5
FEAT7.21.7.3.1.3.3	MA007C1C3	Camera submenu SAS sequences	The Scheduler submenu shall provide a "Sequences..." option to launch the SAS sequences dialog.	GUI	5
FEAT7.21.7.3.1.4	MA007C1D	Camera submenu USB joystick	The Cameras submenu shall provide a "USB Joystick Configuration..." option to launch the joystick configuration dialog.	GUI	5
FEAT7.21.7.3.2	MA007C2	C2C submenu	The Operator Map main menu shall provide a "Center-to-Center" submenu.	GUI	5
FEAT7.21.7.3.2.1	MA007C2A	C2C submenu camera	The Operator Map main menu shall provide a "Center-to-Center" submenu.`	GUI	5
FEAT7.21.7.3.2.2	MA007C2B	C2C submenu DMS	The Center-to-Center submenu shall provide a "DMS Status..." option to launch the C2C DMS dialog.	GUI	5
FEAT7.21.7.3.2.3	MA007C2C	C2C submenu Event	The Center-to-Center submenu shall provide a "Event List..." option to launch the C2C event dialog.	GUI	5
FEAT7.21.7.3.2.4	MA007C2D	C2C submenu Floodgate	The Center-to-Center submenu shall provide a "Floodgate Messages..." option to launch the C2C floodgate tabular display.	GUI	5

FEAT7.21.7.3.2.5	MA007C2E	C2C submenu HAR	The Center-to-Center submenu shall provide a "HAR Status..." option to launch the C2C HAR dialog.	GUI	5
FEAT7.21.7.3.2.6	MA007C2F	C2C submenu RWIS	The Center-to-Center submenu shall provide a "RWIS Status..." option to launch the C2C RWIS dialog.	GUI	5
FEAT7.21.7.3.2.7	MA007C2G	C2C submenu approve messages	The Center-to-Center submenu shall provide an "Operator Approval of Remote Messages" submenu with options labeled "On" and "Off" to allow an operator to toggle the appropriate C2C setting.	GUI	5
FEAT7.21.7.3.2.7.1	MA007C2G1	C2C submenu approve messages control	The "On" or "Off" setting of the Operator Approval option shall be flagged with a checkmark according to the current state of the system.	GUI	5
FEAT7.21.7.3.3	MA007C3	DMS submenu	The Operator Map main menu shall provide a "DMS" submenu.	GUI	5
FEAT7.21.7.3.3.1	MA007C3A	DMS submenu sequences	The DMS submenu shall provide an "Active Sequences..." option to launch the DMS active sequences dialog.	GUI	5
FEAT7.21.7.3.3.2	MA007C3B	DMS submenu device groups	The DMS submenu shall provide a "Device Groups..." option to launch the DMS group dialog.	GUI	5
FEAT7.21.7.3.3.3	MA007C3C	DMS submenu status GUI	The DMS submenu shall provide a "Device Status..." option to launch the full DMS status dialog.	GUI	5
FEAT7.21.7.3.3.4	MA007C3D	DMS submenu MAS queue	The DMS submenu shall provide a "Message Queue Manager..." option to launch the MAS queue manager dialog.	GUI	5
FEAT7.21.7.3.3.5	MA007C3E	DMS submenu messages library	The DMS submenu shall provide a "Message Libraries..." option to launch the DMS message libraries dialog.	GUI	5

FEAT7.21.7.3.3.6	MA007C3F	DMS submenu sequence library	The DMS submenu shall provide a "Sequence Libraries..." option to launch the DMS sequence libraries dialog.	GUI	5
FEAT7.21.7.3.3.7	MA007C3G	DMS submenu toll lane status	The DMS submenu shall provide a "Toll Lane Status DMS..." option to launch the DMS status dialog for toll lane status signs.	GUI	5
FEAT7.21.7.3.3.8	MA007C3H	DMS submenu toll rate status	The DMS submenu shall provide a "Toll Rate Sign Status..." option to launch the DMS status dialog for toll rate signs.	GUI	5
FEAT7.21.7.3.3.9	MA007C3I	DMS submenu trailblazer status	The DMS submenu shall provide a "Trailblazer DMS Status..." option to launch the DMS status dialog for trailblazers.	GUI	5
FEAT7.21.7.3.3.10	MA007C3J	DMS submenu TvT messages control	The DMS submenu shall provide a "Travel Time Messages" submenu with options labeled "On" and "Off" to allow an operator to toggle the appropriate TvT setting.	GUI	5
FEAT7.21.7.3.3.10.1	MA007C3J1	DMS submenu TvT messages control status	The "On" or "Off" setting of the Travel Time Messages option shall be flagged with a checkmark according to the current state of systemwide TvT message generation.	GUI	5
FEAT7.21.7.3.3.11	MA007C3K	DMS submenu VSL status	The DMS submenu shall provide a "Variable Speed Limit DMS Status..." option to launch the DMS status dialog for VSLs.	GUI	5
FEAT7.21.7.3.4	MA007C4	Event submenu	The Operator Map main menu shall provide an "Event Management" submenu.	GUI	5
FEAT7.21.7.3.4.1	MA007C4A	Event submenu add event	The Event Management submenu shall provide an "Add New Event..." option to launch the EM add new event interface.	GUI	5
FEAT7.21.7.3.4.2	MA007C4B	Event submenu list events	The Event Management submenu shall provide an "Event List..." option to launch the EM event list tabular display.	GUI	5

FEAT7.21.7.3.4.3	MA007C4C	Event submenu predefined plans	The Event Management submenu shall provide a "Predefined Response Plans..." option to launch the RPG (EM) predefined plan manager dialog.	GUI	5
FEAT7.21.7.3.4.4	MA007C4D	Event submenu remove 511 event	The Event Management submenu shall provide a "Remove Events from 511..." option to launch the FL-ATIS event removal dialog.	GUI	5
FEAT7.21.7.3.4.5	MA007C4E	Event submenu republish 511 event	The Event Management submenu shall provide a "Republish Events to 511..." option to launch the FL-ATIS event republish dialog.	GUI	5
FEAT7.21.7.3.4.6	MA007C4F	Event submenu abandoned vehicles	The display of the disabled vehicles icon shall be an option that can be toggled in the icon configuration menu.	GUI	5
FEAT7.21.7.3.4.7	MA007C4G	Event submenu disabled vehicles	The display of the disabled vehicles icon shall be an option that can be toggled in the icon configuration menu.	GUI	5
FEAT7.21.7.3.5	MA007C5	Launch express Lanes submenu	The Operator Map main menu shall provide an "Express Lanes" submenu	GUI	5
FEAT7.21.7.3.5.1	MA007C5A	Launch Express Lanes dialog	The Express Lanes submenu shall provide and "Express Lanes... " option to launch the Express Lanes dialog.	GUI	5
FEAT7.21.7.3.5.2	MA007C5B	Launch Express Lane Startup Status Dialog	The Express Lanes submenu shall provide a "Startup Status ..." option to launch the Express Lanes Startup Status dialog if the Pricing Subsystem is awaiting startup state approval.	GUI	5
FEAT7.21.7.3.5.3	MA007C5C	Launch Offline Toll Rates Synchronization dialog	The Express Lanes submenu shall provide an "Offline Synchronization..." option to launch the Offline Toll Rate Synchronization dialog.	GUI	5
FEAT7.21.7.3.6	MA007C6	HAR submenu	The Operator Map main menu shall provide a "HAR" submenu.	GUI	5

FEAT7.21.7.3.6.1	MA007C6A	HAR submenu status	The HAR submenu shall provide a "HAR Status..." option to launch the HAR device status dialog.	GUI	5
FEAT7.21.7.3.6.2	MA007C6B	HAR submenu MAS	The HAR submenu shall provide a "Message Queue Manager..." option to launch the MAS queue manager dialog.	GUI	5
FEAT7.21.7.3.7	MA007C7	Incident detection submenu	The Operator Map main menu shall provide an "Incident Detection" submenu.	GUI	5
FEAT7.21.7.3.7.1	MA007C7A	Incident detection submenu VisioPaD	The Incident Detection submenu shall provide a "Systemwide VisioPaD Detection" submenu with options labeled "On" and "Off" to allow an operator to toggle the appropriate IDS setting.	GUI	5
FEAT7.21.7.3.7.1.1	MA007C7A1	Incident detection submenu VisioPaD status	The "On" or "Off" setting of the Systemwide VisioPaD Detection option shall be flagged with a checkmark according to the current state of systemwide IDS VisioPaD detection.	GUI	5
FEAT7.21.7.3.7.2	MA007C7B	Incident detection submenu VisioPaD control	The Incident Detection submenu shall provide a "VisioPaD Camera Detection Status..." option to launch the combined cameras tabular display.	GUI	5
FEAT7.21.7.3.8	MA007C8	IMS submenu	The Operator Map main menu shall provide an "Inventory and Maintenance" submenu.	GUI	5
FEAT7.21.7.3.8.1	MA007C8A	IMS submenu Inventory GUI	The Inventory and Maintenance submenu shall provide an "Inventory" option to launch the IMS inventory management dialog.	GUI	5
FEAT7.21.7.3.8.2	MA007C8B	IMS submenu vendor GUI	The Inventory and Maintenance submenu shall provide a "Vendor" option to launch the IMS vendor management dialog.	GUI	5
FEAT7.21.7.3.9	MA007C9	Preferences submenu	The Operator Map main menu shall provide a "Preferences" submenu.	GUI	5

FEAT7.21.7.3.9.1	MA007C9A	Preferences submenu clear saved window	The Preferences submenu shall provide a "Clear Saved Window Positions" option to clear the user's saved window position information.	GUI	5
FEAT7.21.7.3.9.4	MA007C9D	Preferences submenu save current view	The Preferences submenu shall provide a "Save Current Map View" option to store the current map pan and zoom settings as the user's default view for future sessions.	GUI	5
FEAT7.21.7.3.9.5	MA007C9E	Preferences submenu save current windows	The Preferences submenu shall provide a "Save Current Window Positions" option to store the current window location/size information as the user's default location/size for those windows which may have that information stored.	GUI	5
FEAT7.21.7.3.9.6	MA007C9F	Preferences submenu subsystem selection	The Preferences submenu shall provide a "Subsystems..." option to launch the operator map subsystem status/selection dialog.	GUI	5
FEAT7.21.7.3.10	MA007C10	Ramp metering submenu	The Operator Map main menu shall provide a "Ramp Metering" submenu.	GUI	5
FEAT7.21.7.3.10.1	MA007C10A	Ramp metering submenu alarms	The Ramp Metering submenu shall provide an "Alarms..." option to launch the RM RMC alarms dialog.	GUI	5
FEAT7.21.7.3.10.2	MA007C10B	Ramp metering submenu control	The Ramp Metering submenu shall provide a "Control..." option to launch the RM RMC control dialog.	GUI	5
FEAT7.21.7.3.10.3	MA007C10C	Ramp metering submenu reset	The Ramp Metering submenu shall provide a "Reset Ramp Meters..." option to launch the RM RMC reset dialog.	GUI	5
FEAT7.21.7.3.10.4	MA007C10D	Ramp metering submenu status	The Ramp Metering submenu shall provide a "Status Overview..." option to launch the RM RMC status dialog.	GUI	5

FEAT7.21.7.3.11	MA007C11	Launch reports display	The Operator Map main menu shall provide a "Reports..." option to launch the Reports tabular display.	GUI	5
FEAT7.21.7.3.12	MA007C12	Responders submenu	The Operator Map main menu shall provide a "Responders" submenu.	GUI	5
FEAT7.21.7.3.12.1	MA007C12A	Responders submenu status	The Responders submenu shall provide a "Responder Status..." option to launch the AVL/RR vehicle status tabular display.	GUI	5
FEAT7.21.7.3.12.2	MA007C12B	Responders submenu vehicle location replay	The Responders submenu shall provide a "Vehicle Location Replay..." option to launch the AVL/RR historical track dialog.	GUI	5
FEAT7.21.7.3.13	MA007C13	Launch RWIS status	The Operator Map main menu shall provide a "Roadside Weather Systems..." option to launch the RWIS station status dialog.	GUI	5
FEAT7.21.7.3.14	MA007C14	Launch Safety Barrier status	The Operator Map main menu shall provide a "Safety Barriers..." option to launch the SB station status dialog.	GUI	5
FEAT7.21.7.3.15	MA007C15	System submenu	The Operator Map main menu shall provide a "System" submenu.	GUI	5
FEAT7.21.7.3.15.1	MA007C15A	System submenu logout submenu	The System submenu shall provide a "Logout" submenu.	GUI	5
FEAT7.21.7.3.15.1.1	MA007C15A1	System submenu logout submenu logout option	The Logout submenu shall provide a "Logout" option to terminate the current user's operator map session and return to the initial log in prompt.	GUI	5
FEAT7.21.7.3.15.2	MA007C15B	System submenu change password	The System submenu shall provide a "Change Password..." option to launch the operator map password dialog.	GUI	5
FEAT7.21.7.3.15.3	MA007C15C	System submenu log level	The System submenu shall provide a "Log Level" submenu.	GUI	5
FEAT7.21.7.3.15.3.1	MA007C15C1	System submenu log level selection	The Log Level submenu shall provide "Info", "Debug", and "Detail" options to control the log level used by the operator map.	GUI	5

FEAT7.21.7.3.15.3.2	MA007C15C2	System submenu log level status	The appropriate submenu item shall be flagged with a checkmark based on the current log level of the operator map.	GUI	5
FEAT7.21.7.3.15.4	MA007C15D	System submenu map views	The System submenu shall provide a "Map Views..." option to launch the operator map systemwide predefined map view definition dialog.	GUI	5
FEAT7.21.7.3.15.5	MA007C15E	System submenu system alerts	The System submenu shall provide a "System Alerts..." option to launch the operator map system alerts dialog.	GUI	5
FEAT7.21.7.3.15.6	MA007C15F	System submenu system messages	The System submenu shall provide a "System Messages..." option to launch the operator map system messages dialog.	GUI	5
FEAT7.21.7.3.15.7	MA007C15G	System submenu system settings	The System submenu shall provide a "System Settings..." option to launch the operator map general UI system settings dialog.	GUI	5
FEAT7.21.7.3.16	MA007C16	Traffic detection submenu	The Operator Map main menu shall provide a "Traffic Detection" submenu.	GUI	5
FEAT7.21.7.3.16.1	MA007C16A	Traffic detection submenu detector status	The Traffic Detection submenu shall provide a "Detector Status..." option to launch the TSS detector status dialog.	GUI	5
FEAT7.21.7.3.16.2	MA007C16B	Traffic detection submenu dynamic probe	The Traffic Detection submenu shall provide a "Dynamic Probe Linking" submenu with options labeled "On" and "Off" to allow an operator to toggle the appropriate TSS setting.	GUI	5
FEAT7.21.7.3.16.2.1	MA007C16B1	Traffic detection submenu dynamic probe linking	The "On" or "Off" setting of the Dynamic Probe Linking option shall be flagged with a checkmark according to the current state of systemwide TSS dynamic linking.	GUI	5
FEAT7.21.7.3.17	MA007C17	Launch travel times GUI	The Operator Map main menu shall provide a "Travel Times..." menu option to launch the Travel Times tabular display.	GUI	5

FEAT7.21.7.3.18	MA007C18	Video switching submenu	The Operator Map main menu shall provide a "Video Switching" submenu.	GUI	5
FEAT7.21.7.3.18.1	MA007C18A	Video switching submenu control	The Video Switching submenu shall provide a "Switching Control..." option to launch the VS switching control dialog.	GUI	5
FEAT7.21.7.3.18.2	MA007C18B	Video switching submenu tours	The Video Switching submenu shall provide a "Video Tours..." option to launch the VS video tours dialog.	GUI	5
FEAT7.21.7.3.18.3	MA007C18C	Video switching submenu video wall	The Video Switching submenu shall provide a "Video Wall Control..." option to launch the VWS video wall dialog.	GUI	5
FEAT7.21.7.3.18.4	MA007C18D	Video switching submenu virtual video wall layout	The Video Switching submenu shall provide a "Virtual Wall Layout..." option to launch the VS virtual wall dialog.	GUI	5
FEAT7.21.7.3.19	MA007C19	VSL submenu	The Operator Map main menu shall provide a "VSL Segment Status..." option to launch the VSL segment status tabular display.	GUI	5
FEAT7.21.7.7	MA007D	AVL/RR context menu	The Operator Map shall display an AVL/RR context menu when the mouse right clicks over an AVL/RR vehicle.	GUI	5
FEAT7.21.7.7.1	MA007D1	AVL/RR context menu add event	The AVL/RR context menu shall allow an operator with sufficient permissions to add an event at the vehicle location, view details of the vehicle, or view replay data for the vehicle.	GUI	5
FEAT7.21.7.8	MA007E	CCTV context menu	The Operator Map shall display a camera context menu when the mouse right clicks over a camera.	GUI	5

FEAT7.21.7.8.1	MA007E1	CCTV context menu share video	The camera context menu shall allow an operator with sufficient permissions to switch the camera video to a shared video destination, local video destination, or video wall destination; toggle the use of the camera in VisioPaD detection; launch a GUI to control the camera or switch its video; or handle a potential detected alarm.	GUI	5
FEAT7.21.7.9	MA007F	C2C context menu	The Operator Map shall display a C2C context menu when the mouse right clicks over a C2C device.	GUI	5
FEAT7.21.7.9.1	MA007F1	C2C context menu send command	The C2C context menu shall allow an operator with sufficient permissions to view the status of the device or send a command to the device (if applicable).	GUI	5
FEAT7.21.7.10	MA007G	DMS context menu	The Operator Map shall display a DMS context menu when the mouse right clicks over a DMS, trailblazer, lane status sign, toll rate sign, toll gantry sign, or VSL.	GUI	5
FEAT7.21.7.10.1	MA007G1	DMS context menu toggle TvT messages	The DMS context menu shall allow an operator with sufficient permissions to toggle travel time message generation for the device or launch GUIs to view the device status, message queue, or "short" status, or to send a message to the device (if applicable).	GUI	5
FEAT7.21.7.11	MA007H	Event context menu	The Operator Map shall display an Event context menu when the mouse right clicks over an Event.	GUI	5
FEAT7.21.7.11.1	MA007H1	Event context menu event details	The Event context menu shall allow an operator with sufficient permissions to launch GUIs to view event details or response plan.	GUI	5

FEAT7.21.7.12	MA007I	HAR context menu	The Operator Map shall display a HAR context menu when the mouse right clicks over a HAR.	GUI	5
FEAT7.21.7.12.1	MA007I1	HAR context menu status	The HAR context menu shall allow an operator with sufficient permissions to launch GUIs to view the HAR device status or message queue, or to send a message to the HAR.	GUI	5
FEAT7.21.7.13	MA007J	IMS context menu	The Operator Map shall also display an IMS context menu when the mouse right clicks over a device which is configured as part of the IMS system.	GUI	5
FEAT7.21.7.13.1	MA007J1	IMS context menu status	The additional IMS context menu shall allow an operator with sufficient permissions to launch GUIs to view details about the device in inventory or its maintenance history.	GUI	5
FEAT7.21.7.14	MA007K	Ramp Meter context menu	The Operator Map shall display a Ramp Meter context menu when the mouse right clicks over a Ramp Meter device.	GUI	5
FEAT7.21.7.14.1	MA007K1	Ramp Meter context menu status	The RM context menu shall allow an operator with sufficient permissions to launch GUIs to display Alarms, configure Time of Day settings, control the RMC, configure firmware parameters, and reset the RMC.	GUI	5
FEAT7.21.7.15	MA007L	RWIS context menu	The Operator Map shall display an RWIS context menu when the mouse right clicks over an RWIS device.	GUI	5
FEAT7.21.7.15.1	MA007L1	RWIS context menu status	The RWIS context menu shall allow an operator with sufficient permissions to launch a GUI to view the status of the detector.	GUI	5

FEAT7.21.7.16	MA007M	Safety Barrier context menu	The Operator Map shall display a Safety Barrier context menu when the mouse right clicks over a Safety Barrier device.	GUI	5
FEAT7.21.7.16.1	MA007M1	Safety Barrier context menu status	The SB context menu shall allow an operator with sufficient permissions to launch a GUI to view the status of the barrier.	GUI	5
FEAT7.21.7.17	MA007N	TSS Link context menu	The Operator Map shall display TSS link context menu when the mouse right clicks over a TSS link.	GUI	5
FEAT7.21.7.17.1	MA007N1	TSS Link context menu control	The TSS link context menu shall allow an operator with sufficient permissions to launch GUIs to view the status of the link's detector, view the speed data of the link, and create an event from or dismiss an alarm if any lanes of the link currently have IDS alarms.	GUI	5
FEAT7.21.7.18	MA007O	TSS Detector context menu	The Operator Map shall display TSS detector context menu when the mouse right clicks over a TSS detector.	GUI	5
FEAT7.21.7.18.1	MA007O1	TSS Detector context menu status	The TSS detector context menu shall allow an operator with sufficient permissions launch a GUI to view the detector's status.	GUI	5
FEAT7.21.8	MA008	Map hover status	The Operator Map shall display a concise summary of object information when an object is hovered over with the mouse.	GUI	5
FEAT7.21.8.1	MA008A	Map hover status AVL/RR	When an AVL/RR vehicle is hovered over, the Operator Map shall display the vehicle's beat, driver, radio, phone, heading, speed, location, destination (with distance from), and current service status. (See AVL/RR requirements)	GUI	5

FEAT7.21.8.2	MA008B	Map hover status C2C	When a C2C device is hovered over, the Operator Map shall display the device's ID, center, and operational status.	GUI	5
FEAT7.21.8.3	MA008C	Map hover status CCTV	When a camera is hovered over, the Operator Map shall display the camera's ID, status, and lock holder if locked.	GUI	5
FEAT7.21.8.4	MA008D	Map hover status DMS	When a DMS is hovered over, the Operator Map shall display the DMS's ID and status.	GUI	5
FEAT7.21.8.5	MA008E	Map hover status event	When an event is hovered over, the Operator Map shall display the event's ID, type, status, and location.	GUI	5
FEAT7.21.8.6	MA008F	Map hover status HAR	When a HAR is hovered over, the Operator Map shall display the HAR's ID and status.	GUI	5
FEAT7.21.8.7	MA008G	Map hover status Ramp Meter	When a ramp meter is hovered over, the Operator Map shall display the ramp meter's ID and status.	GUI	5
FEAT7.21.8.8	MA008H	Map hover status RWIS	When an RWIS is hovered over, the Operator Map shall display the RWIS's ID and status.	GUI	5
FEAT7.21.8.9	MA008I	Map hover status Safety Barrier	When an SB is hovered over, the Operator Map shall display the SB's ID and status.	GUI	5
FEAT7.21.8.10	MA008J	Map hover status TSS	When a TSS detector is hovered over, the Operator Map shall display the detector's ID and status.	GUI	5
FEAT7.21.8.11	MA008K	Map hover status TSS link	When a TSS link is hovered over, the Operator Map shall display the link's ID and the smoothed speed, occupancy, and volume of each of its lanes.	GUI	5
FEAT7.21.9	MA009	Display components of response plan	The operator map shall support visually displaying devices included in an Event Management Response Plan.	GUI	5

FEAT7.21.10	MA010	Highlight potential incidents	The Operator Map shall support highlighting potential detected incidents by using flashing icons or flashing icon backgrounds or flashing links	GUI	5
FEAT7.21.11	MA011	Support map views	The Operator Map shall allow an operator to switch to systemwide map views previously stored by an operator with sufficient permissions.	GUI	5
FEAT7.21.12	MA012	Review AVL/RR track history	The Operator Map shall allow an operator with sufficient permissions to review AVL/RR vehicle historical track data via a breadcrumb display which hides all other devices while it is in use.	GUI	5
FEAT7.21.13	MA013	Select base map tile sets	The Operator Map shall allow a user to select from a configurable list of pre-generated map tile sets.	GUI	5
FEAT7.21.14	MA015	Display shields on map	The Operator Map shall display shields on the map.	GUI	5
FEAT7.21.14.1	MA015A	Display shields on map at lat/long	The Operator Map shall display shields at the latitude and longitude specified when the shield is created.	GUI	5
FEAT7.21.14.2	MA015B	Display shields on map based on zoom level	Shields shall only be displayed on the Operator Map at a minimum zoom level configurable by the operator and higher zoom levels.	GUI	5
FEAT7.21.15	MA014	Map performance	The performance of the Operator Map shall be measured with workstations and servers meeting the minimum requirements specified in the SunGuide Computer Sizing Estimates document, version SunGuide-CSE-3.0.0 and all computers operating with less than a 25% CPU load and connected on a 100MB network.	GUI	5

FEAT7.21.15.1	MA014A	Map performance login	The Operator Map shall load up to the login prompt in less than 20 seconds after either the map application is updated, IE's cache is cleared or if the workstation has never access the map previously.	GUI	5
FEAT7.21.15.2	MA014B	Map performance view change	The Operator Map shall load up to the login prompt in less than 10 seconds once the map has been previously accessed.	GUI	5
FEAT7.21.15.3	MA014C	Map performance available for input	The Operator Map shall be available for operator input within 10 seconds of the operator providing valid user credentials.	GUI	5
FEAT7.21.15.4	MA014D	Map performance pan	The Operator Map with no ITS equipment displayed shall allow for pan operations to be completed in less than one second.	GUI	5
FEAT7.21.15.5	MA014E	Map performance zoom	The Operator Map with no ITS equipment displayed shall allow for zoom operations to be completed in less than two seconds.	GUI	5
FEAT7.21.15.6	MA014F	Map performance pan for 500 pieces of equipment	The Operator Map with up to 500 pieces of ITS equipment and shields in the current field of view displayed shall allow for pan operations to be completed in less than two seconds.	GUI	5
FEAT7.21.15.7	MA014G	Map performance zoom for 500 pieces of equipment	The Operator Map with up to 500 pieces of ITS equipment and shields in the current field of view displayed shall allow for zoom operations to be completed in less than three seconds.	GUI	5
FEAT7.21.22		System Message Window Focus	The UI shall have a configurable value indicating whether the display of a new system message should cause the System Messages dialog to be brought to the front of the user's window stack	GUI	5

FEAT7.22	MA020	Map tile generation	The Map Tile Generation tool shall use ESRI Shape File formats for the map data used to render the tiles.	GUI	5
FEAT7.22.1	MA021	Map tile generation images	The Map Tile Generation tool shall produce graphical images of the Shape File data.	GUI	5
FEAT7.22.2	MA022	Map tile generation map tiles	The Map Tile Generation tool shall create map tiles for display in the SunGuide Operator Map.	GUI	5
FEAT7.22.2.1	MA022A	Map tile generation zoom layers	The map tiles shall be generated with multiple resolutions to support additional detail as the map zoom is increased.	GUI	5
FEAT7.22.2.2	MA022B	Map tile generation road colors	The Map Tile Generation tool shall allow road colors to be specified.	GUI	5
FEAT7.22.2.3	MA022C	Map tile generation feature selection	The Map Tile Generation shall allow the SunGuide Administrator to determine which features in the Shape Files to include in the map tiles.	GUI	5
FEAT7.23	MA030	Link Editor	The Link Editor map displayed shall be the same map as the Operator Map.	GUI	5
FEAT7.23.1	MA030A	Link Editor mode of operation	The Link Editor shall be managed as a semi-independent mode of the Operator Map.	GUI	5
FEAT7.23.2	MA031	Link Editor TSS link management	The Link Editor shall allow an operator with appropriate permissions to manage the display of TSS links.	GUI	5
FEAT7.23.3	MA032A	Link Editor TSS link management link creation	The Link Editor shall allow links not based on TSS links to be drawn on the map using a visual drawing tool.	GUI	5
FEAT7.23.4	MA031A	Link Editor TSS link management link display	The Link Editor shall allow existing TSS links to be drawn on the map using a visual drawing tool	GUI	5
FEAT7.24	MA040	Device Sequence Editor	The Device Sequencing Editor map displayed shall be the same map as the Operator Map.	GUI	5

FEAT7.24.1	MA040A	Device Sequence Editor mode of operation	The Device Sequencing Editor shall be managed as a semi-independent mode of the Operator Map.	GUI	5
FEAT7.24.2	MA041	Device Sequence Editor display DMS	The Device Sequencing Editor shall display DMS devices configured in the system and received via Center-to-Center.	GUI	5
FEAT7.24.3	MA042	Device Sequence Editor add nodes	The Device Sequencing Editor shall allow an operator with appropriate permissions to add traversal nodes to more closely match the device sequence to the layout of the roadway.	GUI	5
FEAT7.24.4	MA043	Device Sequence Editor modify nodes	The Device Sequencing Editor shall allow an operator with appropriate permissions to move traversal nodes.	GUI	5
FEAT7.24.5	MA044	Device Sequence Editor delete nodes	The Device Sequencing Editor shall allow an operator with appropriate permissions to delete traversal nodes.	GUI	5
FEAT7.24.6	MA045	Device Sequence Editor associate nodes	The Device Sequencing Editor shall allow an operator with appropriate permissions to visually associate DMS devices and traversal nodes to establish a relationship that can be used when Response Plans are generated.	GUI	5
FEAT7.24.7	MA045A	Device Sequence Editor associate nodes select	The DSE shall allow an operator with appropriate permissions to select a node or device and then indicate which other nodes or devices are upstream of the initial node or device.	GUI	5
FEAT7.24.8	MA045B	Device Sequence Editor associate nodes display upstream	The DSE shall allow an operator with appropriate permissions to select a node or device and view its complete upstream device tree.	GUI	5

FEAT7.24.9	MA045C	Device Sequence Editor associate nodes excluded devices	The DSE shall allow an operator with appropriate permissions to view all upstream device associations at once, allowing the operator to detect any excluded devices.	GUI	5
FEAT7.25	MA050	Geofence Editor	The Geofence Editor map displayed shall be the same map as the Operator Map.	GUI	5
FEAT7.25.1	MA050A	Geofence Editor operation	The Geofence Editor shall be managed as a semi-independent mode of the Operator Map.	GUI	5
FEAT7.25.2	MA051	Geofence Editor manage geofences	The Geofence Editor shall allow an operator with appropriate permissions to manage geofences.	GUI	5
FEAT7.25.3	MA051A	Geofence Editor manage geofences create	The Geofence Editor shall allow geofences to be created using a visual drawing tool	GUI	5
FEAT7.25.4	MA051B	Geofence Editor manage geofences modify	The Geofence Editor shall allow geofences to be modified.	GUI	5
FEAT7.25.5	MA051C	Geofence Editor manage geofences delete	The Geofence Editor shall allow geofences to be deleted.	GUI	5
FEAT7.26	MA060	Shield Editor	The Shield Editor map displayed shall be the same map as the Operator Map.	GUI	5
FEAT7.26.1	MA060A	Shield Editor operation	The Shield Editor shall be managed as a semi-independent mode of the Operator Map.	GUI	5
FEAT7.26.2	MA061	Shield Editor manage shields	The Shield Editor shall allow an operator with appropriate permissions to manage shields.	GUI	5
FEAT7.26.3	MA061A	Shield Editor manage shields create	The Shield Editor shall allow shields to be created using a predefined set of shields.	GUI	5
FEAT7.26.4	MA061B	Shield Editor manage shields modify	The Shield Editor shall allow shields to be modified.	GUI	5
FEAT7.26.5	MA061C	Shield Editor manage shields delete	The Shield Editor shall allow shields to be deleted.	GUI	5

FEAT7.26.6	MA062	Shields place on map	The Shield Editor shall allow shields to be placed on the Operator Map.	GUI	5
FEAT7.26.6.1	MA062A	Drag and Drop shields	The Shield Editor shall allows shields to be dropped and dragged on to the Operator Map.	GUI	5
FEAT7.26.6.2	MA062B	Display lat/long of shield.	The Shield Editor shall provide a dialog that displays the Latitude/Longitude of a selected shield.	GUI	5
FEAT7.26.6.3	MA062B1	Enter lat/long of shield.	The Shield Editor Latitude/Longitude dialog shall allow the operator to enter the Latitude/Longitude for a selected shield	GUI	5
FEAT7.27	VOD001	Video on Desktop	The software shall provide Video on Desktop capabilities	GUI	6
FEAT7.27.1	VOD002	Launch Window from context menus	The operator shall be able to launch the Window from the context menu of the operator map, closed-circuit television (CCTV) camera device icons, and the menu of another Window already open	GUI	6
FEAT7.27.2	VOD003	Drag and drop video sources	The software shall provide drag and drop operation of CCTV icons onto the Video on Desktop	GUI	6
FEAT7.27.3	VOD004	Launch to Viewer to last open Window	When video is launched via context menu, the user shall choose the Window in which the video should be displayed and the new Viewer shall be placed in the last position	GUI	6
FEAT7.27.4	VOD005	Auto-arrange Viewers	When a Viewer is added to, removed from, or moved within the Window, the Window will automatically arrange Viewers	GUI	6

FEAT7.27.5	VOD006	Auto-arrange Viewers in order	When a Viewer placement modification is made, the Window shall automatically rearrange Viewers by moving them on the right side of the placement modifications, filling positions in order towards the right and continuing towards the lower rows of the modification in the same order as they were prior to the placement modification	GUI	6
FEAT7.27.6	VOD006	Auto-arrange Viewers to maximize size	The auto-arrange behavior will resize and position the fewest number of Viewers on the same row and column as possible to maximize the area of each viewer	GUI	6
FEAT7.27.7	VOD007	Drag and drop tour creation	When a source is dragged and dropped on top of an existing Viewer within a Window, the source will combine with the source(s) already in the Viewer as an ad-hoc tour where each source dwells for a default time of 5 seconds before switching. The user may change the dwell time as desired.	GUI	6
FEAT7.27.8	VOD008	Drag and drop indicator	When a source is being dragged over the center area of a Window, the Window will visually indicate if the source would be placed inside another Viewer to create a tour or if the source would be added as a new Viewer	GUI	6
FEAT7.27.9	VOD009	Viewer center area for drag and drop	The center area of a Viewer used for a drag and drop location for combining sources in a tour will not consume the entire Viewer allowing room to drag and drop Viewers between or on the outside of existing Viewer's' center areas	GUI	6
FEAT7.27.10	VOD010	Move Viewers	The Window will allow users to drag and drop Viewers into different positions and into different Windows	GUI	6

FEAT7.27.11	VOD011	Maintain Viewer aspect ratio	The Viewer will maintain the aspect ratio of the video source	GUI	6
FEAT7.27.12	VOD012	Viewer source label	The top portion within the Viewer will contain a one-line label indicating the video source name or tour name	GUI	6
FEAT7.27.13	VOD013	Viewer sources in tour list	The Viewer shall provide a means for a Video on Desktop Viewer Tour List to appear listing the video sources that are in the tour	GUI	6
FEAT7.27.14	VOD014	Reorder and remove sources from tour	The list items in the Video on Desktop Viewer Tour List will allow the user to reorder and remove items in the tour list	GUI	6
FEAT7.27.15	VOD015	Edit tour	The Viewer tour list's name, viewer sources, and dwell time will be changeable from the Viewer tour list	GUI	6
FEAT7.27.16	VOD016	Save and cancel tour modifications	The Video on Desktop Window Viewer Tour list shall contain save and cancel buttons that will either update or not update the name, the video sources, and the dwell times in the tour, respectively, and will both close the list	GUI	6
FEAT7.27.17	VOD017	Store tours in database	The Video on Desktop Window Viewer Tours, including their name, sources, and dwell times, shall be saved as a user-specific preference when either the viewer tour list is saved or the Window configuration is saved	GUI	6
FEAT7.27.18	VOD018	Store Window layouts in SunGuide database	The Window shall allow the user to save the Window preset information in the SunGuide database as a user-specific preference	GUI	6
FEAT7.27.19	VOD019	Window layout data	The Window layout data shall include the Viewers and their positions, their video sources, and their saved or unsaved tours	GUI	6

FEAT7.27.20	VOD020	Recall Window layout information	The Window shall allow the user to recall the Window preset information from the menu	GUI	6
FEAT7.27.21	VOD021	Launch layout Window from Operator Map	The Operator Map context menu shall allow the user to launch a Window with any of the configured Window presets in addition to a no-preset option that launches an empty Window	GUI	6
FEAT7.27.22	VOD022	Resize Window	The Window shall be resizable by the user	GUI	6
FEAT7.27.23	VOD023	Maximize Window as full screen	The Window shall enter a full screen mode when maximized	GUI	6
FEAT7.27.24	VOD024	Exit full-screen mode of Window	The Window shall exit full-screen mode when the user presses the escape key or the restore window size control	GUI	6
FEAT7.27.25	VOD025	Translucent controls in Viewer	The Viewer shall have translucent command controls and translucent pan-tilt-zoom (PTZ) controls that can be animated to fade in to be revealed and fade out to be hidden	GUI	6
FEAT7.27.26	VOD026	Hide Viewer PTZ controls	The Viewer shall hide PTZ controls when the mouse pointer is not positioned over the Viewer.	GUI	6
FEAT7.27.27	VOD027	Reveal Viewer PTZ controls	The Viewer shall reveal PTZ controls when the mouse ponter is positioned over the Viewer and the user has a lock on the camera.	GUI	6
FEAT7.27.28	VOD028	Nudge controls	The Viewer PTZ controls shall include nudge buttons that command the camera to nudge in the selected direction	GUI	6
FEAT7.27.29	VOD029	PTZ visual indicator	The Viewer shall reveal a PTZ control that is a visual indicator that the Viewer is in PTZ mode and shall hide the visual indicator when, and only when, the Viewer is no longer in PTZ mode	GUI	6

FEAT7.27.30	VOD030	Engage panning in PTZ mode and left mouse down	Panning shall be engaged when the Viewer is in PTZ mode and the user drags the PTZ control in the desired direction.	GUI	6
FEAT7.27.31	VOD031	Pan using range of speeds	The Viewer PTZ controls shall allow the camera to be panned in a range of speeds, depending on how close to the center or the edge of the Viewer the mouse pointer is positioned	GUI	6
FEAT7.27.32	VOD032	Viewer zoom controls	The Viewer's PTZ controls shall include zoom controls.	GUI	6
FEAT7.27.33	VOD033	PTZ controls contain camera preset buttons	The Viewer's PTZ controls shall include preset buttons that command the camera to move to a stored preset	GUI	6
FEAT7.27.34	VOD034	PTZ controls allows save presets	The Viewer's PTZ controls shall include a save to preset control that, when clicked, allows the user to save to existing or new camera presets	GUI	6
FEAT7.27.35	VOD035	Launch CCTV details	The Viewer's command controls shall include a method of launching the CCTV detail status dialog	GUI	6
FEAT7.27.36	VOD036	Video on Desktop performance warning	The Viewer shall prompt the user with a warning and request for confirmation when attempting to launch additional viewers and the workstation resource utilization is high	GUI	6
FEAT7.27.37	VOD037	Performance of non-local user interface response	All user interface responses of adding video streams shall occur within 1 second of the completion of the user's command	GUI	6
FEAT7.27.38	VOD038	Non-blocking user interface	While the software is processing a user command, it shall not prevent the user from further interactions with the software while a previous command is being processed.	GUI	6

FEAT7.27.39	VOD039	Performance of user interface response	All local user interface responses that do not require adding video streams shall occur within 100 milliseconds of the completion of the user's command.	GUI	6
FEAT8		Closed Circuit Television (CCTV)		CCTV	1
FEAT8.1		General		CCTV	1
FEAT8.1.1	A002	Video surveillance	The SunGuide software shall provide software for video surveillance along the limited-access facilities and the interchange areas (along the mainline and crossroads).	CCTV	1
FEAT8.1.2	S015	Interface with CCTV cameras	The SunGuide software shall interface with CCTV used for traffic surveillance.	CCTV	1
FEAT8.1.4	TV003S	Lock CCTV	The CCTV function shall incorporate software logic to allow only one workstation at a time to control a particular CCTV unit.	CCTV	1
FEAT8.1.5	PA001U	Camera menu	A selectable menu of cameras shall be provided to the user.	CCTV	1
FEAT8.1.6	TV003	Interface to portable CCTV	The SunGuide system shall provide an interface to portable CCTVs that support work zone management through drivers with the following protocols:· NTCIP, Florida MIB	CCTV	1
FEAT8.1.7	A008	Real-time video display and control	The SunGuide software shall provide software for real-time video display and real-time video control.	CCTV	1

FEAT8.1.8	TV006S	Video switch device drivers	At a minimum, the CCTV video switch function shall provide device drivers for the following switch types:
			- IP video devices, including:
			  - iMPath
			  - VBrick
			  - Teleste
			  - Cortec
				CCTV	1

FEAT8.1.9	TV003S1	Automatic locking	A "lock" shall be acquired when a camera is selected if no other user holds a "lock".	CCTV	1
FEAT8.1.10	TV001D3	Supported keyboard	SunGuide shall interface with an AMERICAN DYNAMICS M300 external CCTV keyboard/joystick device connected to serial port on a TCP/IP accessible terminal server.	CCTV	1
FEAT8.1.11	TV001D4	Keyboard control functions	The external Joystick shall control: - CCTV Pan Tilt and Zoom - Video switching - Video wall control - Create and edit camera presets.	CCTV	1
FEAT8.1.12	TV003S2	Automatic locking 2	Operator activation of any camera motion control shall automatically request a lock on the camera.	CCTV	1
FEAT8.1.13	TV003S3	Lock timeout	The automatically-requested camera lock shall automatically time out after a configurable amount of time.	CCTV	1
FEAT8.2		Camera types		CCTV	1
FEAT8.2.1	TV001D	Pan/Tilt/Zoom (PTZ) systems	The device drivers shall be capable of controlling pan/tilt/zoom camera systems manufactured by a number of different manufacturers.	CCTV	1

FEAT8.2.2	TV002D	Camera system types	The CCTV function shall be capable of controlling cameras (e.g., pan/tilt/zoom). The following protocols will be used to issue command/control requests to the cameras.· NTCIP· SunGuide	CCTV	1
FEAT8.2.3	TV017D	IP based controls	The CCTV driver shall also support cameras with IP based controls.	CCTV	1
FEAT8.2.4	TV002	Technologies supported	The CCTV function shall provide an interface that supports the following technologies for the transmission of video and data between field hardware, subsystems, TMCs and additional remote locations· Fiber optic transceivers;· Fiber optic video/data multiplexers;· MPEG encoders/decoders; and· Wireless.	CCTV	1
FEAT8.2.5	TV001	Device driver types	At a minimum the CCTV function shall provide device drivers for the following camera types:· NTCIP compliant cameras· Sunguide protocol	CCTV	1
FEAT8.2.6	TV003D	NTCIP standard	Whenever possible, the NTCIP protocol standard shall be utilized for camera control and communication.	CCTV	1
FEAT8.2.8	TV005D	Functionality equal to NTCIP	Manufacturer-specific drivers shall, at a minimum, provide functionality equal to that provided via NTCIP mandatory objects provided the manufacturer's protocol supports the functionality.	CCTV	1
FEAT8.2.9	TV001D5	Support for American Dynamics camera driver	The SunGuide software shall provide the capability to control (e.g. pan, tilt, zoom, focus, iris) the American Dynamics Model #RAS917-OPC (Speed Dome ultra 7 ver 11), i.e. an American Dynamics Camera Driver.	CCTV	3

FEAT8.2.10	TV001D6	Responses not required for AD driver	The American Dynamics camera driver for the Speed Dome ultra 7 ver 11 shall not require responses from the camera.	CCTV	3
FEAT8.3		Functionality	Functionality will be provided if the protocol supports the particular function.	CCTV	1
FEAT8.3.1	TV007D	Range objects	The CCTV range objects shall be implemented in the device drivers and at a minimum shall include:· A maximum number of presets parameters;· Pan left limit parameters;· Pan right limit parameters;· Pan home position parameters;· True north offset parameters;· Tilt up limit parameters;· Tilt down limit parameters;· Zoom limit parameters;· Focus limit parameters;· Iris limit parameters;· Maximum pan step angle parameters; and· Maximum tilt step angle parameters.	CCTV	1
FEAT8.3.2	TV008D	Timeout objects	The device drivers shall contain the CCTV timeout objects and shall include the following parameters at a minimum· Pan timeout parameter;· Tilt timeout parameter;· Zoom timeout parameter; · Focus timeout parameter; and· Iris timeout parameter.	CCTV	1
FEAT8.3.3	TV009D	Preset objects	The device driver shall contain CCTV preset objects and shall include the following parameters at a minimum:· Go to preset position parameters;· Store preset position parameters;· Pan position parameters;· Tilt position parameters;· Lens zoom position parameter; · Lens focus position parameter; and· Lens iris position parameter.	CCTV	1

FEAT8.3.4	TV010D	System feature control objects	The device drivers shall contain CCTV system feature control objects and shall contain the following parameters and characteristics:· System camera feature control parameter;· System camera feature status;· System camera equipment availability parameter;· System lens feature control parameter;· System lens feature status parameter; and· System lens equipment availability parameter.	CCTV	1
FEAT8.3.5	TV011D	Alarm objects	The device driver shall contain the following CCTV alarm objects:· Alarm status parameters;· Alarm latch status parameters;· Alarm latch clear parameters;· Temperature alarm high-low threshold;· Temperature alarm current value parameters;· Pressure alarm high-low threshold parameters;· Pressure alarm current value; · Washer fluid alarm high-low threshold parameters;· Washer fluid alarm current value parameters; and· Alarm label index parameter.	CCTV	2
FEAT8.3.6	TV012D	Discrete input objects:	The device driver shall contain the following CCTV discrete input objects:· Discrete input status parameters;· Discrete input latch status parameters;· Discrete input latch clear parameters; and · Discrete input label index parameters.	CCTV	2
FEAT8.3.7	TV013D	Discrete output objects:	The device driver shall contain the following CCTV discrete output objects:· Discrete output status parameters;· Discrete output control parameters; and· Discrete output label indexes.	CCTV	2

FEAT8.3.8	TV014D	Zone parameters:	The device driver shall contain the following CCTV zone parameters:· Maximum number of zones parameter; and· Zone tables.	CCTV	2
FEAT8.3.9	TV015D	Label objects	The device driver shall contain the following CCTV label objects:· Maximum number of labels parameters; · Label tables; · Label location parameters; and · Enable label text displays.	CCTV	2
FEAT8.3.10	TV016D	On-Screen camera menu objects	The device driver shall contain CCTV On-Screen Camera Menu Objects to the extent supported by NTCIP:· Activate menu parameters;· Menu control parameters.	CCTV	2
FEAT8.4		Display		CCTV	1
FEAT8.4.1	TV001S	MPEG2 displayed on monitors	The CCTV function shall support the switching of video signals to any video monitor or desktop workstation that is connected with a similar technology and has physical connectivity. Protocols to be supported by the software include:· VBrick MPEG-2, Teleste MPEG-2, Cortec MPEG-2 iMPath MPEG-2	CCTV	1
FEAT8.4.2	TV002S	View image multiple locations	The CCTV switching function shall support the switching of video signals to multiple workstations if the underlying video hardware provides the functionality.	CCTV	1

FEAT8.4.3	TV004S	Multiple video images from multiple sources on single monitor	The SunGuide system shall provide the capability for a single workstation monitor to display multiple video images from multiple sources to the extent possible provided by availability of digital video images on the network or the control capabilities of the video switch if the necessary switching, display, conversion and connectivity functionality is supported in the TMC video system.	CCTV	1
FEAT8.4.4	TV005S	Route video frames to FDOT Central Office.	The SunGuide system shall be capable of routing the maximum number of video frames per second over the FDOT network to the FDOT Central Office that can be supported by the hardware video switch or the network.	CCTV	1
FEAT8.4.5	PA003	Control video	A browser-based control mechanism shall allow an authorized user to control and view video from any video device so long as the user has a high-speed Internet connection defined as an upstream connection speed greater than 256 thousand (256,000) bits per second (user to device).	CCTV	1
FEAT8.4.6		Video Switching		CCTV	4
FEAT8.4.6.1	TV007S	Graphical layout management	The SunGuide Operator Map shall allow a user with appropriate privileges to define, store and edit the graphical layout of shared displays in the Video Switching subsystem.	CCTV	4
FEAT8.4.6.2	TV008S	Shared displays	The SungGuide Operator Map shall present shared displays to users as specified by the graphical layout stored in the Video Switching subsystem.	CCTV	4

FEAT8.4.7	VW001	Video Wall	The SunGuide software shall manage the display of a video wall controller following the SunGuide ICD document, SunGuide-VW-ICD-1.0.2, and the manaufacturer's specified protocol.	VW	5.1.1
FEAT8.4.7.1	VW002	Video Wall Controller Error Reporting	The SunGuide software shall report errors in performing management functions of the video wall controller by presenting a description of the error to the user and in the Status Logger.	VW	5.1.1
FEAT8.4.7.2	VW003	Video Wall Controller Permissions	The SunGuide software shall support the management of user permissions to manage which users can perform management functions of the video wall controller	VW	5.1.1
FEAT8.4.7.3	VW004	Video Wall Controller Connection	The SunGuide software shall connect to one or more video wall controllers at a configured host and port	VW	5.1.1
FEAT8.4.7.4	VW005	Video Wall Controller Management	The SunGuide software shall provide management functions of the video wall controller to approved users	VW	5.1.1
FEAT8.4.7.4.1	VW005A	Video Wall Controller Selection	The SunGuide software shall allow the selection of a configured video wall controller to manage	VW	5.1.1
FEAT8.4.7.4.2	VW005B	Video Wall Controller Layouts	The SunGuide software shall present to the user the configured names of the configured layouts available from selected video wall controller	VW	5.1.1
FEAT8.4.7.4.2.1	VW005B1	Video Wall Controller Layout Activation	The SunGuide software shall allow the activation of the selected layout on the selected video wall controller	VW	5.1.1
FEAT8.4.7.4.2.2	VW005B2	Video Wall Controller Layout Deactivation	The SunGuide software shall allow the deactivation of the selected layout on the selected video wall controller	VW	5.1.1

FEAT8.4.7.4.3	VW005C	Video Wall Controller Geometry	The SunGuide software shall present the video wall geometry of the video wall controller that graphically depicts the display viewers currently active on the selected video wall controller that are used for display on the video wall	VW	5.1.1
FEAT8.4.7.4.3.1	VW005C1	Video Wall Controller Geometry Update Request	The SunGuide software shall allow the user to request an update of the video wall geometry from the selected video wall controller	VW	5.1.1
FEAT8.4.7.4.3.2	VW005C2	Video Wall Controller Geometry Update	The SunGuide software shall broadcast updated video wall geometry information via the SunGuide databus when updated video wall geometry is provided by the video wall controller	VW	5.1.1
FEAT8.4.7.4.4	VW005D	Video Wall Controller Sources	The SunGuide software shall present to the user the configured names of the display sources configured in the video wall controller that are used for display on the video wall	VW	5.1.1
FEAT8.4.7.5	VW006	Video Wall Controller Switching	The SunGuide software shall allow users to manually switch a display source configured in the selected video wall controller to a display viewer used for display in the selected video wall controller	VW	5.1.1
FEAT8.4.7.6	VW007	Video Wall Controller Touring	The SunGuide software shall allow users to select a Video Switching configured tour for display in a display viewer of the selected video wall controller. The touring function will automatically switch a source by source name, if a source with that name exists, at the configured interval of the tour until another source or tour is selected for display on the same display viewer.	VW	5.1.1

FEAT9		Dynamic Message Signs (DMS)		DMS	1
FEAT9.1	S019	DMS drivers	The SunGuide system shall provide an interface to dynamic message signs (DMSs) through a minimum of three drivers supporting:· NTCIP protocol (Florida MIB) and· Mark IV (I95 protocol).	DMS	1
FEAT9.2	DM003D	DMS control	The DMS device driver shall communicate to the DMS and perform the following:· Set or check date and time;· Poll the DMS on a periodic basis as specified in the database and retrieve DMS status.· Check the cyclic redundancy check of the DMS operating parameters and message library against the cyclic redundancy check parameters of the database;· Download operating parameters and DMS command messages;· Upload the current operating parameters and display on user's workstation;· Download all message text and its attributes;· Display all message text, database parameters and attributes on the user's workstation(s);· Command the particular DMS message be stored in the message library;· All uploaded information from the DMS shall be displayed at the user's workstation(s);· The operator, with proper security, shall be able to display/change database messages and parameters. A log of all changes shall be maintained by time and operator identification;· Provide a DMS test mode set of commands;· Provide a method for restricting overwriting an essential (e.g., incident related) message on a DMS;· Provide a log of all communication events to and from the DMS including the report of device errors; and· Provide the capability to stop	DMS	1

FEAT9.3	DM001	Sending database messages	The DMS software device driver shall be capable of sending all messages as defined in the DMS message database.	DMS	1
FEAT9.4	DM002	Save messages	The DMS software shall implement a database of standard messages.	DMS	1
FEAT9.4.1	DM002A	DMS Priority	When creating a DMS library message, the user shall be able to configure a message priority.	DMS	6
FEAT9.5	DM001D	Acceptable words/messages	The DMS database shall contain a list of acceptable messages and words/or messages that are unacceptable.	DMS	1
FEAT9.6	DM002D	System configuration	The DMS database shall contain DMS internal operating parameters and internal messages.	DMS	1
FEAT9.7	TB001	Trail blazer signs	The SunGuide system shall provide an interface to the dynamic and blank-out trail blazer signs.	DMS	2
FEAT9.8	DM003D1	Status information	The information requested in the regular periodic poll of DMS devices shall include basic error information from the device, including but not limited to pixel, lamp, temperature and fan errors. For NTCIP devices, this shall be accomplished by utilizing the "short error status" object.	DMS	1
FEAT9.9	DM004D	DMS driver default page times	Each DMS device driver shall have configurable default page on and off times.	DMS	1
FEAT9.10	DM005D	Approved word conflict	If DMS detects a word list conflict in a message being activated as part of a sequence, the system shall alert the operator of the conflict and prompt for a decision, just as if the message had been activated manually.	DMS	1
FEAT9.11		Fonts		DMS	2.1

FEAT9.11.1	DM005MA	DMS fonts	SunGuide software shall be able to configure a font to use with a SunGuide defined DMS device to either use proportional fonts that are user specified for each type of DMS or to use fixed width font. This requirement applies to Mark IV and NTCIP compliant DMS devices.	DMS	2.1
FEAT9.11.2	DM005M1	Assign DMS fonts	SunGuide shall require that a font be assigned to each DMS device.	DMS	2.1
FEAT9.11.3	DM005M2	Mark IV centering	SunGuide shall horizontally all lines on the sign with respect to the pixel length of the message line versus the pixel width of the sign on the non-NTCIP compliant Mark IV signs.	DMS	2.1
FEAT9.11.4	DM005M3	Define font	SunGuide shall allow a user to define a font for each type of DMS in use using the following characteristics: - Name of font; - Character height in pixels; - Default character width in pixels; and - Width in pixels for any characters whose width differs from the default.	DMS	2.1
FEAT9.11.5	DM005M4	Verify message	DMS shall use each device's font characteristics to determine whether a message can be displayed.	DMS	2.1
FEAT9.12	DM007	Travel time default message	On select DMS, the travel time shall be the default message, appearing 24 hours a day, 7 days a week, except when it is overridden by a higher-priority message.	DMS	3
FEAT9.13	DM018M	Unavailability of travel times	When travel times are unavailable for a particular segment, the default message on the associated DMS shall be blank until the data are restored.	DMS	3

FEAT9.14	TM008A	Prioritized DMS message types	DMS message types shall be prioritized such that message types with a lower priority will outrank those with a higher priority value (e.g., incident messages always replace any other type of message).	DMS	3
FEAT9.15	EX008L	Log posted DMS messages	The log file shall list each newly posted DMS message, the corresponding DMS' involved, and a time/date timestamp.	DMS	3
FEAT9.16	DM016	Color DMS	The software shall support the use of color DMSs.	DMS	6
FEAT9.17	DM017	Color DMS through C2C	The software shall support the transmission of the color DMS status via Center to Center.	SAS	6
FEAT9.18	DM018	Archival of Color DMS	The software shall support the archival of the transmission of color DMS messages in the database	SAS	6
FEAT10		Transportation Sensor System (TSS)		TSS	1
FEAT10.1	A007	Data collection	The SunGuide software shall provide software for traffic data collection and support incident detection.	TSS	1
FEAT10.2	S016	Predict traffic conditions	The SunGuide system shall utilize real-time and archived data from a variety of sources to determine and report current and predicted traffic conditions for any segment of roadway within the scope of system coverage.	TSS	1
FEAT10.3	TD001	Data sources	The SunGuide system shall be capable of collecting traffic data from a variety of in-ground and above-ground traffic NTCIP compliant detection technologies including, but not limited to, inductive loop systems, radar systems, and video detection systems.	TSS	1

FEAT10.4	TD002	Data time intervals	The SunGuide system shall be able to receive and process traffic data in time intervals including but not limited to:· Ten (10) seconds;· Twenty (20) seconds;· Thirty (30) seconds;· One (1) minute;· Five (5) minutes;· Ten (10) minutes;. Fifteen (15) minutes;· Thirty (30) minutes; and· Sixty (60) minutes.	TSS	1
FEAT10.5	TD003	Bitrans WashDOT standard	To the maximum extent possible, the Bitrans WashDOT standard for transportation sensor systems shall be utilized for traffic detector communications.	TSS	1
FEAT10.6	TD004	Serial connections	The SunGuide system shall provide protocol software to communicate with the Bitrans 238I-95 traffic detection unit using serial and/or Ethernet connections over a variety of transmission media (i.e. fiber optic, copper, and wireless) that are capable of baud rates equal to or greater than 1200 bits per second.	TSS	1
FEAT10.7	TD005	Non NTCIP drivers	For traffic detectors within the system that do not support NTCIP, control of these devices shall be supported through device drivers that can be selectively loaded and unloaded by the system's traffic detector application on an as-needed basis.	TSS	1
FEAT10.8	TD006	Data element categories	The device driver for vehicle detectors shall contain the following categories of data elements:· System setup data elements;· Control data elements; and· Inductive loop detector data elements.	TSS	1

FEAT10.9	TD001D	System setup data elements	The transportation sensor system setup data elements shall at a minimum contain the following:· Sensor system reset parameters;· Sensor system status parameters;· Sensor system occupancy type parameters;· Maximum number of sensor zones parameters;· Sensor zone tables;· Clock available parameters.	TSS	1
FEAT10.10	TD002D	Control Data elements	The transportation sensor system control data element shall at a minimum contain the following:· Maximum number of outputs parameters;· Output configuration tables;· Maximum number of output groups parameters;· Output group tables;· Data collection tables;· Data buffer tables.	TSS	1
FEAT10.11	TD003D	Loop detector data elements	The transportation sensor system inductive loop detector data element shall at a minimum contain the following data elements· Loop system setup tables;· Loop output conditioning tables; and· Loop system status tables.	TSS	1
FEAT10.12	TD004D	3M Traffic Sensors	The SunGuide system shall be capable of collecting traffic data from 3M Traffic Sensing Series TMC900E and TMC900 vehicle detection devices.	TSS	2
FEAT10.13	TD005D	WaveTronix SmartSensor	The SunGuide system shall be capable of collecting traffic data from the WaveTronix SmartSensor.	TSS	1
FEAT10.14	TD006D	EIS RTMS Sensor	The SunGuide system shall be capable of collecting traffic data from the Electronic Integrated Systems (EIS) RTMS sensor.	TSS	1
FEAT10.15	DF103	Maintain raw data values	SunGuide shall maintain the raw data values read from traffic sensors in their original precision.	TSS	3

FEAT10.16		Probe sensors		TSS	4
FEAT10.16.1		General		TSS	4
FEAT10.16.1.1	TM001S	Latency of no more than 2 minutes	Processing associated with collection, fusion, and dissemination of real-time toll tag data feeds shall introduce a latency of no more than two (2) minutes from the time the data was acquired by SunGuide to when the data is presented to the travel time module for use in calculating travel time.	TSS	4
FEAT10.16.1.2	TM003P	Interface with AVI and LPR equipment	SunGuide shall interface with Toll Tag Reader (AVI) equipment and License Plate Reader (LPR) equipment to obtain data on Probe Vehicles.	TSS	4
FEAT10.16.1.3	TM004P	Poll readers at a configurable rate	SunGuide shall poll all LPR and AVI reader stations not marked as inactive at a SunGuide operator with appropriate permissions configurable rate.	TSS	4
FEAT10.16.1.4	TM004P1	Use interface compatible with readers	SunGuide shall use an interface compatible with the LPR and AVI reader stations.	TSS	4
FEAT10.16.1.5	TM005S5	Use of FDOT-approved, standardized interface	The SunGuide system shall interface with Data Collection modules using a standardized interface that is documented and approved by FDOT.	TSS	4
FEAT10.16.1.6	TM006P	Average speeds based on probe vehicles	SunGuide shall calculate average speeds for segments based on the measured travel time of individual probe vehicles.	TSS	4
FEAT10.16.1.7	TM007S1	Keep toll tag customers anonymous	SunGuide shall process AVI tag ids in the form provided by the tag readers, i.e. will not reconstruct the original tag or identifying information.	TSS	4
FEAT10.16.2		LPR data collection		TSS	4

FEAT10.16.2.1	TM001X	Data to collect from LPR readers	The SunGuide Software shall collect the following data from License Plate readers (LPR): - Individual license plate numbers that have been made anonymous by the LPR readers. - A timestamp for when each license plate number was collected - Data Collection Station id - Lane of travel from which data was collected - Quality/likely accuracy of each plate read (as assessed by LPR system) - Information concerning system health - license plate readers, power, communications, etc.	TSS	4
FEAT10.16.2.2	TM002X	Monitor system health of LPRs	SunGuide shall monitor system health of the LPRs to include as a minimum: power, and communication (i.e., system health) status.	TSS	4
FEAT10.16.2.3	TM003X	Synchronize internal clock for LPR readers	SunGuide shall synchronize the LPR's internal clock if supported by the reader station equipment with the SunGuide system time clock that is used by SunGuide to time stamp reader data.	TSS	4
FEAT10.16.2.4	TM004X	Communicate with existing LPR protocols	The SunGuide LPR data collection function shall communicate with the existing LPR protocols used for travel time data collection applications in the State of Florida: PIPS and Inex Zamir Zap.	TSS	4
FEAT10.16.2.5	TM004X1	Support PIPS and Zap LPR protocols	The SunGuide LPR data collection function shall be able to process data from Inex Zamir Zap LPR readers used for traffic conditions data collection applications.	TSS	4

FEAT10.16.2.6	TM007G	Alert operators upon failures	SunGuide shall notify SunGuide operators of reported failures by the LPR equipment.	TSS	4
FEAT10.16.2.8		Configurable parameters for license plates	SunGuide shall provide separate configurable parameters for adminstrating license plates	TSS	4.3
FEAT10.16.2.8.1	TM005X	Administering license plate length	SunGuide shall provide separate configurable parameters for administrator for minimum license plate length and maximum license plate length to perform license plate matching to calculate travel time.	TSS	4.2
FEAT10.16.2.8.2	TM005X1	Default value for minimum length	SunGuide shall provide the default value 3 for minimum license plate length.	TSS	4.2
FEAT10.16.2.8.3	TM005X2	Default value for maximum length	SunGuide shall provide the default value 5 for maximum license plate length.	TSS	4.2
FEAT10.16.2.8.4	TM005X3	Minimum length for licesnse plate reads	SunGuide shall not use any license plate reads which have length shorter than minimum license plate length for travel time calculation.	TSS	4.2
FEAT10.16.2.8.5	TM005X4	Maximum length for license plate reads	SunGuide shall not use any license plate reads which have length longer than maximum license plate length for travel time calculation.	TSS	4.2
FEAT10.16.2.8.6	TM006X	Character/digits read by license plate reads	SunGuide shall not include any license plate reads which contain non-alphanumeric characters to perform license plate matching to calculate travel time.	TSS	4.2
FEAT10.16.2.8.7	TM007X	Storage or license plate reads	SunGuide shall not store license plate read data in the database	TSS	4.3
FEAT10.16.3		AVI data collection		TSS	4

FEAT10.16.3.1	TM002S	System config activities without introducing latency	SunGuide shall allow users to perform system configuration activities without introducing latency greater than 2 minutes in the real-time processing of the toll tag with the exception of the addition, removal, or modifications to AVI collection (The system can be reconfigured while it is running without increasing the current latency.)	TSS	4
FEAT10.16.3.2	TM003S	Operational 99.9% the time, annually	The SunGuide Toll Tag reader function shall be operational 99.9% the time, measured annually over a 24 hour period.	TSS	4
FEAT10.16.3.3	TM003S1	Operational definition	Operational shall be defined as that the system is running and that no internal errors have occurred.	TSS	4
FEAT10.16.3.4	TM005P	Synchronize internal clock for AVI readers	SunGuide shall synchronize the reader stations' internal clock if supported by the reader station equipment with the SunGuide system time clock that is used by SunGuide to time stamp reader data.	TSS	4
FEAT10.16.3.5	TM005S	AVI data collected for probe TVT calculations	The Toll Tag reader function shall include an interface with AVI data collection equipment to collect data to be used for probe travel time calculations.	TSS	4
FEAT10.16.3.6	TM005S1	Support Allegro and Flex AVI protocols	The AVI data collection system shall communicate with the existing AVI protocols used for travel time data collection applications in the State of Florida: TransCore Allegro and SIRIT Flex.	TSS	4

FEAT10.16.3.7	TM005S2	AVI configurable poll cycle	The AVI data collection system shall receive AVI Tag data from the toll collection agency AVI Data Collection Sensors, or alternatively poll the Data Collection Sensors within a configurable amount of time of when the data is polled by SunGuide.	TSS	4
FEAT10.16.3.8	TM005S3	Add AVI sensors to system	Users shall be able to add AVI Data Collection Sensors to the SunGuide system and changes will take effect when the system is restarted.	TSS	4
FEAT10.16.3.9	TM005S4	Modify AVI sensors in the system	Users shall be able to modify AVI Data Collection Sensors that have already been added to the SunGuide system. Changes will take effect when the system is restarted.	TSS	4
FEAT10.16.3.10	TM005S6	Raw data collected	Raw AVI data collected by SunGuide shall include the following: Transponder ID - unique AVI tag identifier, Reader ID - Data collection sensor that made, the tag read, Lane ID - lane in which the tag was read, Time stamp - time when the tag was read, Fault Information - fault information from the data source.	TSS	4
FEAT10.16.3.11	TM005S7	Support IT2020 and Sirit Identity Flex AVI protocols	The AVI data collection function shall be able to process AVI tag data from the existing AVI readers used for travel time data collection applications in the State of Florida: TransCore IT2020 (via UDP and TCP) and Sirit Identity Flex.	TSS	4

FEAT10.16.3.12	TM005S8	Alert sent if no data received	An alert shall be generated to the SunGuide operator if no data is received from an AVI or LPR device after a configurable amount of time that can be established the by the SunGuide Administrator. This configured time is the same time designated as the polling cycle for detector devices.	TSS	4
FEAT10.16.3.13	TM006S2	Report device errors	The AVI data collection system shall report errors in AVI Data Collection devices.	TSS	4
FEAT10.16.3.14	TM007S2	Archive AVI transponder IDs	The SunGuide system shall archive AVI transponder IDs.	TSS	4
FEAT10.16.3.15	TM009S	Archive AVI tag read data	SunGuide shall archive AVI Tag read data.	TSS	4
FEAT10.16.3.17	TM009S2	Raw AVI data archived as received	Raw AVI Tag read data shall be archived in the same format in which it was received.	TSS	4
FEAT10.16.4		Dynamic linking		TSS	4
FEAT10.16.4.1	TM006T1	Initiate dynamic link re-definition	The Travel Time function shall have the ability to initiate dynamic link re-definition to compensate for loss of data collection stations that would otherwise result in the loss of segment travel times.	TSS	4
FEAT10.16.4.2	TM006T3	Linking across the system	The SunGuide GUI shall allow an operator to suspend and resume dynamic linking for associated probe TSS links across the system.	TSS	4
FEAT10.16.4.3	TM006T4	Linking for associated probe TSS links	The SunGuide GUI shall allow an operator to suspend and resume dynamic linking for associated probe TSS links.	TSS	4
FEAT10.16.5		Probe fusion		TSS	4
FEAT10.16.5.1	TM008S	Filter duplicate tag reads	The Data Server shall filter out duplicate tag reads (i.e. reads of the same AVI transponder, at the same data collection site, in a given time.)	TSS	4

FEAT10.16.5.2	TM009S3	Retain toll tag data for one month	Toll tag data shall be retained on line for one month and be able to be exported for long term storage.	TSS	4
FEAT10.16.6	TM025	Probe-based travel time calculation	The probe-based travel time calculation algorithm shall utilize several user configurable parameters in its calculation on a per probe (TSS) link basis	TSS	5.1.1
FEAT10.17		Discard zero speed in smoothed data	SunGuide shall not include the zero speed value in its calculations for smoothed speed, but shall include the zero occupancy and zero volume values in calculations for smoothed occupancy and volume.	TSS	4
FEAT10.18		TSS Alarms	Adding a "Recovery Threshold" to TSS alrams, which will prevent SunGuide from generating a large number of alerts when the traffic data is oscillating around the alarm threshold	TSS	4.3
FEAT10.18.1	TD009T	Generate TSS alarms	SunGuide shall generate TSS alarms	TSS	4.3
FEAT10.18.2	TD009T1	Configure TSS alarm	A TSS alarm shall be configurable to generate alarms for speed or occupancy, or for speed and occupancy. This will be configurable at the link level	TSS	4.3
FEAT10.18.3	TD009T2	TSS alarm triggering	A TSS alarm shall not be triggered when TSS reports no traffic. (i.e. speed, volume and occupancy = 0.)	TSS	4.3
FEAT10.18.4	TD009T3	TSS Alarm retriggering	Once a TSS alarm has been triggered, it shall not be retriggered until simultaneously speed is above its recovery threshold and occupancy is below its recovery threshold.	TSS	4.3
FEAT10.18.5	TD009T4	Removal criteria for TSS alarms	TSS alarms that have not been addressed by an operator shall be removed when the traffic data that triggered the alarm subsequently crosses the Recovery Threshold.	TSS	4.3

FEAT10.18.6	TD009T5	TSS Alarm Configuration	The Recovery Threshold shall be configurable per link in the Admin Editor.	TSS	4.3
FEAT10.18.7	TD009T6	TSS Link Data Screen	The Operator Map shall represent the data region between the threshold and recovery threshold with yellow in the 'TSS Link Data' screen.	TSS	4.3
FEAT10.18.8	TD009T7	TSS Alarm Operator map view	A link where the traffic data currently falls between the Recovery Threshold and the Alarm Threshold shall be displayed in yellow on the Operator Map.	TSS	4.3
FEAT10.18.9	TD009T8	TSS Alarm triggering speed or occcupancy	If configured for speed or occupancy, a TSS alarm shall be triggered when the speed or occupancy values cross the Alarm Thresholds configured for that link.	TSS	4.3
FEAT10.18.10	TD009T9	TSS Alarm triggering on spped and occupancy	If configured for speed and occupancy, a TSS alarm shall be triggered when the speed and occupancy values cross the Alarm Thresholds configured for that link.	TSS	4.3
FEAT10.18.11	TD009T10	TSS Alarm triggering on speed only	TSS alarms shall be based on speed only by setting occupancy alarm threshold to 100% and the occupancy recovery threshold to 100%.	TSS	4.3
FEAT10.18.12	TD009S	TSS Stabilization Hold-off	When a TSS detector status transitions to "ACTIVE" from either "FAILURE" or "OUT OF SERVICE", SunGuide shall not generate alarms the detector has stabilized.	TSS	4.3
FEAT10.18.12.1	TD009S1	Stable detector	A detector is stable if it reports data for a configurable period of time.	TSS	4.3
FEAT10.18.12.2	TD009S2	Configuration of stabilization period	The stabilization period is configurable at the driver level within the system configuration file.	TSS	4.3

FEAT10.19		Polling Failed Devices	Allows dirvers to periodically attempt to reconnect to failed devices. THis will allow SunGuide drivers to continue to poll failed devices(at a reduced rate) and bring them back into operation	TSS	4.3
FEAT10.19.1	TD014E	Polls a TSS detector	When SunGuide polls a TSS detector and the poll is unsuccessful, SunGuide shall report the device in "ERROR" status.	TSS	4.3
FEAT10.19.2	TD014A	Device is in "ERROR" and Sunguide successfully polls device	If a device is in "ERROR" and SunGuide successfully polls the device then the device status is reported as "ACTIVE" state.	TSS	4.3
FEAT10.19.3	TD014F	Device in "ERROR" and Sunguide unsuccessfully polls device	If a TSS device is in "ERROR" and SunGuide unsuccessfully polls the device a configurable number of times, the device is placed in "FAILURE" state.	TSS	4.3
FEAT10.19.4	TD014O	Device placed "OUT OF SERVICE"	SunGuide shall allow an operator to place a device in "OUT OF SERVICE."	TSS	4.3
FEAT10.19.4.1	TD014O1	Device "OUT OF SERVICE" not polled	SunGuide shall not poll a device with status "OUT OF SERVICE."	TSS	4.3
FEAT10.19.5	TD015F	Poll device at a "slow poll" rate	When a traffic detection device is in "FAILURE" mode, SunGuide shall poll the device at a "slow poll" rate.	TSS	4.3
FEAT10.19.5.1	TD015F1	Slow poll rates are configurable	Slow poll rates shall be configurable at the driver level within the system configuration file.	TSS	4.3
FEAT10.19.5.2	TD015F2	Device successfully polled	When a device is successfully polled at the slow poll rate, the device will be placed in "ACTIVE" status.	TSS	4.3
FEAT10.19.6	TD015S	Store traffic detection device state transitions	SunGuide shall store traffic detection device state transitions as "Online" (active) or "Offline" (error and failure).	TSS	4.3
FEAT10.19.6.1	TD015S1	State transitions have date and time	Traffic detection device state transitions shall have date and time of the transition.	TSS	4.3

FEAT10.19.6.2	TD015S2	State transitions have transition reason	Traffic detection device state transitions shall have indication of transition reason, (poll failure, operator forced, operator who performed the operation, etc.)	TSS	4.3
FEAT10.19.6.4	TD015S4	Write messages to Status Logger	SunGuide shall write messages to the Status Logger when traffic detector device operational state transitions.	TSS	4.3
FEAT10.20	TD016	Traffic Detector Failure Alerts	The software shall be able to send Traffic Detector Failure alerts.	GUI	5
FEAT10.21	TD017	System-wide Traffic Detector Alerts	The software shall be able to send System-wide Traffic Detector Failure alerts.	GUI	5
FEAT10.22		Invalid Detector Data Alerts	The software shall be able to send Invalid Detector Data alerts.	GUI	5
FEAT10.23	TD019	Alert Generation Delay Threshold	Traffic Detector Failure, System-wide Traffic Detector Failure, and Invalid Detector Data alerts shall delay generation of the alert based on a delay threshold.	GUI	5
FEAT10.25	TD020	EIS G4	The software shall allow the user to configure a detector to use the EIS G4 protocol	TSS	6
FEAT10.25.1	TD020A	Data Collection	The software shall support communicating to the detector using the EIS G4 protocol including receiving speed, volume, occupancy, and classification data.	TSS	6
FEAT10.26	TD021	Volume Weighted Average	TSS shall produce the average speed based on a volume weighted averaging method.	TSS	6
FEAT10.26.1	TD021A	Lane Average	The rolling average for a lane shall weight the speed on each vehicle in the rolling average period equally.	TSS	6
FEAT10.26.2	TD021B	Link Average	For a given poll cycle, the TSS link speed average shall weight the speed of each vehicle in each lane equally.	TSS	6

FEAT10.26.3	TD021C	Link Rolling Average	The rolling average for a TSS link shall weight the speed on each vehicle in the rolling average period equally.	TSS	6
FEAT10.26.4	TD021D	No Volume Condition	For a given poll cycle, if the volume reported 0, the lane shall not report a speed for that period	TSS	6
FEAT10.26.5	TD021E	Types of Link Averages	TSS links shall provide an average link speed based on raw data and an average based on a rolling average.	TSS	6
FEAT10.26.5.1	TD021E1	Discard Lane Average for 0 Volume	For a given poll cycle, if the volume reported 0, the lane shall not be included in the raw data link average	TSS	6
FEAT10.26.5.2	TD021E2	Discard Link Average for 0 Volume	For the rolling data link average, if the link reports 0 volume for a given poll cycle, that cycle shall not be include in the rolling data link average.	TSS	6
FEAT10.26.5.3	TD021E3	No Data Condition	If no data is available for the link average, the link average shall not report a speed for that period	TSS	6
FEAT10.27	TD022	Minimum Volume Threshold for alert generation	The software shall have a configuration parameter specifying the minimum volume needed for a lane in order to produce an alert.	TSS	6
FEAT10.27.1	TD022A	Non-alert Conditions	The software shall not generate an alert if the poll cycle reports a volume less than the minimum volume needed to produce an alert.	TSS	6
FEAT11		Evacuation Coordination (EC)		EC	2
FEAT11.1	S023	Definition	The SunGuide system shall provide an evacuation coordination subsystem to provide for management of traffic during evacuations.	EC	2

FEAT11.2	EC001	Manage evacuation	The evacuation coordination subsystem shall provide the capability to provide evacuees with information they need during the evacuation, as well as the reentry.	EC	2
FEAT11.3	EC002	Functionality	The evacuation coordination subsystem shall consist of five (5) major functions: (1) evacuation guidance, (2) evacuation travel information, (3) evacuation traffic management, (4) evacuation planning support and, (5) resource sharing.	EC	2
FEAT11.4		Evacuation Guidance (EG)		EC	2
FEAT11.4.1	EC001G	Determine evacuation necessity	The evacuation guidance component shall provide the capability to determine and display those evacuation zones under specific government orders to evacuate during an emergency condition.	EC	2
FEAT11.4.2	EC002G	Multiple distributed locations	The evacuation guidance component shall be accessible to users who access the Internet through a browser application.	EC	2
FEAT11.4.3	EC003G	Shelter-in-place information for non-evacuation	The evacuation guidance component shall provide shelter-in-place information for evacuation zones where local governments have not issued specific orders to evacuate.	EC	2
FEAT11.4.4	EC004G	List and graphical depiction of evacuation zones	The evacuation guidance component shall provide a means to obtain evacuation zone locations and status.	EC	2
FEAT11.4.5	EC005G	Alternative evacuation destinations	The evacuation guidance component shall provide a list of alternative evacuation destinations on demand as appropriate based on the emergency condition requiring evacuation.	EC	2

FEAT11.4.7	EC007G	Recommended evacuation and reentry start time	The evacuation guidance component shall provide a display of actual traffic conditions on instrumented evacuation routes. This information shall include at a minimum:·Travel times and speeds.·Current construction and detours information.	EC	2
FEAT11.4.8	EC008G	Evacuation shelters	The evacuation guidance component shall provide information regarding evacuation shelters in areas specified by users. The information shall provide:· Locations of evacuation shelters;· Time during which evacuation shelters are in operation;· Occupancy levels at evacuation shelters; and· Available facilities at evacuation shelters, including those shelters that will accommodate people with special needs, such as pets, disabilities, and the elderly.	EC	2
FEAT11.4.9	EC009G	Zones and categories	The EG shall provide a means of determining evacuation zone and category information.	EC	2
FEAT11.5		Evacuation Travel Information (ETI)		EC	2
FEAT11.5.1	EC003	Evacuation travel information	The evacuation coordination subsystem shall provide an evacuation travel information function.	EC	2
FEAT11.5.2	EC001E	Multiple distributed locations	The evacuation travel information function shall provide the capability for users to access information via the Internet using a browser to view a web application.	EC	2

FEAT11.5.3	EC002E	Information about traffic conditions	The evacuation travel information function shall provide information about traffic conditions on evacuation routes and shall provide:· Current speed/travel time on evacuation routes.· An estimate of future speed/travel time on evacuation routes, taking into consideration current evacuation decisions and traveler behavior.· Information regarding incident conditions on evacuation routes. · Real-time road, bridge and lane closure information.· A list of roads that should be avoided due to hazardous conditions, such as flooding, malfunctioning traffic signals, debris and falling objects.	EC	2
FEAT11.5.4	EC003E	Current and forecast weather conditions	The evacuation travel information function shall provide the current and forecast weather conditions for evacuation origins, destinations and routes.	EC	2
FEAT11.5.5	EC004E	Transportation modes	The evacuation travel information function shall provide information regarding transportation modes including buses, airlines, trains and ships. Specifically, ETI shall provide:· Information regarding the availability of transportation mode services;· Arrival and departure information, including location, for those services available.	EC	2
FEAT11.5.6	EC005E	Evacuation guidance information	The evacuation travel information function shall provide general evacuation guidance information to travelers, including guidance/tips for trip preparation, trip duration and trip return.	EC	2

FEAT11.5.7	EC006E	Lodging availability	The evacuation travel information function shall provide information regarding lodging available along evacuation routes and at evacuation destinations.	EC	2
FEAT11.6		Evacuation Traffic Management		EC	2
FEAT11.6.1	EC004	Evacuation traffic management	The evacuation coordination subsystem shall use the SunGuide subsystems (e.g. DMS, CCTV, TSS, Incident Management) to provide an evacuation traffic management function.	EC	2
FEAT11.6.2	EC001M	Real-time data collection	The evacuation traffic management function shall use the SunGuide subsystems (e.g. DMS, CCTV, TSS, Incident Management) to assist in the selection of evacuation strategies and to monitor the operations of the strategies selected.	EC	2
FEAT11.6.5	EC004M	Control of devices	The evacuation traffic management function shall utilize the SunGuide device control subsystems (e.g, DMS, CCTV) to provide the control of devices as required by the evacuation management plan.	EC	2
FEAT11.6.6	EC005M	Manual override	The evacuation traffic management function shall utilize the SunGuide device control subsystems (e.g, DMS, CCTV) to provide the capability to control, change and confirm device changes.	EC	2
FEAT11.6.7	EC006M	Incident management for evacuation routes.	The evacuation traffic management function shall utilize the SunGuide Incident Management subsystem to perform the incident management function for evacuation routes.	EC	2
FEAT11.7		Evacuation Planning Support		EC	2

FEAT11.8		Resource Sharing		EC	2
FEAT12		Road Weather Information System (RWIS)		RWIS	
FEAT12.1	A005	Detection of road weather conditions	The SunGuide software shall provide software for detection of road weather conditions that may impact operations.	RWIS	2
FEAT12.2	S017	Standards consistency	The FL-ATIS shall be network-based using Transmission Control Protocol/Internet Protocol (TCP/IP) connectivity, the Hypertext Transfer Protocol (HTTP), and XML data format based shall be consistent with TMDD 2.1 (and NTCIP 2306) and the emerging TMDD 3.0 (and NTCIP 2306). FDOT modified SAE J2540 IITS codes shall be used to capture event information.	RWIS	2
FEAT12.3	RW004	NTCIP protocol	The RWIS interface shall use the NTCIP protocol.	RWIS	2
FEAT12.4	RW001D	Physical communication	The RWIS interface function shall implement SNMP over UDP/IP to communicate with NTCIP RWIS devices.	RWIS	2
FEAT12.5	RW002D	Object definitions	The RWIS interface function shall implement the NTCIP OIDs necessary to implement the functionality that is to be provided through the GUI (see RW0002U or FEAT12.6).	RWIS	2

FEAT12.6	RW002U	Data fields	The user interface shall provide the following data fields relative to each RWIS field unit:· Name;· Location;· Data age;· Air temperature;· Dew point temperature;· Relative humidity;· Precipitation type· Precipitation intensity;· Precipitation rate;· Precipitation accumulation;· Visibility;· Average wind speed;· Wind gust speed;· Wind direction;· Surface sensor name;· Surface temperature;· Freeze point;· Chemical factor;· Chemical percent; and· Ice thickness.	RWIS	2
FEAT12.7	RW001	NTCIP protocol standard	The NTCIP standard for environmental sensor stations (ESS) shall be utilized for the RWIS interface communications.	RWIS	2
FEAT12.8	RW002	RWIS Interface	The RWIS interface function shall provide protocol software to communicate with RWIS field units using NTCIP.	RWIS	2
FEAT12.9	RW005	User interface display	The RWIS user interface shall be a software application within the SunGuide system that displays the required RWIS data fields.	RWIS	2
FEAT12.10	RW001U	Statewide data display	It shall be possible for any workstation within the SunGuide system to access the RWIS user interface and the data from all RWIS system components statewide.	RWIS	2
FEAT13		Center to Center (C2C)		C2C	1
FEAT13.1	A020	Center-to-center communications	The SunGuide software shall provide software for center-to-center communications to support major incidents that affect multiple jurisdictions including evacuation.	C2C	2

FEAT13.2	A021	Coordination and delegation	The SunGuide software shall support the coordination and delegation of control of operations and management during natural or man-made disasters or evacuations. Information exchanged currently includes:· Description· Special staging area· Number of people affected· Source· Contact · Start and end times	C2C	2
FEAT13.3	S021	Center-to-Center functions	The SunGuide system shall support center-to-center communications through the normal command/control functions, the status update of field devices, web server switching to another RTMC, incident data review as an output from the Data Distributor, and the GUI display from the ARCView software or Map Objects.	C2C	2
FEAT13.5	DM010D	Message approval parameter	If SunGuide receives a DMS request from another center, a configurable parameter shall be provided as to whether or not an operator has to approve the posting of DMS request to the Message Arbitration System (MAS) subsystem.	C2C	2.1
FEAT13.6	DM001M	Validate device requests	Device requests received via the C2C interface shall be validated.	C2C	2.1
FEAT13.7	DM016M1	DMS configuration	SunGuide shall publish the number of characters per line for each DMS in the inventory information sent through C2C. No proportional font information will be sent over the C2C interface.	C2C	2.1
FEAT13.8	TM020	Support data exchanging	SunGuide shall support exchanging of data through C2C with the FHP.	C2C	3

FEAT13.9	TM002V	Automated interface	SunGuide automated interface shall consist of C2C XML Interfaces through which each of the participating systems and organizations will transmit their respective data to SunGuide.	C2C	3
FEAT13.10	TM002V1	Configured to support data sources	The SunGuide software shall be capable of being configured to accommodate supported data sources as they become available.	C2C	3
FEAT13.11	CR002	Processing and providing data	The SunGuide software shall be capable of processing all required data sources and providing this data to other centers through a center-to-center interface.	C2C	3
FEAT13.12	CR003	Storing multiple source information	SunGuide shall be capable of storing information from multiple automated and manual sources, including weather.	C2C	3
FEAT13.13	OD001T	Time stamping of data	The SunGuide data available via the center-to-center interface will be time stamped.	C2C	3
FEAT13.14	DF005C	Support exchange of floodgate information	The SunGuide Center-to-Center interface shall support the exchange of the floodgate information entered by an operator via the GUI.	C2C	4
FEAT13.15	DF005C	Exchange of floodgate information	The SunGuide Center-to-Center interface shall support exchange of floodgate information entered by an operator via the GUI.	C2C	4
FEAT13.17		Filter out TvT Links, CCTV and DMS from FL-ATIS		PS	4.3
FEAT13.17.1	CC001	CCTV configuration data	CCTV configuration data published to C2C shall have an attribute indicating whether the device should be visible to the public	C2C	4.2
FEAT13.17.2	CC002	DMS Configuration Data	DMS configuration data published to C2C shall have an attribute indicating whether the device should be visible to the public	C2C	4.2

FEAT13.17.3	CC003	Travel Time Configuration Data	Travel Time configuration data published to C2C shall have an attribute indicating whether the link should be visible to the public.	C2C	4.2
FEAT13.18	CC004	EM Location Publish Flag through C2C	When an EM location is published via C2C, it shall contain the setting indicating whether or not the locations should be published.	C2C	5
FEAT13.19	CC005	Soft Messaging	Events should be published via C2C only if the event status is "Active" or "Unconfirmed"	C2C	5
FEAT13.20	CC006	Head/Tail Location sent to FLATIS	When an "aafected area" event is selected and the user has set the head and tail of the event, the head of the event shall be sent as the primary event location and the tail of the event shall be sent as the secondary event location	C2C	6
FEAT14		Data Archiving (DA)		DA	2
FEAT14.1	A019	Data warehousing	The SunGuide software shall provide software for storing and regionally sharing traffic data so it can be archived in a data warehouse.	DA	2
FEAT14.2	SS001A	Automated archiving	The system support archiving component shall provide automated archiving of data to a common file usable by external databases for reporting purposes.	DA	2
FEAT14.3	SS002A	Archive data minimums	At a minimum, the system support archiving component shall archive the following information:· Incident history data;· Device status logs;· Detector data; and · System logs.	DA	2

FEAT14.4	SS003A	Format standards	The format of the archived data shall comply with standards set by FDOT's TranStat Office that are required for performance monitoring and deployment evaluation, including data input to the HPMS. This applies only to SunGuide collected data.	DA	2
FEAT14.5	SS004A	Export form	The system support archiving function shall support archiving as an export to comma delimited form.	DA	2
FEAT14.6	TM014D	Time-stamped data archive information	The SunGuide data available in the Data Archive will be time stamped.	DA	3
FEAT15		Ramp Metering System (RMS)		RMS	2
FEAT15.1	TM001M	Ramp meter configuration		RMS	2
FEAT15.1.1	TM001M1	Download parameters	The system shall allow operational parameters to be downloaded to one or more ramp meter controllers. These parameters currently include:· Metering rate table· Mode control· Time of day table	RMS	2
FEAT15.1.2	TM001M2	Online status	The system shall allow ramp meter controllers operational status to be manually changed to inactive/active.	RMS	2
FEAT15.1.3	TM001M3	Associate detectors	The system shall allow mainline and on-ramp traffic detectors to be associated with a ramp meter controller.	RMS	2
FEAT15.1.4	TM001M4	Modify vehicle release mode	The system shall allow the vehicle release mode of a ramp meter controller to be modified. Release modes currently include:· Single car· 2-car tandem· 2-car platoon· 2-car staggered· HOV bypass	RMS	2

FEAT15.1.5	TM001M5	Responsive mode	The system shall allow demand-responsive mode parameters to be modified for a ramp meter controller. Responsive mode parameters currently include:· Mainline occupancy· Queue length	RMS	2
FEAT15.1.6	TM001M6	Manual override	The system shall allow a user with appropriate permissions to override the automatic control of a ramp meter.	RMS	2
FEAT15.2	TM002M	System		RMS	2
FEAT15.2.1	TM002M1	System operating parameters	The system shall allow the central operating parameters to be modified. These parameters currently include:· Ramp Metering(demand-responsive) Algorithm· Time of day (for selecting mode of operation and for selecting times to activate or deactivate ramp metering).	RMS	2
FEAT15.2.2	TM002M2	Controller groups	The system shall allow groups of ramp meter controllers to be defined. Groups of groups may also be defined.	RMS	2
FEAT15.2.3	TM002M3	Central overrides	The system shall allow a local time of day (TOD) ramp metering control table to be defined for each ramp meter. The local TOD table is downloaded to the controller to control ramp metering in the case of communication failure.	RMS	2
FEAT15.2.4	TM002M4	Monitoring status	The system shall monitor ramp meter controller status and change the operator display to indicate failed or marginal to reflect the current ramp meter controller status.	RMS	2

FEAT15.2.5	TM002M5	Metering on/off	The system shall turn ramp metering operations on or off based on the WSDOT/UW algorithm using traffic conditions input from mainline and on-ramp detectors associated with ramp metering.	RMS	2
FEAT15.2.6	TM002M6	Logging	The system shall log the following events: Communication errors with ramp meter controllers· Manual overrides of ramp meter control· Changes between modes of operation (on/off, TOD, etc.).	RMS	2
FEAT15.3	TM003M	Ramp meter communication		RMS	2
FEAT15.3.1	TM003M1	Automatic polls	The system shall poll ramp meter controllers for their current status periodically at a rate that is configurable by a user who has appropriate permissions.	RMS	2
FEAT15.3.2	TM003M2	Manual poll	The system shall allow ramp meters to be manually polled for their current status.	RMS	2
FEAT15.3.3	TM003M3	Synchronize clock	The system shall allow the clocks on a ramp meter controller to be synchronized with the current system date and time.	RMS	2
FEAT16		Message Arbitration System (MAS)		MAS	1
FEAT16.1		General		MAS	1
FEAT16.1.1	DM004	Message queue	The SunGuide system shall support a priority-based queue for messages.	MAS	1
FEAT16.1.2	DM005M	Number of priority levels	The system shall support 256 message priority levels.	MAS	1

FEAT16.1.3	TM014T2	Manual pages with TvT messages	Manual pages can replace or coexist with travel time messages. (For example, as the system posts "To SR 528, 5 MILES, 10 minutes," an operator can add "Roadwork Ahead" as a second or third, alternating page, to the message. Alternatively, the operator can completely replace the automated message with a single "Roadwork Ahead" page.)	MAS	3
FEAT16.1.4	TM014T3	TvT pages update automatically	If the operator elects for the manual page to coexist with the travel time message, the travel time page(s) shall continue to update automatically, without disturbing or removing the manual page.	MAS	3
FEAT16.1.5	TM014T4	Manual pages removed without disrupting TvT pages	At any time, the operator shall be able to remove the manual page from sign without disrupting the updating of the travel time page(s).	MAS	3
FEAT16.2		Device control		MAS	1
FEAT16.2.1	DM006M	Priority display	If a message is placed in the queue with a higher priority than the currently active message, the higher-priority message shall be displayed on the device.	MAS	1
FEAT16.2.2	DM007M	Remove message	When a message is removed from the queue, the message with the next highest priority shall be activated.	MAS	1
FEAT16.2.3	DM007M2	Same priority	If two messages of the same priority are on the queue the message received first will be displayed first.	MAS	1
FEAT16.2.4	DM007M1	Blank queue	If the queue for a device becomes empty, the device shall blank.	MAS	1
FEAT17		Safety Barrier (SB)		SB	1

FEAT17.1	EX005L	SB protocol	The SunGuide Safety Barrier Interface Protocol shall be used to communicate with safety barrier devices.	SB	1
FEAT17.2		SB Status		SB	1
FEAT17.2.1	TM017R	Monitor SB status	SunGuide software shall monitor the status of each safety barrier device. Status information includes:· Lamp status,· switch status	SB	2
FEAT17.2.2	TM017R2	SB status information	Barrier sensor status shall include but not be limited to:Data byte 1: Lamp status: · Hex 0 - normal position· Hex 1 - barrier event in progress· Hex 2 -Failed· Data byte 2: Switch status:·Hex 0 - normal position·Hex 1 - barrier event in progress· Hex 2 -Failed·Data bytes 3-66: ASCII text string	SB	2
FEAT17.3		SB Detection		SB	1
FEAT17.3.1	TM014	Detect SB incidents	SunGuide software shall detect and react to incidents associated with vehicles impacting sensor equipped safety barriers along the roadway.	SB	2
FEAT17.3.2	TM001S	SB switch alert	SunGuide software shall alert the operator in the event a message is received indicating one or more breakaway switches are tripped and the associated strobe light is activated.	SB	2
FEAT17.3.3	EX004L	Log timestamp of switch activation	Events associated with safety barrier breakaway switch activations shall be logged with a date time stamp.	SB	1
FEAT17.3.4	EX004L1	Log timestamp of switch restoration	Restoration of the breakaway switch (closure) shall be logged with a date time stamp.	SB	2
FEAT18		Travel Times (TvT)		TVT	2
FEAT18.1		General		TVT	2

FEAT18.1.1	S031	Compose and send travel time messages	SunGuide shall compose and be capable of sending messages to DMS that inform travelers of the average travel time between two points on the instrumented and monitored roadway system defined by each District.	TVT	2
FEAT18.1.2	DF200R3	Travel times for drive-time comparisons	Once configured, SunGuide shall calculate the total travel time along the summary drive-time comparisons by summing the travel times along each roadway link.	TVT	3
FEAT18.1.3	DM019M	One or two DMS phases	Travel time messages can have one or two DMS phases.	TVT	3
FEAT18.1.4	TM004T	TVT links greater than zero	SunGuide shall ensure that travel time links shall be greater than zero.	TVT	4
FEAT18.1.5	TM004S	Units for archived toll tag data	The Toll Tag reader function shall report and archive average speed in miles per hour and travel time calculations (not raw data) in terms of seconds.	TVT	4
FEAT18.1.6	TM004T2	Speed values greater than zero	Travel time computations shall use speed values greater than zero (0).	TVT	4
FEAT18.1.7	TM006T	Dynamically resolve missing reports	The Travel Time function shall have the ability to dynamically resolve missing travel speed reports (when they are single individual links but not for multiple contiguous links, along a given segment) based on data that can logically be used to determine roadway link travel speeds.	TVT	4

FEAT18.1.8	TM006T2	Meta-rules to resolve missing link data	SunGuide shall utilize the following meta-rules and apply them in sequence to dynamically resolve missing link data: (1) If only partial link data is available, then use existing link data to extract a travel time; (2) If all link data is not available, then utilize dynamic linking to determine a travel time; and (3) If dynamic linking does not prove adequate or reliable, then use (as a last resort) a "no data available" condition.	TVT	4
FEAT18.1.9	TM007T	Automatic link report updates	Travel time report updating shall be fully automatic, without operator validation, unless a supervisor decides to suspend an event detection link travel time segment.	TSS	4
FEAT18.1.10	TM008P	Monitor number of vehicles used for computations	The SunGuide GUI shall monitor number of vehicles being used to compute travel times for each segment during the current and past 4 hour time periods and associate the number of vehicles with the segment.	TVT	4
FEAT18.1.11	TM009T2	Less than a minute latency for display	The Travel Time calculations shall not add more than 1 minute of data latency prior to data being queued for display.	TVT	4
FEAT18.1.12	TM012T	Calculate delay time for each segment	SunGuide shall calculate a delay time for each travel time segment based on the speed limit for the segment.	TVT	4
FEAT18.1.13	TM012T1	Delay time calculation definition	Delay time shall be calculated by subtracting free flow travel time from current travel time; where free flow travel time is link traversal time calculated using the speed limit, current travel time is link traversal time calculated using currently measured speeds while not exceeding the speed limit.	TVT	4

FEAT18.1.14	TM013D	Archive travel time and speed data	SunGuide shall have the ability to archive all travel time and speed data for later use.	TVT	4
FEAT18.1.15		test	test	RR	4
FEAT18.2		Configuration		TVT	2
FEAT18.2.1	TM002T	Travel time message template	SunGuide shall include a "Travel Time Message template" that is editable by operators with SunGuide Administrator privileges.	TVT	2
FEAT18.2.2	TM003T	Travel time message priority	Travel time messages shall have a SunGuide Administrator configurable priority that can be modified by operators with appropriate SunGuide privileges.	TVT	2
FEAT18.2.3	TM017	Travel time link setup	SunGuide shall provide an editor for each district to specify which links in their instrumented roadways will be used for travel time calculations.	TVT	2
FEAT18.2.4	UT012	Alter 511 segments	It shall be possible to alter the initial 511 reporting segments.	TVT	3
FEAT18.2.5	TM002G	Ability to turn off travel time messages	The SunGuide operator shall have the ability to turn off the travel time messages to the DMS.	TVT	4
FEAT18.2.6	TM004T1	TVT link lengths for one or more TSS links	Different Travel Time link lengths shall be able to be associated with one or more TSS links.	TVT	4
FEAT18.2.7	TM008G	Specify upper and lower bounds	The SunGuide Operator shall have the ability to specify an upper bound for the travel time and a lower bound for the travel time for each segment defined to have a travel time calculation.	TVT	4
FEAT18.2.8	TM008T1	Allow for multiple routes	SunGuide Travel Time function shall allow more than one route for an origin/destination pair to be configured by an operator that Travel Time will be computed for.	TVT	4

FEAT18.2.9	TM010T	Lower/upper bound for each segment	The SunGuide Travel Time function shall require that for each segment defined that will have travel times calculated for it that there be a minimum travel time defined called a lower bound and a maximum travel time defined called an upper bound.	TVT	4
FEAT18.2.10	TM010T5	Lower/upper bounds per reporting segment	The "lower bound," and "travel time upper bound" values shall be able to be defined separately for each travel time link segment.	TVT	4
FEAT18.2.11	TM013T	Multiple TVT links from different data sources	SunGuide shall be able to create multiple travel time links from different data sources on the same roadway segment.	TVT	4
FEAT18.2.12	TM013T1	TVT link may contain TSS links of varied types	A travel time link shall be allowed to contain TSS links of varied types (i.e., AVI, LPR, roadway Sensor Types).	TVT	4
FEAT18.3		Generation		TVT	2
FEAT18.3.1	TM001T	Generate travel time messages	Travel time messages shall be automatically generated.	TVT	2
FEAT18.3.2	TM016	Travel time generation method	Travel time computations shall be based on the Texas Department of Transportation TransGuide Travel Time computation method.	TVT	2
FEAT18.3.3	TM005T	Group travel time tags	SunGuide shall provide the ability to group the travel time tags in such a way that portions of the travel time message can be automatically removed if data is not available.	TVT	4
FEAT18.3.4	TM005T1	Insufficient data alert	If insufficient data is available to calculate travel time then no travel time shall be provided to the DMS and the operator shall be alerted.	TVT	4

FEAT18.3.5	TM005T2	Revert to single phase message	When there are two or more travel links (a two phase TVT message) and there is insufficient data available to calculate one of the travel times, then the message reverts to a single phase message exhibiting only one of the travel times.	TVT	4
FEAT18.3.6	TM007P	Filter outlier travel times	SunGuide shall have the ability to filter out travel times that are outside a normal distribution for the travel time for the segment. e.g., travel times/speeds that don't make sense given current conditions or are way in excess of the speed limit - e.g., 120 mph).	TVT	4
FEAT18.3.7	TM009T1	Times computed on configurable interval	Travel times shall be computed on an interval specified by a system configuration parameter (e.g., 1 minute, 2 minutes, 5 minutes, etc.).	TVT	4
FEAT18.3.8	TM010T4	Display of messages over 3 lines	If a DMS does not provide the ability to present a 3 line (row) message, the message will be displayed sequentially on the available rows.	TVT	4
FEAT18.3.9	TMT039	Enable/Disable Systemwide	The software shall accept a command from a user that will enable or disable travel time message generation on a system-wide basis	TVT	6
FEAT18.3.10	TMT0310	Enable/Disable for a single DMS	The software shall accept a command from a user that will enable or disable travel time message generation for a specified DMS	TVT	6
FEAT18.3.11	TMT040	No Units	The software shall have a configuration parameter that will allow travel times to be posted to DMS without including the units.	TVT	6
FEAT18.4		Vehicle travel times		TVT	4

FEAT18.4.1	TM018	Accept data from toll tag readers	SunGuide shall accept data from toll tag readers and use that data to calculate the elapsed time of travel between the geographic location where the tag was initially read and the geographic location where the tag was read again.	TVT	4
FEAT18.4.2	TM024	Travel times and delays with probe data	SunGuide shall provide vehicle travel times and delays using probe vehicle technologies.	TVT	4
FEAT18.4.3	TM002P	Compute probe vehicle-based travel times	SunGuide shall have an algorithm to compute probe vehicle-based travel times based on data received from probe vehicles or by road based sensors that track a probe vehicle.	TVT	4
FEAT18.4.4	TM009T	Calculations from different detection technologies	SunGuide shall calculate travel times using data obtained from a combination of data from point-based and probe-based detection technologies.	TVT	4
FEAT18.5		Alternate routes		TVT	4
FEAT18.5.1	TM003G	Specify up to 2 diversion roads	The SunGuide operator shall be able to select either a primary or a secondary alternative road for each EM location.	TVT	4
FEAT18.5.2	TM008T	Compute travel times for alternate routes	The SunGuide travel time process shall include the capability of computing travel times for alternate routes and conditionally presenting the alternatives on DMSs.	TVT	4
FEAT18.5.3	TM008T2	Display of alternate routes	Display of alternate route travel time messages shall be based on the calculated travel times and current traffic conditions.	TVT	4

FEAT18.5.4	TM011T	Post diversion messages to signs	SunGuide shall automatically post alternate routes messages to operator specified dynamic message signs when the travel time savings on the alternative route exceeds an operator specified time in minutes. The default travel time savings shall be 10 minutes over the main route.	TVT	4
FEAT18.5.5	TM011T1	Diversion message template format	Diversion messages shall be formatted into one of the two following templates. SunGuide shall attempt to use the first substitution, if that does not fit on a selected sign attempt the second. If that does not fit, then it should not make any alternate route message substitutions. Line 1: TO <Destination> Line 2: VIA <Alternate Route> Line 3: <Distance> <Travel Time> or Line 1: TO <Destination> Line 2: VIA <Alternate Route> <Distance> Line 3: <Travel Time>	TVT	4
FEAT19		Event Management / Performance Measures (EM/PM)		EMPM	2
FEAT19.1		GUI		EMPM	2
FEAT19.1.1	EM001G	User interface for new event records	The Event Manager tabular screen shall be opened automatically upon operator login based on operator preferences.	EM	3
FEAT19.1.2	EM001G1	Opening GUI automatically	The EM/PM GUI shall open automatically whenever the operator completes a log in to SunGuide.	EMPM	2

FEAT19.1.3	EM001G2	Opening screens within 60 seconds	SunGuide map GUI screen shall open and be ready for use within 60 seconds from when the SunGuide URL is selected exclusive of operator log-in process.	GUI	3
FEAT19.1.4	EM003G2	Represent unresolved events differently	The EM Subsystem GUI element shall represent unresolved events differently than; unconfirmed events, active with lane blockage events, and active without lane blockage events on the display.	EM	3
FEAT19.1.5	EM003R	Support editing for PM data fields	The SunGuide PM subsystem shall support data editing.	RS	3
FEAT19.1.6	EM003R1	Data entry form editing	Changes to the data shall be able to be made in the data entry form and in the data editing component.	EM	3
FEAT19.1.7	EM003R2	Agency timeline data	It shall be possible to edit agency timeline data in real-time using the data entry form.	EM	3
FEAT19.1.8	EM007G	Graphical lane blockage data entry	The SunGuide GUI component shall provide a graphical display to the operator, allowing lane blockage information to be entered using point-and-click methods.	EM	3
FEAT19.1.9	EM007G1	Predefined lane mappings	The SunGuide GUI element shall use predefined lane mappings to determine the number of lanes, shoulders, and exit ramp lanes to display to the operator.	EM	3
FEAT19.1.10	EM007G2	Changing lane configuration	The SunGuide GUI element shall allow the operator to change the lane configuration (i.e. number of lanes, shoulders, exit ramp lanes) at the event location. Changes shall only apply to the current event (the lane mapping adjustments shall not be saved).	EM	3
FEAT19.1.11	EM011G	Free text fields for event records	The SunGuide GUI shall have a free text field for each event record that the operator can enter comments.	EM	3

FEAT19.1.12	EM011G1	Maximum of 512 ASCII characters	The free text field shall accommodate a maximum of 512 ASCII characters.	EM	3
FEAT19.1.13	EM017G1	Popup alerts for blocked CCTVs	The SunGuide GUI shall use a popup alert to remind the operator that one or more CCTV are blocked at the video switch subsystem.	GUI	3
FEAT19.1.14	EM017G2	Visible popup alerts	The popup alert shall be visible to all operators logged on to the SunGuide system.	GUI	3
FEAT19.1.15	EM017G3	Confirming blocked camera alerts	The popup alert shall remain visible on the SunGuide operator's display until at least one operator confirms the blocked camera status by clicking on a button on the popup that will cause the popup to disappear for a configurable amount of time after which it will reassert itself until an operator again acknowledges it.	GUI	3
FEAT19.1.16	EM017G4	Unblocking blocked cameras	The SunGuide GUI shall allow any operator with appropriate permissions to unblock a blocked camera.	GUI	3
FEAT19.1.17	TM006W	Interface to annotate an incident record	SunGuide graphical operator interface shall provide the ability for the operator to annotate an incident record with date/time information related to incident management and performance measures calculation.	EM	3
FEAT19.2		Reports		EMPM	2
FEAT19.2.1	EM001R	Weekly and monthly reports	The Performance Measures subsystems reporting component shall generate weekly, monthly, quarterly and yearly reports, providing both summary and detailed performance measures when requested by a manager.	RS	3

FEAT19.2.2	EM001R1	Based on Cambridge Systematics' final report	The performance measures compiled shall be based on the FDOT Office of Traffic Operations Refinement of Florida Statewide Operations Performance Measures and Data Collection Methodology, May 2006.	RS	3
FEAT19.2.3	EM001R2	Daily chronology report of incidents	The PM reporting component shall be able to generate a daily chronology report of incidents based on time and day parameters entered by the operator.	RS	3
FEAT19.2.4	EM002R	Viewable report within 30 seconds	The SunGuide PM subsystem shall be able to generate a report and display it on the operator's screen within 30 seconds of the last key stroke command that requests the report.	RS	3
FEAT19.2.5	EM001D2	Viewing reports for events with associated tag data	The SunGuide GUI element shall provide a link to view a report on an event that had an associated vehicle license tag.	EM	3
FEAT19.2.6	EM001P	Generating statistics and reports	The performance measures component shall generate statistics and reports based on data entered via SunGuide data entry screens.	RS	3
FEAT19.2.7	TM004D	Support quarterly report generation	SunGuide shall support the compilation and report generation weekly, monthly, quarterly and annually.	RS	3
FEAT19.2.8	TM005D	Minimum of 12 months road ranger data	SunGuide shall store the road ranger data for a minimum of 12 months and have it available for review and report generation within 120 seconds of when a specific piece of data is requested.	RS	3
FEAT19.2.9	TM007D	Calculate, display, and export TMC performance measures	SunGuide shall calculate and be able to display and export TMC performance measures.	RS	3

FEAT19.2.10	TM006W4	Calculating average response time	The SunGuide Graphical User Interface shall allow a SunGuide operator with appropriate permissions to specify the date/time period or the incident IDs or range of IDs for SunGuide to calculate the average response time.	EM	3
FEAT19.3		Manage events		EMPM	2
FEAT19.3.1	EM002G	Specify event verification	The EM/PM GUI component shall allow an operator to specify that the event has been verified.	EMPM	2
FEAT19.3.2	EM002G1	Current time as verification time	At the time an event is created in SunGuide, the current time shall be recorded by the EM subsystem as the notification time.	EM	3
FEAT19.3.3	EM003G	Specify event status	The EM subsystem shall allow an operator to specify the status of the event.	EM	3
FEAT19.3.4	EM003G1	Unresolved event status	Status shall include that the event is unresolved indicating passive management, such as waiting for debris cleanup on the shoulder or towing an abandoned vehicle.	EM	3
FEAT19.3.5	EM003G3	Specify event closure	The EM Subsystem GUI element shall allow an operator to specify when an event has been closed.	EM	3
FEAT19.3.6	EM004G	Specify false/invalid information	The EM GUI component shall allow an operator to specify that the information provided was false and the record is voided.	EM	3
FEAT19.3.7	EM004G1	Records flagged as invalid	Records flagged as invalid shall not be deleted by the database element.	EM	3
FEAT19.3.8	EM005G	Specify events as 'false alarm'	The SunGuide GUI component shall allow an operator to specify that the event was a 'false alarm'.	EM	3
FEAT19.3.9	EM006G	Lane blockage data	The SunGuide GUI component shall allow an operator to enter lane blockage data for any event.	EM	3

FEAT19.3.10	EM006G1	Timestamps for lane blockage entries	All lane blockage entries shall be recorded with timestamps by the database element.	EM	3
FEAT19.3.11	EM008G	Multiple vehicle descriptions	The SunGuide GUI component shall allow an operator to enter at least 10 vehicle descriptions for any event, with the following descriptive data: make, model, color, state, and tag.	EM	3
FEAT19.3.12	EM010G	Event types from predefined list	The SunGuide GUI component shall allow an operator to select the event type from a predefined list for each event record.	EM	3
FEAT19.3.13	EM012G	Specifying event location graphically	The EM/PM GUI component shall allow the operator to specify the location of an event, using a graphical interface.	EMPM	2
FEAT19.3.14	EM012G1	Micro-degrees event coordinates	Events shall be geo-located using latitude and longitude coordinates in micro-degrees.	EM	3
FEAT19.3.15	EM013G	Specifying event data	The SunGuide GUI component shall allow the operator to specify the event: county, roadway, direction, relation to exit, nearest exit, and distance to exit, lane configuration.	EM	3
FEAT19.3.16	EM014G	Point location along roadway	The SunGuide GUI component shall allow the operator to define a point location along a roadway.	EM	3
FEAT19.3.17	EM015G	Congestion queues	The SunGuide GUI component shall allow the operator to specify congestion queues for an event, using a similar interface as is used to define the event location.	EM	3
FEAT19.3.18	EM016G	Weather conditions	The SunGuide GUI component shall allow the operator to specify weather conditions for the event.	EM	3
FEAT19.3.19	EM009G	Alerts for license plate matches	The SunGuide GUI component shall provide an alert message to the operator if an event record matches a license plate number.	EM	3

FEAT19.3.20	EM003	Recording free-text comments	The EM subsystem shall be able to record free-text comments entered by the operator.	EM	3
FEAT19.3.21	EM002D	Storing free text comments in database	The operator entered free text comments shall be stored in the database associated with the related event.	EM	3
FEAT19.3.22	EM017G	Blocking video camera displays	An operator with appropriate permissions shall be able to command the SunGuide to block one or more video camera displays through the video switch subsystem.	GUI	3
FEAT19.3.23	EM017G5	Manually unblocking cameras	There shall be no timeout feature to unblock the cameras; the camera must be unblocked manually by an operator.	GUI	3
FEAT19.3.24	EM005T	Identifying and notifying agencies	The tracking component shall allow an operator to identify an agency that was notified and enter a timestamp indicating when an agency has been first notified about an event or has detected an event and three more date/time fields for repeated notifications.	EM	3
FEAT19.3.25	EM005T1	Indicate if TMC notified agency	The operator shall be able to indicate whether it was the TMC that notified a specific agency.	EM	3
FEAT19.3.26	EM005T2	Entering responder times	For agencies that are configured as responders (FHP, Fire, etc.) SunGuide shall allow the operator to enter the time when they arrived on-scene, and the time when they departed.	EM	3
FEAT19.3.27	EM007T1	Tracking queue lengths	SunGuide 2.2 shall be able to track queue lengths based on operator data entry being driven by CCTV images or VDS detector data.	EMPM	2

FEAT19.3.28	EM005	Notification, on-scene, and departure times	The PM subsystem shall automatically enter the notification time, on-scene time, and departure time for the road ranger agency.	RS	3
FEAT19.3.29	EM006	Recording DMS message status changes	The EM subsystem shall record DMS message status changes from the DMS and MAS modules and maintain a log of posted message changes and the timestamp of the changes.	EM	3
FEAT19.3.30	EM007	Email alerts for event subscribers	The EM subsystem shall allow operators to send email alerts to subscribers with summary information about an event.	EM	3
FEAT19.3.31	EM001E	Email template	The EM subsystem E-mail component shall create the e-mail template with at least the following information: a subject, event type, event location, lane blockage and last status date and time.	EM	3
FEAT19.3.32	EM002E	Entering free-text changes to emails	The SunGuide E-mail component shall allow the operator to enter free-text changes to the email.	EM	3
FEAT19.3.33	EM003E	Pre-defined email groups	The SunGuide E-mail component shall allow the operator to choose from one or more pre-defined email groups for sending e-mails.	EM	3
FEAT19.3.34	EM008	Entering sensitive email information	The SunGuide shall provide a mechanism through which the system and operator may enter "sensitive" information that shall only be sent to a pre-defined and privileged group of subscribers using E-mail.	EM	3
FEAT19.3.35	EM002P	Logging audit changes	All audit changes shall be logged in the system, including the previous values, the operator who changed them, and the date/time it was changed.	EM	3

FEAT19.3.36	TM005B	Creation/modification of an incident by standalone software	SunGuide shall support the creation or modification of an incident by a standalone software module (the EM/PM Subsystems).	EMPM	2
FEAT19.3.37	TM005B1	Identification of incident created by EM/PM	SunGuide shall identify the incident as having been created or changed by the EM/PM Subsystems.	EMPM	2
FEAT19.3.38	TM005B3	TSS dectected incidents shown in EM/PM	Possible incidents detected through SunGuide TSS shall show up in the EM/PM GUI.	EMPM	2
FEAT19.3.39	TM005B5	Event owner as person logged into RRPM module	An event created or modified by the EM/PM Subsystems shall identify the owner as the person logged into the RRPM module that created or changed the incident.	EMPM	2
FEAT19.4		Data synchronization		EMPM	2
FEAT19.4.1	EM013G1	Display of lane configuration changes	Any lane configuration changes in any data entry screen will be reflected in any other data entry screen that display lane configuration.	EM	3
FEAT19.4.2	EM003D	Synchronizing event records	The EM/PM event records shall be synchronized with IM event records.	EMPM	2
FEAT19.4.3	EM006T	EM/PM data populates IM data	The EM/PM data entry screens shall populate IM data entry screens.	EMPM	2
FEAT19.4.4	EM009	Synchronizing event data via IM ICD	The EM/PM subsystems shall synchronize its event data with the IM subsystem using the SunGuide Incident Manager Subsystem ICD.	EMPM	2
FEAT19.5		System		EMPM	2
FEAT19.5.1	EM002	SunGuide Oracle database access	The SunGuide Oracle database shall support Event Manager functions.	EM	3
FEAT19.5.2	EM001D	Vehicle license plate numbers	When a vehicle license plate number is entered, the Event Manager database component shall search the database to look for an event record with a matching tag number.	EM	3

FEAT19.5.3	EM006T1	Calculating latitude/longitude coordinates	EM/PM subsystem shall calculate latitude/longitude coordinates in the background and provide them to the IM subsystem.	EMPM	2
FEAT19.6		Road ranger vehicles		EMPM	2
FEAT19.6.1	EM004	Tracking status of road ranger vehicles	The EM subsystem shall allow an operator to track the status of each road ranger vehicle (truck) in the fleet.	RR	3
FEAT19.6.2	EM001T	Minimum vehicle status conditions	The EM tracking component shall track road ranger vehicle status conditions that shall include as a minimum: patrolling, assist-motorist, meal, inspection, out of service, Base, Assist FHP, Assist Other Road Ranger, Mechanical.	RR	3
FEAT19.6.3	EM002T	Billable/non-billable and available/unavailable status	The EM tracking component shall automatically track the billable/non-billable and available/unavailable for dispatch status of a truck based on its current status.	RR	3
FEAT19.6.4	EM003T	Changing radio number, beat, and driver status	The EM tracking component shall allow the operator to change the status, radio number, beat, and driver for any given truck.	RR	3
FEAT19.6.5	EM004T	Recording truck dispatch data	The EM tracking component shall allow the operator to record when a specific road ranger truck was dispatched to an event, arrived on-scene to an event, departed from an event, or had their dispatch order cancelled.	RR	3
FEAT19.6.6	EM004T1	Responding to same event multiple times	A road ranger vehicle may respond to the same event multiple times, and each response shall have its own notification/arrival/departure/cancel times.	EM	3

FEAT19.6.7	EM004T2	Recording performed activities	The EM tracking element shall allow an operator to record activities performed, along with timestamps for each activity, for each road ranger response on-scene.	EM	3
FEAT19.6.8	TM001D	Storing Road Ranger data to support report generation	SunGuide shall acquire and store the following data that is collected at the beginning of the Road Ranger Service Patrol Vehicle Operator's shift: A.Date B.Shift start time C.Operator name D.Truck number E.Route F.Beginning vehicle mileage This data shall be available to support the generation of reports concerning Road Ranger operations.	RR	3
FEAT19.6.9	TM002D	Data collected at each stop	The following data collected at each stop shall be stored by SunGuide and made available for report generation and reviewing through the SunGuide GUI: A.Dispatch time B.Arrival time C.License number D.State E.Vehicle type F.Direction of travel (NB, SB, EB, WB) G.Mile marker H.How discovered I.Lanes/Shoulder blocked J.Cause for stop K.Services provided L.Depart time M.Comment card (Y/N)	EM	3

FEAT19.6.10	TM002D1	Vehicle type data collected at each stop	The following data collected about the vehicle type at each stop shall be stored and linked to the road ranger report containing the data: a.Passenger b.Pickup or van c.RV or bus d.Single-unit truck e.Tractor trailer f.Motorcycle g.Not Applicable (N/A)	EM	3
FEAT19.6.11	TM002D2	Data collected when Road Ranger discovers event	The following data collected by the Road Ranger about how it was discovered at each stop shall be stored and linked to the road ranger report containing the data: a.Drive up b.Saw and changed route c.Road Ranger dispatch d.FHP dispatch/officer e.Other	EM	3
FEAT19.6.12	TM002D3	Data collected about the cause for the stop	The following data collected about the cause for the stop shall be stored and linked to the road ranger report containing the data:: a.Accident (crash) include FHP Crash Number b.Vehicle fire c.Disabled d.Abandoned e.Debris f.Other	EM	3

FEAT19.6.13	TM002D4	Services provided at each stop	The list of services that were provided at each stop shall be stored and linked to the road ranger report containing some of the following data: a.Extinguish fire b.Absorbent c.Remove debris d.Relocate (to safer location) e.Tire f.Fuel g.Fluids h.Mechanical i.Jump start j.Called wrecker k.Secure Load l.Mobile phone call m.Directions n.Transported o.Blocked lane/traffic control p.Tagged abandoned vehicle u.Other - describe v.No service - occupied w.No service - abandoned	EM	3
FEAT19.6.14	TM002D5	Data collected at the end of each road ranger shift	The following data collected at the end of each road ranger shift shall be stored by SunGuide and linked to the road ranger reporting the data. A.Shift end time B.Ending vehicle mileage	RR	3
FEAT19.6.15	TM003D	Road ranger operator data collected monthly	The road ranger operator data shall be collected weekly and monthly and be able to be exported to Microsoft Excel or other compatible format.	RS	3

FEAT19.6.16	TM006D	Receive road ranger data in XML	SunGuide shall interface with and be able to receive road ranger data using a file or document that is in XML format.	RS	3
FEAT19.6.17	TM012D	Driver interface with service vehicle collection data streams	SunGuide shall provide a driver to interface with different service vehicle collection data streams in accordance with published SunGuide Interface Control Documents.	RR	3
FEAT19.6.18	TM012D1	Driver for D4 RR PC Tablet ICD	SunGuide shall provide a driver to interface with the Xplore's iX104C2 tablet PC through a local area connection (LAN) to upload performance measures data recorded by the device in accordance with the District 4 RR PC Tablet Interface Control Document.	RR	3
FEAT19.6.19	TM019	Interface to D4 RR data collection equipment	SunGuide shall support an interface with a software subsystem that will interface with District 4 road ranger data collection equipment.	RR	3
FEAT19.6.20	S032	Performance measures data collection	The SunGuide software shall support the performance measures data collection of Road Rangers Service Patrols.	RS	3
FEAT19.6.21	TM006W6	Downloaded service patrol data	Service patrol data downloaded after the event shall not overwrite the operator entered date/time for road ranger initial notification but shall fill in any missing data.	EM	3
FEAT19.7		Performance measures		EMPM	2
FEAT19.7.1	TM009D	Calculate and save incident response time	SunGuide shall calculate and save the Response Time for each incident confirmed by the SunGuide operator.	EM	3
FEAT19.7.2	TM009D1	Recording date and time upon initial notification	The date and time that law enforcement or road ranger service was initially notified of a confirmed SunGuide incident shall be recorded and associated with the incident.	EM	3

FEAT19.7.3	TM009D2	Recording arrival time	For each incident confirmed by the SunGuide operator, the arrival time of law enforcement or the road ranger vehicle shall be recorded and associated with the incident.	EM	3
FEAT19.7.4	TM009D3	Response time calculation	SunGuide shall calculate the Response Time for each confirmed incident by subtracting the date/time of initial SunGuide notification of the incident from the date/time that law enforcement or road ranger arrives on scene. Response Time$_{incident ID}$ = t$_{LE/RR Arrives}$ - t$_{initialnotification}$.	EM	3
FEAT19.7.5	TM009D4	Average response time	SunGuide shall calculate the Average Response Time for a period of time or for a group of incidents specified by the SunGuide operator.	EM	3
FEAT19.7.6	TM010D	Incident clearance time	SunGuide shall calculate and save the Incident Clearance time for each incident confirmed by the SunGuide operator .	EM	3
FEAT19.7.7	TM010D1	Date and time when traffic lanes are cleared	The date and time when the SunGuide operator decides that all traffic lanes are cleared shall be recorded and associated with the incident.	EM	3
FEAT19.7.8	TM010D2	Incident clearance time calculation	SunGuide shall calculate the Incident Clearance Time (ICT) by subtracting the date/time that law enforcement or road ranger vehicle arrive on scene from the time that the lanes are cleared. ICT = t$_{lanescleared}$ - t$_{LE/RR Arrives}$	EM	3
FEAT19.7.9	TM010D3	Average incident clearance time	SunGuide shall calculate the Average Incident Clearance Time for a period of time or for a group of incidents specified by the SunGuide operator.	EM	3

FEAT19.7.10	TM006W1	Entering initial notification time	SunGuide graphical operator interface shall provide the ability for the operator to enter the date and time that law enforcement or road ranger was notified of a confirmed SunGuide incident and by what agency by name. This is called Initial Incident Notification Time (tinitialnotification).	EM	3
FEAT19.7.11	TM006W2	Initial notification time associated with incidents	The initial notification time for road ranger service shall be associated with each incident if the data is available from the road ranger service.	EM	3
FEAT19.7.12	TM006W3	Entering arrival time	SunGuide graphical operator interface shall provide the ability for the operator to enter the date and time that a law enforcement or road ranger vehicle arrived on the scene of a SunGuide confirmed incident. This is called the Arrival Time of Law Enforcement/Road Ranger vehicle (tLE/RR Arrives).	EM	3
FEAT19.7.13	TM006W5	Entering lanes cleared time	The SunGuide Graphical User Interface shall allow a SunGuide operator with appropriate permissions to specify the date/time that all traffic lanes resumed free flow operation following the confirmation of an incident by the SunGuide operator. This is called "tlanescleared".	EM	3
FEAT19.8		General		EMPM	2
FEAT19.8.1	EM001	Road ranger performance measures module	The SunGuide software shall include a road ranger performance measures module that interfaces with District service patrol data collection and reporting devices.	RS	3
FEAT20		Scheduled Action System (SAS)		SAS	2.2.2

FEAT20.4	SAS004	Travel Time Message Scheduling	The software shall allow the scheduling of the enabling and disabling of travel time messages.	SAS	6
FEAT20.4.1	SAS004A	Scope of Enable/Disable	The travel time message scheduling shall allow for the invocation of a disable travel times messaging command and an enable travel times messaging command on a per DMS basis as well as a system wide basis.	SAS	6
FEAT20.5	SAS005	Schedules	The software shall allow the user to schedule a series of predefined actions within the system.	SAS	6
FEAT20.5.1	SAS005A	Schedule Parameters	The schedule shall have the following parameters: 1. The start and end time of the schedule shall be a date and time of day 2. The default value of the start time shall be the clock time ending in 0 or 30 minutes immediately after the current system time and the end time will default to one hour after the start time 3. When the start time is adjusted, the end time shall preserve the current duration of the event 4. The duration shall be displayed as a non-editable value near the end time 5. An all day event button shall be displayed near the start time and when clicked shall set the start time to 12:00:00 AM and the end time to 11:59:59 PM 6. The schedule shall allow the user to select the days on the week the schedule should execute when the schedule is active.	SAS	6

FEAT20.6	SAS006	Sequences	The software shall allow for sequences, or a set of actions, to be configured within the schedule configuration	SAS	6
FEAT20.6.1	SAS006A	Available Camera Actions	The software shall support the following actions against a user selected camera: pan for a user specified amount of time, tilt for a user specified amount of time, zoom for a user specified amount of time, and move to a user specified preset.	SAS	6
FEAT20.6.2	SAS006B	Available options for travel time scheduling	The software shall support the following actions for travel time message generation: 1. Enabling or disabling travel time message generation for a single DMS 2. Enabling or disabling travel time message generation for all DMS signs	SAS	6
FEAT20.6.3	SAS006C	Enable/Disable Schedule within a Schedule	The software shall support an action of invoking an enable command and a disable command on a user selected schedule, not including the schedule itself	SAS	6
FEAT20.6.4	SAS006D	Pausing schedule during execution of next item	The software shall support an action of pausing for a specified number of hours, minutes and seconds before performing the next action.	SAS	6
FEAT20.7	SAS007	Schedule Naming	The software shall allow the user to specify a name for the schedule	SAS	6
FEAT20.7.1	SAS007A	Unique Name	The name shall be required to be unique	SAS	6
FEAT20.7.2	SAS007B	Storing Schedule Name	The name shall be able to be modified and not be used as a primary key	SAS	6
FEAT20.7.3	SAS007C	Default Name	The name shall initially default to "New Schedule"	SAS	6

FEAT20.7.3.1	SAS007C1	If default name is in use	If the name "New Schedule" is in use, a space and the number one or the next available whole number will be appending to the default schedule name in order to make the name unique	SAS	6
FEAT20.8	SAS008	Schedule Copying	The software shall allow the user to copy a schedule from an existing schedule	SAS	6
FEAT20.8.1	SAS008A	Copied Schedule Default Naming	The name shall default to the exiting schedule's name appended with a space and the text "Copy"	SAS	6
FEAT20.8.1.1	SAS008A1	If default name is in use	If the default name is in use, a space and the number one or the next available whole number will be appending to the default schedule name in order to make the name unique	SAS	6
FEAT20.9	SAS009	Enable/Disable Schedule	The software shall allow the schedule to be enabled or disabled by the user	SAS	6
FEAT21		Ramp Meter Firmware (RMF)		RMF	
FEAT21.1		General		RMF	
FEAT21.1.1	TM021	Provide ramp metering firmware	The SunGuide system shall provide a ramp metering firmware for controlling traffic flow onto a roadway from an on-ramp.	RMF	RMF 1
FEAT21.1.2	TM001H	Model 170 equipment	The Ramp Meter controller firmware shall control equipment consisting of standard transportation management hardware equivalent to the Model 170 controller.	RMF	RMF 1
FEAT21.1.3	TM002H	68HC11 processor	The Ramp Meter controller firmware shall be developed for the 68HC11 processor.	RMF	RMF 1
FEAT21.1.4	TM003H	Controller firmware support	The Ramp Meter controller firmware shall support Model 170 controller keypad, LED display, indicators, communications input and output functionality.	RMF	RMF 1

FEAT21.1.5	TM001C	Standardized communications	The Ramp Meter controller shall provide standardized communications that conform to the WSDOT ramp metering protocol as described in "170 Communications Protocol:VAX-170-DOC05".	RMF	RMF 1
FEAT21.1.6	TM001O	Common access keypad	The Ramp Meter controller shall allow use of a common access keypad for manual access to firmware parameters and controller operation.	RMF	RMF 1
FEAT21.1.7	TM004O	WsDOT firmware implementation	The Ramp Meter controller front panel shall provide controller metering and data collection status in a manner consistent with the WsDOT Firmware implementation.	RMF	RMF 1
FEAT21.1.8	TM001L	Surveillance functions	The Ramp Meter controller shall provide Surveillance functions.	RMF	RMF 1
FEAT21.1.9	TM002L	Meter traffic flow	The Ramp Meter controller shall meter traffic flow.	RMF	RMF 1
FEAT21.2		Configuration		RMF	
FEAT21.2.1	TM002C	Input source	The source for input to the Ramp Meter controller shall be configurable.	RMF	RMF 1
FEAT21.2.2	TM002O	Pre-defined configurable parameters	The Ramp Meter controller shall accept pre-defined configurable firmware parameters.	RMF	RMF 1
FEAT21.2.3	TM005O	Clock and calendar function	The Ramp Meter controller shall provide a manually configurable Clock and calendar function.	RMF	RMF 1
FEAT21.2.4	TM002L1	Configurable number of lanes	The Ramp Meter controller shall meter a configurable number of lanes up to three lanes.	RMF	RMF 1
FEAT21.3		Firmware parameters		RMF	
FEAT21.3.1	TM002O1	Data collection and RM algorithms	Firmware parameters shall be utilized for data collection and ramp metering algorithms.	RMF	RMF 1

FEAT21.3.2	TM003O	Downloaded or manually set parameters	The Ramp Meter controller shall allow firmware parameters to be downloaded from a central system or manually input from the keypad.	RMF	RMF 1
FEAT21.4		Controller mode		RMF	
FEAT21.4.1	TM001L1	Data collection surveillance services	The Ramp Meter controller shall provide data collection surveillance services in a local mode.	RMF	RMF 1
FEAT21.4.2	TM002L2	Local or central command modes	The Ramp Meter controller shall operate in a local or central command mode.	RMF	RMF 1
FEAT21.4.3	TM002L3	Local mode operation	The Ramp Meter controller local mode shall operate based on local traffic conditions and firmware parameters consistent with the WsDOT implementation.	RMF	RMF 1
FEAT21.4.4	TM002L4	Central command mode	The Ramp Meter controller central command mode shall operate based on algorithms defined by the central system.	RMF	RMF 1
FEAT21.4.5	TM003L	Local mode implementation	The Ramp Meter controller metering algorithms shall be defined for local mode consistent with the WsDOT firmware implementation.	RMF	RMF 1
FEAT21.4.6	TM004L	Metering rates	While in central mode, the Ramp Meter controller shall implement the metering rates sent from the SunGuide software.	RMF	RMF 1
FEAT21.4.7	TM005L	Central command mode operation	The Ramp Meter controller shall allow for manual starting, stopping and modifying the metering from central command.	RMF	RMF 1
FEAT21.4.8	TM006L	Ramp meter controller	The Ramp Meter controller shall meter in local mode when active and disconnected from central command.	RMF	RMF 1
FEAT22		Event Viewer (EV)		EV	3
FEAT22.1		General		EV	3

FEAT22.1.1	SV001	Limited restricted data to authorized users	The SunGuide Event Viewer Web site shall not display identified sensitive data to restricted users (e.g. license plate information, crash data, etc).	EV	3
FEAT22.1.2	SV001B	Event Viewer web site access	Secure access to the SunGuide Event Viewer Web site shall be through the SunGuide Web site.	EV	3
FEAT22.1.3	SV002B	Web site accessible through browsers	The SunGuide Event Viewer Web site shall be accessible through at least the following browsers: Internet Explorer 6 and 7, Firefox, Opera, Netscape, and AOL.	EV	3
FEAT22.1.4	SV004	Session termination	The SunGuide Event Viewer Web site session shall only be terminated through the use of a logout button.	EV	3
FEAT22.1.5	SV005	Data availability	The SunGuide Event Viewer Web site shall make SunGuide data available for access within 30 seconds of when it was entered into SunGuide.	EV	3
FEAT22.1.6	SV006	Refresh intervals	The SunGuide Event Viewer Web site shall refresh automatically at a system configurable interval, with the default set to 60 seconds.	EV	3
FEAT22.1.7	SV001E2	Inactive period	This recently inactive period shall be configurable, with 30 minutes set as the system default.	EV	3
FEAT22.1.8	SV007E	Web site refresh	The SunGuide Event Viewer Web site shall take no more than 2 seconds to refresh the "event list" or "event details" pages.	EV	3
FEAT22.1.9	SV008	Operator accounts	An administrative application shall be provided to set-up operator accounts for the SunGuide Event Viewer Web page application.	EV	3
FEAT22.2		Security		EV	3

FEAT22.2.1	SV002	Cryptographic protocol	The SunGuide Event Viewer Web site shall be secure employing the Secure Sockets Layer cryptographic protocol or the Transport Layer Security cryptographic protocol.	EV	3
FEAT22.2.2	SV001S	Authenticate based on IP address	The SunGuide Event Viewer Web site shall be capable of authenticating operators based on their originating IP address.	EV	3
FEAT22.2.3	SV002S	Operator accounts	Passwords associated with the operator accounts shall be stored in an encrypted format.	EV	3
FEAT22.2.4	SV003	Operator access	The SunGuide Event Viewer Web site shall prompt the operator for a username and password to gain access to the application.	EV	3
FEAT22.3		Event list		EV	3
FEAT22.3.1	SV007	Web site opening page	The opening page after secure login of the SunGuide Event Viewer Web Site shall be an event list page.	EV	3
FEAT22.3.2	SV001E1	Inactive events	The recently inactive events section shall display all the events that were active in the recent past that is a configurable amount of time.	EV	3
FEAT22.3.3	SV001E	Event list sections	The "event list" page shall have three sections: active events with a lane blockage, active events without a lane blockage, and recently inactive events.	EV	3
FEAT22.3.4	SV002E	Active events	The active events section shall display the following information: Record Number / Identifier, the login name of the operator managing the event, creation timestamp, road rangers dispatched and on-scene, event type, location description, and description of blocked lanes.	EV	3

FEAT22.3.5	SV003E	Inactive events information	The inactive events section shall display the following information: Record Number / Identifier, the login name of the operator managing the event, creation timestamp, road rangers dispatched and on-scene, event type, location description, and current status (unresolved, closed, voided, etc.)	EV	3
FEAT22.3.6	SV004E	Event list page	Each section of the events list page shall use a different background color to easily differentiate the lists.	EV	3
FEAT22.3.7	SV005E	Event list record	For each event list record, the operator shall have the ability to select the record and view the "Event Details" page.	EV	3
FEAT22.4		Event details		EV	3
FEAT22.4.1	SV005E1	Event viewer web site	The SunGuide Event Viewer Web site shall provide an "Event Details" page that will display details about a specific event record.	EV	3
FEAT22.4.2	SV005E2	Event details page	The "event details" page shall display the following information if available: event record number / identifier, current event status, record creation time, TMC managing the event, notifying agency, ID of the primary event if the current record is a secondary event, event type, hazmat, fire, rollover, injuries, a list of vehicles involved including color/make/model/state and tag, estimated clearance time, alternate roads, event location, event congestion, lane blockage description, and roadway conditions.	EV	3

FEAT22.4.3	SV005E3	Road ranger information	The "event details" page shall display road ranger related information if available that at a minimum includes if available an indication that road ranger was dispatched, on-scene arrival time, departure time, and activities performed.	EV	3
FEAT22.4.4	SV005E4	Agency response information	The "event details" page shall display agency response information if available, including the name of the agency, whether or not they were notified by the TMC, and the notification, on-scene, and departed timestamps.	EV	3
FEAT22.4.5	SV005E5	Chronology summary	The "event details" page shall include a chronology summary section, that will display in chronological order the status, responder, road ranger, location, blockage, congestion, and DMS usage data entries.	EV	3
FEAT22.4.6	SV006E	Navigation link	A navigation link to the "event list" page shall be provided on the "event details" page.	EV	3
FEAT22.5		Secondary Events		EV	3
FEAT22.5.1	SV008E	Primary event association	Secondary events shall be associated with a primary event.	EV	3
FEAT22.5.2	SV008E1	Secondary event link	A secondary event shall have a link to the "event details" screen of the primary event that the secondary event is associated with.	EV	3
FEAT23		Incident Detection System (IDS)		IDS	3
FEAT23.1		CitiLog data		IDS	3
FEAT23.1.1	TD008	Display traffic data	SunGuide shall be able to log and display traffic data collected by CitiLog Video Detection Equipment devices.	IDS	3
FEAT23.2		Alert notification		IDS	3

FEAT23.2.1	TD013D	Alert notification	SunGuide shall supply alert notification for VisioPaD/Citilog data collected indicating the CCTV that detected the incident, and the timestamp when it was detected.	IDS	3
FEAT23.2.2	TM007D7	Alarm/incident log	SunGuide shall log the time an alarm is generated by TSS or the operator elects to create a new incident.	IDS	3
FEAT23.2.3	SB001	Safety Barrier Alerts	SunGuide shall allow an operator to generate an event from a Safety Barrier alert.	IDS	5.1.1
FEAT23.2.3.1	SB001A	Alert Triggered	SunGuide shall supply alert notification for Safety Barrier Alerts indicating the Safety Barrier triggered.	IDS	5.1.1
FEAT23.2.3.2	SB001B	Alert information	The alert shall provide a control to access status information for the safety barrier reporting the alert.	IDS	5.1.1
FEAT23.2.3.3	SB001C	Alert resolution	The alert shall provide a method for the user to resolve the Safety Barrier Alert.	IDS	5.1.1
FEAT23.2.3.4	SB001D	Safety Barrier Event Details	Events generated through this process shall be assigned a notifying contact specified in the system configuration, shall be assigned a default event type specified in the system configuration, and shall be assigned the nearest Event Management location to the configured safety barrier location.	IDS	5.1.1
FEAT24		Automatic Vehicle Location (AVL)		AVL	3
FEAT24.1		General		AVL	3
FEAT24.1.1	AV006L	Source location configuration	The source location of the AVL data source shall be configurable using the SunGuide Administration function.	AVL	3

FEAT24.1.3	AV004	Stored position data	The AVL subsystem shall store vehicle position data by vehicle so that the vehicle's track can be replayed on the SunGuide map.	AVL	3
FEAT24.1.4	AV009T	Maintaining position data	Chronological position data shall be maintained for each vehicle reporting position for a configurable number of days subject to data storage capacity on the hard disk(s).	AVL	3
FEAT24.1.5	AV009T2	Logging location data	All vehicle location status data received from the AVL subsystem shall be logged to the database for reporting purposes.	AVL	3
FEAT24.1.6	AV004T2	External reporting function	SunGuide shall make available the report data selected by the operator so that a reporting function external to SunGuide can generate the desired reports and print them.	AVL	3
FEAT24.1.7	AV008	Adding/removing vehicles	Admin Editor functions shall be provided to allow administrators to add and remove vehicles from the AVL tracking system.	AVL	3
FEAT24.1.8	S034	AVL data displayed in icon form	The SunGuide software shall support the acquisition of AVL data and the display of an analysis of the data in the form of icons on the SunGuide map.	AVL	3
FEAT24.2		Vehicle list		AVL	3
FEAT24.2.1	EM018G	Tabular listing	A Vehicle List window shall be provided that displays a tabular listing of all the AVL-enabled vehicles.	AVL	3
FEAT24.2.2	EM018G2	List information	The tabular list shall include the following information for each vehicle: vehicle ID, status, location, speed, driver, beat, stopped time, incident ID (if available).	AVL	3
FEAT24.3		Vehicle information		AVL	3

FEAT24.3.1	AV001	Position coordinates	The AVL subsystem shall acquire vehicle information containing position coordinates in XML format originated external to SunGuide.	AVL	3
FEAT24.3.2	AV004L	Required information	As a minimum, the XML data file shall contain the following information: vehicle ID; latitude in decimal degrees; longitude in decimal degrees; vehicle heading; vehicle speed in mph; type of event vehicle is responding to; event data (classification) location the vehicle is traveling to; area of responsibility for the vehicle (zone ID or area ID); date-time stamp.	AVL	3
FEAT24.3.3	AV002	Vehicle position display	The AVL subsystem shall display vehicle position for vehicles logged on using icons on the SunGuide Map.	AVL	3
FEAT24.3.4	AV009V	Vehicle map representation	Each vehicle shall be represented on the map with an icon, with the icon placed at the last reported geo-coordinate location.	AVL	3
FEAT24.3.5	AV003	Vehicle status display	AVL subsystem shall display vehicle status that is provided by the AVL data feed.	AVL	3
FEAT24.3.6	AV006V1	Summary data information	The summary data shall consist of truck number, beat, driver, radio/telephone number, truck position (roadway, direction, reference location, proximity to reference location), speed and status (availability).	AVL	3
FEAT24.3.7	AV007V	Vehicle status	Vehicle status shall be provided to the extent provided by the received vehicle data file.	AVL	3

FEAT24.3.8	AV007V1	Vehicle status information	Vehicle Status shall include at a minimum: vehicle ID, heading, speed, destination, event type, location in lat/long coordinates, stopped time, amount of time moving since last stop, and the last date-timestamp that position data was received.	AVL	3
FEAT24.3.9	AV010V1	Minimum status values	SunGuide shall support at a minimum the following four vehicle status values: patrolling, dispatched, assisting, and out-of-service.	AVL	3
FEAT24.3.10	AV010V2	Defined values	SunGuide shall allow at least four values to be defined for "Availability Status".	AVL	3
FEAT24.3.11	AV011V2	Displayed vehicle information	The Detailed Vehicle Status window shall display the following information about the most recently selected AVL vehicle icon: Vehicle ID, speed, heading, location, status, stopped time, amount of time moving since last stop, operator, beat, nearest reference location (milepost), distance to nearest reference location, and, if available, the following information about the incident the vehicle is responding to: Incident ID, incident severity, incident type, incident description.	AVL	3
FEAT24.3.12	AV002T4	Vehicle stop time	If vehicle is stopped, displayed status data shall include the amount of time that the truck has been stopped.	AVL	3
FEAT24.3.13	AV002T5	Vehicle moving time	If vehicle is moving, displayed status data shall include the amount of time that the truck has been moving.	AVL	3
FEAT24.3.14	AV009T3	Logging related data	The following related data shall be logged, if available: Beat, Driver, reference location, proximity to reference location, status, responding incident ID.	AVL	3

FEAT24.3.15	AV008T	Storing location and history	The AVL subsystem shall store vehicle location and speed history in the SunGuide Oracle database.	AVL	3
FEAT24.3.16	AV009	New status updates	The AVL subsystem shall update the vehicle status each time a new status is reported for the vehicle.	AVL	3
FEAT24.3.17	AV007T	Non-active status icon	If a non-active status (gas, meal, inspection, etc.) is received in the AVL feed, the AVL icon shall remain normal.	AVL	3
FEAT24.3.18	AV002T6	Historical position tracks	Historical vehicle positions (tracks) shall be indicated by "+" symbols or similar leading away from the current vehicle position.	AVL	4
FEAT24.3.19	AV002T7	Hide track display	There shall be an option to hide track display that applies to the track of the vehicle.	AVL	4
FEAT24.4		Data acquisition component		AVL	3
FEAT24.4.1	AV001L	Data file	The AVL data acquisition component shall be able to acquire a data file in XML format either from a URL or in a shared directory or by FTP pull.	AVL	3
FEAT24.4.2	AV002L	Vehicle position	If multiple files are acquired containing more than one position for a vehicle, the acquisition component shall order the position reports by vehicle chronologically so the most currently reported position is last in the list.	AVL	3
FEAT24.4.3	AV003L	Data format	If necessary, the acquisition component shall format the received data in accordance with the AVL Data Interface Specification.	AVL	3

FEAT24.4.4	AV004L1	Geocoordinate reporting	Geocoordinates are expected to be reported to 3 decimal places at a minimum, if they are not, the acquisition component shall locate the closest road to the reported position and fill in the coordinates accordingly.	AVL	3
FEAT24.5		Interfaces		AVL	3
FEAT24.5.1	AV001L1	Tablet application	The AVL subsystem shall interface with the road ranger tablet application developed by District 4, and use the reported status as an input in decision points where required.	AVL	3
FEAT24.5.2	AV001L2	PC tablet devices	The AVL system shall be compatible with the PC tablet devices used by the District 4 road ranger tablet application.	AVL	3
FEAT24.6		Position reports		AVL	3
FEAT24.6.1	AV004L2	Corrected reports	Position reports that are corrected by SunGuide shall be flagged in the data log and indicated to the operator.	AVL	3
FEAT24.6.2	AV005L	Updates	The icon status and position shall be updated upon receipt of new data.	AVL	3
FEAT24.6.3	AV003V	Vehicle icon	The icon assigned by the administrator shall be used to represent vehicles for which position reports are received.	AVL	3
FEAT24.6.5	AV007V2	No reported data	When there is no data in the position or status report for a particular field, a blank for the missing field will be displayed.	AVL	3
FEAT24.6.6	AV014A	Bulk Updates	AVL shall log vehicle positions messages sent in bulk directly to the database without generating updates to the Operator Map.	AVL	6
FEAT24.7		Geospatial data		AVL	3

FEAT24.7.1	AV007L2	Coordinate conversion	The AVL subsystem shall convert Latitude and Longitude coordinates into a text description of the Road the vehicle is on and if within 50 yards of a cross street, provide the name of the cross street as well.	AVL	3
FEAT24.8		Historical track		AVL	3
FEAT24.8.1	AV002T	Display of past positions	The operator shall be able to turn on a "breadcrumb trail" display on the main SunGuide map which displays a system wide configurable number of past positions of the vehicle.	AVL	4.2
FEAT24.8.2	AV002T1	Trail feature enabling	It shall be possible to enable and disable the trail feature on a per-vehicle basis.	AVL	3
FEAT24.8.3	AV002T2	Display track feature	If the operator leaves "display track" on for a particular vehicle, the number of symbols representing the track shall follow the vehicle's position on the map with the oldest track symbol being erased as the next to current one is displayed.	AVL	3
FEAT24.8.4	AV002T3	Vehicle speed	If a vehicle speed is "stopped" or "0", no more than one track icon shall be displayed.	AVL	3
FEAT24.8.5	AV003T1	Replay options	The operator may designate a vehicle ID, a span of time in date and time, and a replay rate when replaying vehicle track information.	AVL	3
FEAT24.8.6	AV003T2	Replay rates	The operator may select to replay the vehicle's position in real time or faster than real time at a rate specified by the operator.	AVL	3
FEAT24.8.7	AV003T3	Deleting historical tracks	The operator shall have the ability to delete from the display all of the historical tracks for a particular vehicle.	AVL	3
FEAT24.9		Geo-fences		AVL	3

FEAT24.9.1	AV011	Manage assets	The AVL subsystem shall provide the capability to manage road ranger assets according to geographic areas that define their patrol areas called geo-fences.	AVL	3
FEAT24.9.2	AV001V	Managing contract responsibilities	SunGuide AVL subsystem shall support management of road ranger contract responsibilities through geo-fences using the SunGuide map and vehicle position reports.	AVL	3
FEAT24.9.3	AV001V1	Leaving area notification	If a vehicle leaves the Geo-fenced area without justification, the system shall provide a visual notification to the operator	AVL	4.2
FEAT24.9.4	AV012V1	Specified beat	If a vehicle is assigned to a beat which has beat-specific geo-fences defined, then the AVL system shall use only the geo-fences for the specified beat to assess whether or not a given vehicle has left its beat zone.	AVL	3
FEAT24.9.5	AV013V	Defining geo-fences	The AVL system shall provide a Graphical User Interface to define the geo-fences, both system wide geo-fences and beat specific geo-fences.	AVL	3
FEAT24.10	AV014B	Bulk Update for RRXML Driver	The RRXML driver will support a method for sending multiple position updates as a single request.	AVL	6
FEAT24.11	AV014C	Logging Alerts	The software shall log stop alerts and geofence alerts including operator responses to the database	AVL	6
FEAT25		511		511	3
FEAT25.1		General		511	3
FEAT25.1.1	DF200F	Reporting routes	SunGuide shall have the ability to manage a minimum of 100 Central Florida 511 reporting routes and 150 FIHS 511 reporting routes.	511	3

FEAT25.1.2	DF204R6	Changes	Changes to any portion of a Link Report, Link Summary, or Drive-Time Summary shall cause a new composite file to be sent to the 511 telephone system.	511	3
FEAT25.1.3	DF208R	Editing summations	The SunGuide shall allow editing a Reporting Segment's logical segment summations.	511	3
FEAT25.1.5	ID207G	Adding new roads	If the newly added or modified locations exist on a road that was not originally listed in the FIHS and Central Florida 511 routes, then the SunGuide shall automatically add the new road to the 511 route list and inform the operator that it has done so.	511	3
FEAT25.1.6	ID228	Adding reporting segments	Upon adding to or modifying 511 reporting segments, the SunGuide shall make available pre-recorded data on the new or modified 511 Reporting Segments within one minute after the system has been restarted.	511	3
FEAT25.1.7	ID210G	Map of routes	The Operator Interface shall provide a map of the Central Florida area that visually depicts the 511 reporting routes.	511	3
FEAT25.1.8	ID203	Voice recording formats	All voice recordings, whether pre-recorded or custom-made, shall be recorded via SunGuide - 511 and stored in .WAV file format via the Operator Interface.	511	3
FEAT25.1.9	ID201V	CF and FIHS recordings	The SunGuide shall treat Central Florida 511 reporting roadways and FIHS 511 reporting roadways similarly, being able to provide one recording at any given time for both Central Florida 511 routes and for FIHS 511 routes.	511	3

FEAT25.1.10	ID201V1	Human voice messages	The system shall disseminate a recorded human voice that will report current traffic conditions using complete sentences.	511	3
FEAT25.2		Scenarios		511	3
FEAT25.2.1	DF207	Data evaluation	SunGuide shall be able to evaluate data collected from both directions of travel as part of a single Scenario.	511	3
FEAT25.2.2	ID205G	Display of scenarios	The Operator Interface shall display a list of current pre-recorded Scenarios that can be selected and associated with a roadway segment or other FIHS defined facility.	511	3
FEAT25.2.3	ID212G	Operator override messages	At any time, an operator shall have the ability to disable reporting of the automatically selected scenario(s) for a 511 link report or link summary report and to record an "override" message using the Incident Link Report recording feature.	511	3
FEAT25.2.4	ID201	Scenario minimums	The SunGuide shall allow a minimum of 30 pre-recorded Scenarios for Central Florida 511 Reporting Segments.	511	3
FEAT25.2.5	ID200V	Pre-recorded file selection	When the SunGuide determines that the conditions fit a particular scenario, then the system shall select the pre-recorded .WAV file associated with that scenario.	511	3
FEAT25.2.6	ID206G1	Display event details	The 511 Operator Interface will display the event details that make the selected 511 Scenario appropriate.	511	3
FEAT25.2.7	ID200V1	Definition of scenario	A Scenario shall be defined as an unique combination of locations, delays and/or conditions for specific Central Florida limited-access or principal arterial roadways.	511	3
FEAT25.3		.WAV files		511	3

FEAT25.3.1	WS014	Operator interface	The SunGuide Operator Interface shall be capable of recording and previewing .WAV files.	511	3
FEAT25.3.2	ID205G1	Event report approval	When an event report is entered or updated in SunGuide and associated with a pre-recorded 511 scenario .WAV file, the SunGuide shall display the .WAV file text to the operator for review and approval before the .WAV file is sent to the 511 telephone system.	511	3
FEAT25.3.3	ID205G2	Option to record incident link report	If the operator rejects the selected recording, the automatically selected scenario .wav files for the reporting segment shall be disabled, and the operator shall have an option to record an Incident Link Report describing current conditions.	511	3
FEAT25.3.4	ID201G	No pre-recorded file	If no pre-recorded .WAV file is associated with a given scenario, then the operator shall be alerted via the Operator Interface to record a message in a .WAV file format.	511	3
FEAT25.3.5	ID202V	Pre-recorded scenario .WAV file	When the SunGuide selects a prerecorded Scenario for a given Reporting Segment, the associated .WAV file shall be shared with the Statewide 511-telephone services, and therein associated with that 511 location.	511	3
FEAT25.3.7	ID222	.WAV file sharing	The SunGuide's interface with the Statewide 511-telephone service shall adhere to an ICD for sharing selected .WAV files that the 511-telephone services will use to report current road conditions.	511	3
FEAT25.3.8	ID209G	Operator wav files	SunGuide shall allow the SunGuide operator to record and preview wav files recorded for the 511 system, whether pre-recorded (canned) or custom-made.	511	3

FEAT25.3.9	ID201V2	.WAV file selection	SunGuide shall provide selected .WAV files to the Statewide 511 service within one minute of their being recorded.	511	3
FEAT25.3.10	ID203G	Floodgate messages	The Operator Interface shall provide the ability to add, remove, and preview Floodgate Messages (.WAV files).	511	3
FEAT25.3.11	ID203G1	Special floodgate message	SunGuide shall insert the floodgate voice recording into the 511 reports table of .WAV files, designating it as a special floodgate message.	511	3
FEAT25.3.12	ID203G4	.WAV file availability	If a .WAV file has been recorded by an operator using the Operator Interface, a second level of the 511-telephone recording .WAV file hierarchy shall be available to the operator for the entry of a Special Floodgate Message relevant to a roadway facility, section of roadway facility, or specific 511 Reporting Segment.	511	3
FEAT25.3.13	ID203G5	Operator interface abilities	The Operator Interface shall also provide the ability to add/modify, remove, and preview floodgate messages (.WAV files) relevant to an entire roadway facility (played to all users interested in 511 event reports along the facility). As described above, these messages will be played to appropriate users after they have selected the roadway in which they are interested.	511	3
FEAT25.3.14	ID204G	Operator scenario recordings	A SunGuide operator with appropriate permissions shall be able to record a 511 Scenario in a .WAV file format and associate the sound file with a 511 Reporting Segment.	511	3

FEAT25.3.15	ID204G1	Managing pre-recorded scenarios	The SunGuide shall have the ability to manage at least 1000 pre-recorded Scenario .WAV files.	511	3
FEAT25.3.16	ID204G2	Ability to listen	The Operator Interface shall provide the ability to listen to the pre-recorded .WAV file associated with the selected 511 Scenario.	511	3
FEAT25.4		Messages		511	3
FEAT25.4.1	DF206	Traveler information	The traveler information contained in the 511 messages may include, but shall not be limited to: generalized conditions and/or traffic flows, travel time information, specific information about non-recurring events (accidents, constructions, etc.), and possible alternative route information (when appropriate). Speed reduction events shall not be carried on the 511 system.	511	3
FEAT25.4.2	ID202G	Selected message availability	The Operator Interface shall provide a list of selected 511 messages that the operator can select from, as well as the "triggers" for each of these messages.	511	3
FEAT25.4.3	ID214G	Operating recording prompts	If an incident/event, significant weather condition, or any other abnormal traffic-related conditions occurs on a particular FIHS 511 Reporting Segment then the operator shall be prompted via the Operator Interface to record a custom message for the reporting segment.	511	3
FEAT25.4.4	ID211G1	Operator messages	No message shall be associated with such a 511 Reporting Segment until the operator creates a message.	511	3

FEAT25.4.5	ID211G	Operator alerts	If no 511 scenario message is found and the SunGuide operator does not create either the appropriate pre-recorded scenario message or a custom Incident Link Report message, SunGuide shall send additional alerts to operators until a message is recorded.	511	3
FEAT25.4.6	ID215	Operator outgoing recording prompts	If an incident/event, significant weather condition, or any other abnormal traffic-related conditions occurs on a particular Central Florida 511 Reporting Segment Route, the operator shall be prompted via the Operator Interface to record a custom outgoing message.	511	3
FEAT25.4.7	ID200G	Override message ability	The operator interface shall provide the ability to disable reporting of automatically-selected scenario messages, and to record "override" messages using the Incident Link Report recording feature.	511	3
FEAT25.4.9	ID203G2	Maximum length	The maximum length for an event report or WAV file shall be 60 seconds.	511	3
FEAT25.4.10	ID203V	Specially recorded messages	SunGuide shall replace the default message with a specially recorded message when it is available.	511	3
FEAT25.4.11	ID204G3	Indicating override messages	If a 511 Reporting Segment has been "overriden" by disabling reporting of automatically-selected scenarios, the Operator Interface shall indicate that the 511 Scenario report has been disabled.	511	3
FEAT25.4.12	ID204G4	Hear or read incident link report	For 511 Reporting Segments with an "override" Incident Link Report message, the Operator Interface shall provide the ability to either hear or read a text version of the Incident Link Report message.	511	3

FEAT25.4.13	ID206G	Display message name	The 511 Operator Interface shall display the name of the message that is currently in use for each 511 Reporting Segment. Each of the 511 Reporting Segments shall display the name of the 511 message that is currently in use.	511	3
FEAT25.5		Reports		511	3
FEAT25.5.1	DF200R4	Event reports	Travel time information shall be provided to the 511-telephone services as event reports, when unusual conditions exist.	511	3
FEAT25.5.2	DF201R	Travel time reports	SunGuide shall generate three types of travel time reports for Central Florida roads covered by the 511 system: Link Reports, Link Summaries, and Drive-Time Comparisons.	511	3
FEAT25.5.3	DF201R1	Announcements	In Link Reports, travel times in the northbound or eastbound direction shall be announced first (depending on the bearing of the route), followed by the southbound or the westbound direction.	511	3
FEAT25.5.4	DF202R5	Pre-recorded message storage	Point-to-Point travel time reports shall be pre-recorded and stored in a library for selection by the SunGuide operator.	511	3
FEAT25.5.5	DF204R	Utilization	Incident Link Reports shall be utilized in the Link Reports and Link Summaries, but not Drive-Time Summaries.	511	3
FEAT25.5.6	DF204R2	Management review	Except for one "default" Incident Link reports per 511 reporting segment, operator-recorded Incident Link Reports shall be saved for management review but shall not be "reusable" once they are removed from the 511 telephone system.	511	3

FEAT25.5.7	DF204R3	Optional inclusion	Incident Link Reports shall be optionally included in the Central Florida 511 messages.	511	3
FEAT25.5.8	DF204R4	Creation	Upon operator approval, Incident Link Reports shall be created and sent to the 511 telephone system.	511	3
FEAT25.5.9	DF204R5	.WAV file creation	For each Link Report and Link Summary SunGuide shall assemble and fuse the applicable Incident Link Reports and travel time reports to create a single .WAV file for sending to the 511 telephone system.	511	3
FEAT25.5.10	ID208G	Entering incidents	When an incident that will be sent to the 511 telephone system is entered into SunGuide, operators shall be prompted to describe an Incident Link Report or update the Incident Link Report for the link in question.	511	3
FEAT25.5.11	ID208G1	Reporting links	There shall be only one associated Incident Link Report for each reporting link, describing all high-priority incidents in both directions of travel.	511	3
FEAT25.5.12	DF227	Link report breakdown	Roads in Central Florida shall be broken down into between one (e.g., SR 520) and four (e.g., I-4) Link Reports for the purpose of reporting travel times.	511	3
FEAT25.5.13	DF205R	Travel time inclusion	Link Reports shall include travel times for both directions of traffic.	511	3
FEAT25.5.14	DF205R1	Road segments	Link Reports shall have a mid point in the road segment for reporting travel times.	511	3
FEAT25.5.15	DF205R2	Select roads	Link Reports for select roads designated by FDOT shall not have mid-points.	511	3
FEAT25.5.16	DF206R	Link summaries	Link summaries shall report current travel times for in one direction for links within central Florida that do not have midpoints.	511	3

FEAT25.5.17	DF206R1	No incident announcements	If there are no incidents on the segment, Link Summaries shall be announced as follows:[Incident Link Report], Going [North | South | East | West],Estimated travel time from Start Point to End Point is X minutes.	511	3
FEAT25.5.18	DF206R2	Announcement directions	For each road, Incident Link Reports shall be announced from south to north or from west to east. Note that each Incident Link Report describes incidents in both directions of travel.	511	3
FEAT25.5.19	DF207R	Up to 42 reports between 7 points	There shall be up to 42 (forty-two) Drive-Time Comparison reports on the 511 system, between 7 configurable points (for example, between Downtown Orlando and the Orlando International Airport).	511	3
FEAT25.5.20	DF207R1	Select road reporting	The Drive-Time Comparison reports will report travel times on select roads in Central Florida.	511	3
FEAT25.5.22	DF207R3	Drive-time comparison report structure	A Drive-Time Comparison report shall be announced as follows: Current travel time on [Alternate Route 1 Description] to [Destination Point] is X minutes, On [Alternate Route 2 Description] to [Destination Point] is Y minutes, ... On [Alternate Route N Description] to [Destination Point] is Z minutes."	511	3
FEAT25.5.24	ID202G1	Pre-recorded report information	The pre-recorded reports shall only contain generalized conditions and/or traffic flows and travel times.	511	3
FEAT25.6		Drive-time comparisons		511	3

FEAT25.6.1	DF226	Applicability	Drive time comparisons (presenting drive times for two or more routes between the same two points) shall apply only to Central Florida road segments.	511	3
FEAT25.6.2	DF200R	Comparison report	A summary comparison report shall be able to compare a travel corridor, including multiple roadway links, and more than one roadway in the comparison.	511	3
FEAT25.6.3	DF200R1	Comparison information	Summary drive-time comparisons shall include information concerning one direction of travel - from a common origin (i.e. "From" point) to a common destination (i.e. "To" point).	511	3
FEAT25.6.4	ID213G	Indicate availability of travel time scenarios	The operator interface shall allow an operator with appropriate permissions to flag or other wise indicate whether travel time scenarios are to be made available to the 511 telephone service for a Link Report, Link Summary, or Drive-Time Comparison Route.	511	3
FEAT25.6.5	DF208R1	Configuration changes	Only a system administrator with appropriate permissions shall have the ability to change the configuration to create, edit, or delete drive-time comparison routes.	511	3
FEAT25.6.6	ID224	Summary report minimums	The SunGuide shall have the capability to provide reports on up to a minimum of 42 (forty-two) drive-time comparisons.	511	3
FEAT25.6.7	DF200R2	Comparisons available with appropriate permissions	Summary drive-time comparison and selected segments shall be available using the 511 telephone service as designated by the SunGuide operator with appropriate permissions.	511	3

FEAT25.6.8	DF201R5	Report times for alternate routes	Drive-Time Comparisons(a.k.a drive-time summaries, a.k.a summary drive-time comparisons) shall report travel times for two or more alternate routes between a common origin (i.e. "From" point) to a common destination (i.e. "To" point) on multiple roadways.	511	3
FEAT25.7		Travel times		511	3
FEAT25.7.1	DF201R2	Reporting increments	All travel times reported on 511 shall be rounded to 5-minute increments (e.g., 5 minutes, 10 minutes, 15 minutes) for reporting on 511.	511	3
FEAT25.7.2	DF201R4	Changing messages	Travel time messages shall not change until they cross the next five minute threshold for a minimum detection period, n (default = three) minutes. This shall ensure that the travel times do not change more than once per n minutes.	511	3
FEAT25.7.3	DF202R	Report posting	Travel time reports shall be formulated and posted automatically to the live 511 system, without operator intervention.	511	3

FEAT25.7.4	DF202R1	Upper Bound time	On all reports that include a travel time, an "upper bound" travel time shall be enforced. When the forecast average travel time exceeds the upper bound, the system shall continue to create travel times, but the travel time message shall indicate that estimated travel times are in excess of [upper bound travel time] minutes. For example: Going [North | East],Estimated travel time from Route A to Route B is in excess of X minutes, Going [South | West], Estimated travel time from Route B to Route A is in excess of Y minutes.	511	3
FEAT25.7.5	DF202R3	Unavailability messages	When the travel time is unknown or unavailable, the system shall play a message announcing that no travel times are available for the segment in question.	511	3
FEAT25.7.6	DF202R4	Automatic updates	Travel time reports shall always update themselves automatically as conditions change.	511	3
FEAT25.7.7	DF205R3	No mid point no incident announcements	If a Link Report has a mid point and there are no incidents on the segment, travel times shall be announced as follows: Going [North | East], Estimated travel time from Start Point to Mid Point is X minutes from Mid Point to End Point is Y minutes, Going [South | West], Estimated travel time from End Point to Mid Point is X minutes from Mid Point to Start Point is Y minutes.	511	3

FEAT25.7.8	DF205R4	Mid point no incident announcement	If a Link Report does not have a mid point and there are no incidents on the segment, travel times shall be announced as follows: Going [North | East], Estimated travel time from Start Point to End Point is X minute. Going [South | West], Estimated travel time from End Point to Start Point is Y minutes.	511	3
FEAT25.7.9	DF205R5	Mid point incident announcements	If a Link Report has a mid point and there is one or more incidents on the segment, travel times shall be announced as follows. [Incident Link Report] Going [North | East], Estimated travel time from Start Point to Mid Point is X minutes from Mid Point to End Point is Y minutes. Going [South | West], Estimated travel time from End Point to Mid Point is X minutes from Mid Point to Start Point is Y minutes.	511	3
FEAT25.7.10	DF205R6	No mid point incident announcements	If a Link Report does not have a mid point and there is one or more incidents on the segment, travel times shall be announced as follows: [Incident Link Report] Going [North | East], Estimated travel time from Start Point to End Point is X minutes Going [South | West], Estimated travel time from End Point to Start Point is Y minutes.	511	3

FEAT25.7.11	DF202R2	Lower bound travel times	On all travel time reports, a "lower bound" travel time shall be enforced for each segment reported. No lower travel times shall be reported for that segment. If the current travel time falls short of the lower bound, then the lower bound shall be reported as the travel time for that segment.	511	3
FEAT26		Event Management (EM)		EM	3
FEAT26.1		General		EM	3
FEAT26.1.1	TM009W	Event entry screen	The SunGuide GUI incident management event entry screen shall provide a field for the operator to enter the ID of an event that is currently open or has been closed within the last hour that is considered to be a primary event causing the event being created or edited.	EM	3
FEAT26.1.2	EM006G2	Lane designation	It shall be possible to designate a lane type as: Mainlane HOV On Ramp Off Ramp On Off Lane Shoulder C/D HOT (High Occupancy Toll).	EM	3
FEAT26.1.3	EM010G1	Change event type	Operator shall be able to change event type at any time and the change will be time and date stamped in database.	EM	3
FEAT26.1.4	EM007T	Track queue length	SunGuide shall be able to track queue lengths based on operator data entry being driven by CCTV images or VDS detector data.	EM	3

FEAT26.1.5	WS004A	Quality assurance permissions	Operator permissions shall include a Quality Assurance category for operators designated to be able to edit data fields for quality control purposes.	EM	3
FEAT26.1.6	EM028	EM Location Publish Flag	Every EM locations shall have a configurable setting indicating whether or not the location should be published.	EM	5
FEAT26.1.6.1	EM028A	Not Publishable Notification in Event	When an event is placed at a location that cannot be published, the operator shall be notified	GUI	5
FEAT26.1.6.2	EM028B	Not Publishable Notification in Response Plan	When a response plan is created for an event that is assigned a location that cannot be published, the operator shall be notified	GUI	5
FEAT26.2		Manage events		EM	3
FEAT26.2.1	EM001D1	Retain information	SunGuide shall retain event information that had an associated vehicle license tag.	EM	3

FEAT26.2.2	EM004T3	Indicating activities performed	The tracking element shall allow the operator to indicate the following activities performed for each service call and the time performed: a.Extinguish fire b.Absorbent c.Remove debris d.Relocate (to safer location) e.Tire f.Fuel g.Fluids h.Mechanical i.Jump start j.Called wrecker k.Secure load l.Mobile phone call m.Directions n.Transported o.Blocked lane/traffic control p.Tagged abandoned vehicle q.Other - describe r.No service - occupied s.No service - abandoned	EM	3
FEAT26.2.3	EM005T3	Agency personnel list	A drop down box or a pop-up window shall be available that provides a list of agency personnel that is editable by an operator with appropriate permission to allow the SunGuide operator to select the name of the person they spoke with.	EM	3
FEAT26.2.4	AV007L	Vehicle dispatch	An operator shall be able to right-click on a vehicle to dispatch it to a new or existing event.	EM	3

FEAT26.2.5	AV007L1	New events	In the case of new events, the operator will be prompted to enter the required information for the new event.	EM	3
FEAT26.2.6	EM030A	Construction Event Type	EM shall have an event type of "Construction"	EM	6
FEAT26.2.7	EM030B	Amber Alert Event Type	EM shall have an event type of "Amber Alert"	EM	6
FEAT26.2.8	EM030C	Leo Alert Event Type	EM shall have an event type of "Leo Alert"	EM	6
FEAT26.2.9	EM030D	Silver Alert Event Type	EM shall have an event type of "Silver Alert"	EM	6
FEAT26.3		Incident data		EM	3
FEAT26.3.1	EM005D	Received/entered data	Incident data shall be received from mobile units and entered into the database.	EM	3
FEAT26.3.2	EM005D1	Data inclusion	Incident data shall include items such as types of vehicles involved, assistances rendered, Method notified, etc.	EM	3
FEAT26.3.3	TM007D12	Notification/confirmation logs	SunGuide shall log the time when the first event participant is notified and subtract it from the time the event was first confirmed.	EM	3
FEAT26.3.4	TM007D13	Time stamps	SunGuide shall time stamp whenever a participant is notified as indicated by the operator in the Event Participants Dialog menu selection.	EM	3
FEAT26.3.5	TM007D8	Event log	SunGuide shall log the time an event was either confirmed or it was indicated to be a false alarm.	EM	3
FEAT26.3.6	TM007D9	Calculated response time	SunGuide shall calculate the response time for each event by subtracting the time an event was confirmed or indicated as false alarm from the time it was generated.	EM	3
FEAT26.3.7	TB001A	Amber alert	SunGuide shall provide an incident type called "Amber Alert" that will be associated with a DMS message template for the Amber Alert Message.	EM	3

FEAT26.3.8	DF006F3	Location has optional city, county, and metro area	SunGuide Event Location shall include the optional entry of city, county and metro area.	EM	4
FEAT26.4		Lane configuration		EM	3
FEAT26.4.1	EM007G3	Adding lanes	The SunGuide GUI shall allow the operator to add a lane anywhere in the existing lane configuration.	EM	3
FEAT26.4.2	EM007G4	Editable sequence	The sequence in which the lane types appear shall be editable by the operator.	EM	3
FEAT26.5		Response plans		EM	3
FEAT26.5.1	TM007D10	Requests and activation	SunGuide shall record the time a Response Plan was requested for an event and the time a response plan was activated for the event.	EM	3
FEAT26.5.2	TM007D11	Confirmation/activation logs	SunGuide shall log the time from when an event was confirmed to when a Response Plan was activated.	EM	3
FEAT26.5.3	TM005R12	Configure Response Plans	SunGuide shall provide the ability to edit, define, and remove predefined response plans	EM	5
FEAT26.6		Responder audit		EM	3
FEAT26.6.1	EM011	Capability to edit data	The responder audit function shall provide the capability to add, delete, or edit responder agency timeline, vehicle response timeline, and responder activity data in the SunGuide database.	EM	3
FEAT26.6.2	EM001U	Logging operator changes	All operator changes shall be logged in the database for traceability, including the new value, previous value, the user who made the change, and the time the change was made.	EM	3
FEAT26.6.3	EM020G1	Modify agency notification	The operator shall be able to add, delete, or edit agency notification, on-scene, and departure times.	EM	3

FEAT26.6.4	EM020G3	Modify response records	The operator shall be able to add, delete, or edit vehicle response records for agencies with responding vehicles (Road Ranger, SIRV, etc.).	EM	3
FEAT26.6.5	EM020G4	Provide notification time	The operator shall be required to provide the notification time and either the arrival and departure times or the cancellation time.	EM	3
FEAT26.6.6	EM020G5	Modify activity records	The operator shall be able to add, edit, and delete activity records associated with vehicle response records.	EM	3
FEAT26.6.7	EM020G8	Enter quantity for quantifiable activity	The operator shall have the option to enter a quantity associated with an activity, such as gas, when the activity is configured as "quantifiable".	EM	3
FEAT26.6.8	EM012	Classify as quantifiable or not	Activities shall be classified in the software as quantifiable or not.	EM	3
FEAT26.7		Allow Congestion Cross Country Lines	Describes the behavior of the EM event details dialog in restricting congestion head and tail locations to the same county as teh actual event location	EM	4.3
FEAT26.7.1		Congestion Head	Rules for congestion head of an event	EM	4.3
FEAT26.7.1.1	EM022G	Configure congestion head	SunGuide shall allow an operator to configure the congestion head of an event.	EM	4.3
FEAT26.7.1.2	EM022G1	Default Congestion Head	SunGuide shall default the congestion head to be the event location (county, road, direction, reference point, relationship to exit, offset).	EM	4.3
FEAT26.7.1.3	EM022G2	Changes to congestion head	When an operator makes changes to the event location, SunGuide shall change the congestion head to match those changes.	EM	4.3

FEAT26.7.1.4	EM022G3	Modify congestion head	SunGuide shall allow an operator to modify the congestion head default value by selecting Reference Point, Location and offset to the location.	EM	4.3
FEAT26.7.1.6	EM022G4	Display upstream locations	SunGuide shall display only those reference points and relationships to exit for congestion head which are "upstream" of those for event location	EM	4.3
FEAT26.7.2		Congestion Tail	Rules for congestion tail of an event	EM	4.3
FEAT26.7.2.1	EM023G	Configure congestion tail	SunGuide shall allow an operator to configure the congestion tail of an event.	EM	4.3
FEAT26.7.2.2	EM023G1	Modify Congestion Tail Default Value	SunGuide shall allow an operator to modify the congestion tail default value by selecting County, Reference Point, Location and offset to the location.	EM	4.3
FEAT26.7.2.3	EM023G3	Default value for congestion tail	SunGuide shall apply a default value for congestion tail when the operator initially checks the congestion box.	EM	4.3
FEAT26.7.2.4	EM023G4	Default value based on congestion dialog	SunGuide shall apply a default value for congestion tail when the congestion dialog is open and the operator changes any event location values. (Changes and change-backs count as changes.)	EM	4.3
FEAT26.7.2.5	EM024G	Default attributes for congestion tail	When an operator initially selects the "congestion" box, SunGuide will default the County, Road, Direction values for the Congestion Tail.	EM	4.3
FEAT26.7.2.6	EM025G	Default Value for congestion tail reference point	Default value for congestion tail reference point and relationship to exit shall be the reference point and relationship to exit with the smallest sort value which matches the congestion tail values for county, roadway and direction.	EM	4.3

FEAT26.7.2.7	EM023G2	Congestion Tail configure roadway direction	SunGuide shall provide a configuration checkbox to enable (if selected) or disable (if not selected) and operator from changing the roadway direction in the congestion tail.	EM	4.3
FEAT26.7.3		Display of referince points and relationships		EM	4.3
FEAT26.7.3.1	EM027G	Congestion head and tail in different country	If congestion head and congestion tail are in different counties, SunGuide shall display all reference points and relationships to exit for congestion tail which match congestion tail county, road and direction.	EM	4.3
FEAT26.7.3.2	EM026G	Congestion head and tail in the same county	If congestion head and congestion tail are in the same county, SunGuide shall display only those reference points and relationships to exit for congestion tail which are "upstream" of those for congestion head.	EM	4.3
FEAT27		Response Plan Generator (RPG)		RPG	3
FEAT27.1		General		RPG	3
FEAT27.2		Response plan messages		RPG	3
FEAT27.2.1	TM005R2	Generate message for new sign	When the operator selects a sign to add to an existing response plan, the Incident management subsystem shall automatically generate the appropriate response plan message for the new sign relative to the location and details of the incident.	RPG	3
FEAT27.2.2	TM005R7	Message recommendation	Each DMS message recommendation in the response plan shall clearly indicate the DMS sign(s) to which the message applies.	RPG	3

FEAT27.2.3	TM005R8	Automatic Abbreviations	When evaluating abbreviation substitutions for a DMS message, EM shall replace any instances of the words "NORTHBOUND", "SOUTHBOUND", "EASTBOUND", and "WESTBOUND" with "NB", "SB", "EB", and "WB", respectively	RPG	5.1
FEAT27.2.4	TM005R9	Proximity Wording	When generating response plan messages based on a message template, if the proximity is "RAMPTO" or "RAMPFROM", EM shall populate the proximity field with "RAMP TO" or "RAMP FROM" respectively	RPG	5.1
FEAT27.2.5	TM005R10	Populating Event Type	When generating response plan messages based on a message template, EM shall populate an event type field using the Event Type Classification of the event's type, except where the event's type is "Crash", in which case EM shall populate the field as "CRASH"	RPG	5.1
FEAT27.2.6	EM026	Abbreviating Messages	The software shall support the abbreviation of phrases when automatically generating messages for a response plan	EM	6
FEAT27.2.6.1	EM026A	Multi Word Abbreviations	The software shall allow the user to configure a multiple word abbreviations	EM	6
FEAT27.2.6.2	EM026B	Abbreviation Priority Precedence	If two abbreviations have the same priority, abbreviations with multiple words shall take precedence over abbreviations consisting of a single word	EM	6
FEAT27.2.7	EM031A	Device Message Ownership	If an operator activates a response plan, the operator shall be the owner of any device messages posted due to the response plan	EM	6
FEAT27.3		Alert messaging		RPG	3
FEAT27.3.1	TM005R3	E-mail alert	SunGuide response plan feature shall include e-mail alert messaging capabilities.	RPG	3

FEAT27.3.2	TM005R4	Editing alert messages	Response plans shall provide alert message content that can be edited by an operator with appropriate permissions to be sent to the recipients.	RPG	3
FEAT27.4		Message templates		RPG	3
FEAT27.4.1	TB001A1	Template information	The Amber Alert Message template shall contain fields for the operator to fill in for specific information related to the amber alerts such as vehicle make/model, vehicle color and license tag number.	RPG	3
FEAT27.4.2	TB001A2	Response Plan uses Long Name	When generating response plan messages based on a message template, EM shall populate a cross street field using the long name of the reference point of the event's location head	RPG	5.1
FEAT27.4.3	EM032A	Amber Alert template	When configuring a device template or a default device template, the user shall be able to configure a template for events with the event type of "Amber Alert"	EM	6
FEAT27.4.4	EM032B	Leo Alert Template	When configuring a device template or a default device template, the user shall be able to configure a template for events with the event type of "Leo Alert"	EM	6
FEAT27.4.5	EM032C	Silver Alert Template	When configuring a device template or a default device template, the user shall be able to configure a template for events with the event type of "Silver Alert"	EM	6
FEAT28		Reporting System (RS)		RS	3
FEAT28.1		General		RS	3
FEAT28.1.1	EM007R	Filters	Reports shall be able to be filtered on any of the event properties.	RS	3
FEAT28.1.2	EM009R	Saving reports	SunGuide shall be able to save a report as a Microsoft Word document or an Excel spreadsheet or an PDF file.	RS	3

FEAT28.2		Performance measures		RS	3
FEAT28.2.1	EM001P1	Generate statistics/reports	The performance measures component shall generate statistics and reports based on HOV and HOT lane types.	RS	3
FEAT28.2.2	TM007D3	Supporting documents	As a minimum, the following information shall be maintained by the SunGuide software as supporting documentation for the Monthly Performance Measures Report: "Device Location "Device Number "Device Type "Manufacturer "Description of failure or issue "Date & Time Down "Date & Time Up "Uptime Percentage Deviation request: Remove the requirement to collect manufacturer data for device of type: Ramp Meter, RWIS, and Safety Barrier.	RS	3
FEAT28.2.3	TM008D	Accessibility of calculations	SunGuide calculated TMC performance measures shall be accessible through the Center-to-Center interface.	RS	3
FEAT28.2.4	TM010D4	Definition for incident duration time	SunGuide shall calculate the total incident duration time defined as the difference in time from when FDOT or FHP is notified until the travel lanes are cleared. and associate it with the incident.	RS	3
FEAT28.2.5	TM007D15	Notification time calculation	SunGuide shall calculate and store a notification time performance measure for each event by taking the time that the TMC was notified and subtracting from it the time the FHP or FDOT is notified.	RS	3

FEAT28.2.6	TM007D16	Verification time calculation	SunGuide shall calculate and store a verification time performance measure for each event by subtracting the time when an incident is confirmed from the time when the TMC was notified.	RS	3
FEAT28.2.7	TM017D	Rate of occurrence for secondary incidents	SunGuide shall calculate the rate that secondary incidents occur over a date-time period specified by the SunGuide operator for specified roadway segments or for the entire District.	RS	3
FEAT28.2.8	TM017D1	Reduction in rate of secondary crashes	The reduction in rate of secondary crashes performance measure shall be: Rate of Secondary Crashes = (Number of Secondary Crashes for a Date-Time period X 1,000,000) / (Total Vehicle Volume for a Date-Time period X Road Segment Length in miles).	RS	3
FEAT28.2.9	TM018D	Track incident detection	SunGuide shall track the primary way in which an incident was detected and associate that information with the incident for performance measure reporting.	RS	3
FEAT28.2.10	TM018D1	Recorded incident detection methods	Detection methods to be recorded by SunGuide are: by surveillance camera (CCTV), speed detector (by type), Road Ranger stop, FHP notification.	RS	3
FEAT28.2.11	TM018D2	Report listing number of incident detections	SunGuide shall be able to generate a report listing the number of incident detections by device type over a SunGuide operator specified date-time period.	RS	3
FEAT28.2.12	TM018D3	Sort incidents by severity level	SunGuide shall be able to sort the incidents by level of incident severity.	RS	3

FEAT28.2.13	TM019D	Vehicle miles traveled calculation	For performance measures purposes, SunGuide shall calculate Vehicle Miles Traveled (VMT) expressed as million vehicle miles for any date-time period specified by the person requesting a performance measures report from SunGuide that deals with VMT.	RS	3
FEAT28.2.14	TM019D1	Data used for VMT calculations	For the volumes needed to calculate vehicle miles traveled (VMT) for presenting crash statistics, SunGuide shall use either TSO data provided in tabular form to calculate VMT or VMT shall be calculated by SunGuide off-line using the volume from detectors multiplied by the segment length.	RS	3
FEAT28.3		Road ranger status report		RS	3
FEAT28.3.1	EM004R	Capabilities	A Road Ranger Vehicle status report shall be capable of being produced using SunGuide data.	RS	3
FEAT28.3.2	EM004R1	Date/time range	The Road Ranger Vehicle status report shall allow the operator to specify a date/time range to retrieve data to support the report.	RS	3
FEAT28.3.3	EM004R2	Retrieved data	The retrieved data shall list all activity for the Road Ranger Vehicle(s) for the selected date/ time range including; all stops, logon information (including driver name), and logoff information.	RS	3
FEAT28.3.4	EM004R3	Data filters	The Road Ranger Vehicle status data shall be able to be filtered by event type and/or disposition.	RS	3
FEAT28.3.5	EM005R	Activity summary report	SunGuide shall provide data to support the generation of an activity summary report.	RS	3

FEAT28.3.6	EM005R1	Track truck number	The operator shall be able to select a specific truck number or all trucks, and a date/time range to retrieve the necessary data to generate the activity summary report.	RS	3
FEAT28.3.7	EM005R2	Activity summary data	The activity summary data shall contain the information necessary to summarize all activities for the given data range specified.	RS	3
FEAT28.3.8	EM005R3	Summary filters	The activity summary data shall be able to be filtered by event type and/or disposition.	RS	3
FEAT28.3.9	EM002T2	Beat coverage summary	SunGuide shall be able to generate a report that summarizes beat coverage (truck-hours) for any particular time range specified by the operator.	RS	3
FEAT28.4		Truck location report		RS	3
FEAT28.5		Camera usage report		RS	3
FEAT28.5.1	EM008R	Usage report for camera locks	SunGuide shall be able to create a Camera Usage report to show when cameras were locked and by whom.	RS	3
FEAT28.6		Device status report		RS	3
FEAT28.6.1	TM007D1	Tracking equipment	The system shall keep track of equipment as available from the SunGuide Software ICD (NTCIP protocol, etc.) - downtime and uptime of ITS equipment that includes: CCTVs; DMSs; Non-intrusive detectors; and RWIS	RS	3
FEAT28.7		Traffic flow monthly report		RS	3

FEAT28.7.1	TM007D5	Collected data	SunGuide software shall collect the following data to support the generation of the Traffic Flow Monthly Report: o Average speed - the average speed of vehicles passing through each detection zone in 15 minute increments. o Average volume - the average number of vehicles. o Average occupancy - the average percentage of time, during the sample period, that the detector sensed a vehicle. o Average density - the average number of vehicles that occupy one mile of road space.	RS	3
FEAT28.8		Software reliability		RS	3
FEAT28.8.1	TM007D2	Tracking	SunGuide shall track software reliability including at a minimum downtime, uptime, and upgrade/repair time of ITS software for the following software systems: Central Computer system	RS	3
FEAT28.9		Traveler information		RS	3
FEAT28.10		Incident management		RS	3

FEAT28.10.1	TM007D6	Monthly report information	SunGuide shall collect the following data to support the generation of the Incident Management Monthly Report: o Total number of incidents by county, by roadway segment and level (i.e., Traffic Impact Levels - Level 1, 2 & 3 Incidents). o Total number of incidents by county, by notifying agency. o Incident detection method - system by which the RTMC was notified. o Total incident duration - incident duration is the time between when an incident occurs and when traffic returns to normal flow. The following component time increments of incident duration shall be graphically depicted: -RTMC detection time -RTMC verification time -RTMC response time -Incident clearance time period -Traffic queue clearance time o Number of secondary incidents. o Road Ranger dispatch time period - the difference between initial RTMC notification and when a Road Ranger is contacted for dispatch to an incident. o Road Ranger response time period - the difference between when a Road Ranger is	RS	3
FEAT28.11		Position reports		EV	3
FEAT28.11.1	AV005	Time line reports	The AVL subsystem shall support the generation of a report about vehicle position time line with vehicle status information that was associated with the date-time of each position report.	RS	3

FEAT28.11.2	AV004T	Designating information	The operator shall be able to designate a vehicle or a group of vehicles and enter a date-time and time span that position reports are generated for.	RS	3
FEAT28.11.3	AV004T1	Sorting data	SunGuide shall provide the option for the operator to: - Sort report data by vehicle or by area of operation or by date and time period. - Filter report data by event type or event data codes.	RS	3
FEAT28.11.4	AV005T	Displaying reports	Position reports shall be displayed on the SunGuide workstation when requested by the operator.	RS	3
FEAT28.11.5	AV005T1	Saving report formats	The operator shall have the option to save the report format thereby preserving the order in which the data is grouped to use as a template for future reports.	RS	3
FEAT28.11.6	AV005T2	Report options	The operator shall have the option to save, delete or export a report.	RS	3
FEAT28.11.7	AV006T	Retrieving data	The reporting function shall retrieve AVL data based on a date/time range and a particular vehicle.	RS	3
FEAT28.11.8	AV006T1	Identification criteria	At a minimum the identification criteria shall be able to be identified as: truck number, beat, driver, radio/telephone number, truck position (roadway, direction, reference location, proximity to reference location), speed and status (availability).	RS	3
FEAT28.12		Chronology report		RS	3
FEAT28.12.1	EM002U	Display operator changes	All operator changes shall be displayed in the chronology report with an indication that specific information has been changed.	RS	3

FEAT28.12.2	EM003U	Report for viewing changes	The operator shall be able to run a report using the SunGuide report function to review changes made and logged by the audit function.	RS	3
FEAT28.13		ODS reports		ODS	3
FEAT28.13.1	OD001R	Report content and format	The content and format of these reports shall be coordinated with FDOT.	RS	3
FEAT28.13.2	OD002R	Report drop down lists	Users shall be able to select one of the standard reports to view/extract via drop down lists.	RS	3
FEAT28.13.3	OD007R	Content format for display	Viewing of all archived data page content shall be formatted to fit a traditional display.	RS	3
FEAT29		Road Ranger (RR)		RR	3
FEAT29.1		General		RR	3
FEAT29.1.1	TM001D1	Radio/district data	SunGuide shall attach the Radio Number and District number to the data that is collected at the beginning of the Road Ranger Service Patrol Vehicle Operator's shift.	RR	3
FEAT29.1.2	EM002T1	Assigning beats to trucks	SunGuide shall provide the ability for an operator to assign a beat on an in-service truck.	RR	3
FEAT29.2		Road Ranger status		RR	3
FEAT29.2.1	EM004D	Mobile unit data	Event data from mobile units shall be received and automatically stored in the database.	RR	3
FEAT29.2.2	EM004D1	Data items	Event data shall be items such as Enroute, At Scene, Cleared Scene, On Break, Assisting Others, etc.	RR	3
FEAT29.2.3	EM008T	Road Ranger vehicle status	TMC Operators shall be able to change road ranger vehicle status.	RR	3

FEAT29.2.4	AV010	Stopped vehicles	If a driver is stopped for a configurable length of time without accounting for the stop the system shall notify the operator.	RR	3
FEAT29.3		Drivers		RR	3
FEAT29.3.1	TM001V	Driver interface	SunGuide shall provide a driver to interface with different service vehicle collection data streams in accordance with published SunGuide Interface Control Documents.	RR	3
FEAT29.4		AVL/RR Interface		RR	4
FEAT29.4.1	AV018	Determine comm-related data duplication	System shall be able to determine likely duplicated data during audit which was caused by communications loss, then recovery.	RR	4
FEAT29.4.2	AV020	Initiate incidents	Mobile operator shall be able to initiate incident.	RR	4
FEAT29.4.3	AV020M	Close incidents initiated by unit	Mobile operator shall be able to close incident which was initiated by that unit.	RR	4
FEAT29.4.4	AV020M1	Depart incidents and leave unresolved	Mobile operator shall be able to depart incident and leave it unresolved in SunGuide (i.e., abandoned vehicles).	RR	4
FEAT29.4.5	AV009T4	Data collected for involved vehicle	Data for an involved vehicle shall include: color, make, model, license state, and license tag.	RR	4
FEAT29.4.6	AV006V2	Vehicle summary data	The AVL software shall provide summary data when an operator "mouses-over" the vehicle icon. The summary data shall consist of truck number, beat, driver, adio/telephone number, truck position (roadway, direction, reference location, proximity to reference location), speed and status (availability).	RR	4

FEAT29.4.7	AV007L5	Dispatch vehicle to new or existing event	An operator shall be able to right-click on a vehicle to dispatch it to a new or existing event. In the case of new events, the operator will be prompted to enter the required information for the new event.	RR	4
FEAT29.4.8	AV017	Road ranger position data	The list of Road Rangers, part of the EM GUI, shall be augmented to include current truck position (roadway, direction, reference location, proximity to reference location), speed and status (availability) from the AVL software. A "Find on map" option will be provided from the list, which will 'zoom' the SunGuide map to the current position of the vehicle icon.	RR	4
FEAT29.4.9	AV005T3	Display list of trucks and status	A list of currently logged on trucks and their current dispatch status shall be displayed.	RR	4
FEAT29.4.10	AV005T4	Truck activity report	A Road Ranger Activity Report shall be available. This report shall list all activities for a road ranger for a given date and time range. The report shall be filterable by truck number (or all), event types, road ranger activities and Driver ID	RR	4.2
FEAT29.4.11	AV005T5	Activity summary report	A Road Ranger Activity Summary report shall be available. This report shall summarize all activity for a given date and time range. The report shall be filterable by truck number (or all), event types, road ranger activity and Driver ID	RR	4.2
FEAT29.4.12	AV005T6	Location report information	A Location report shall be available. This report shall list each GPS update for a given date and time, and the geo-referenced location for that report. It shall be filterable by truck (or all), and Driver ID.	RR	4

FEAT29.4.12.1	AV005T7	Location report column headings	Roadway and location long name shall both be displayed in the Location column header of the "Vehicle GPS Location Report."	RR	4.2
FEAT29.4.13	AV019	Change unit status	TMC Operators shall be able to change unit status in the event of mobile electronics or communications malfunction.	RR	4
FEAT30		Variable Speed Limit (VSL)		VSL	3
FEAT30.1		General		VSL	3
FEAT30.1.1	DM006	Manage VSL signs	SunGuide shall be able to manage Variable Speed limit (VSL) signs.	VSL	3
FEAT30.1.2	DM003V	Monitor roadway conditions	SunGuide shall continuously monitor roadway conditions and require changed conditions to be present for a user-selectable period before making a recommendation.	VSL	3
FEAT30.1.3	DM004V	Interfacing with DMS	SunGuide VSL functionality shall interface and communicate with existing DMS control software.	VSL	3
FEAT30.1.4	DM005V	Implementation of recommendation	Only a SunGuide operator with appropriate permissions can authorize the implementation of a VSL reduced speed limit recommendation resulting in a reduction of the posted speed limit on VSL signs.	VSL	3
FEAT30.1.5	DM007V	Log posted VSL data	The DMS log file (i.e. the system log file) shall list each newly posted speed limit, the corresponding variable speed limit sign(s) involved, and a time/date timestamp.	VSL	3
FEAT30.1.6	VSLXXX	Turn VSL beacons on and off	SunGuide shall allow an operator to turn VSL beacons on and off.	VSL	4
FEAT30.2		Recommendations		VSL	3
FEAT30.2.1	TM005R8	Recommendation logs	All VSL recommendations shall be logged.	VSL	3

FEAT30.2.2	DM001V	Speed limit values	SunGuide shall provide Variable Speed Limit (VSL) software to recommend speed limit values for I-4 segments furnished with Variable Speed Limit signs.	VSL	3
FEAT30.2.3	DM001V1	Alert to recommend changes	SunGuide shall alert the operator in order to recommend changes in speed limit values for each of the 22 VSL signs deployed as part of the I-4 VSL Trial within one minute of determining changes are necessary.	VSL	3
FEAT30.2.4	DM001V2	Speed limit changes	SunGuide shall log all recommended changes in speed limit.	VSL	3
FEAT30.2.5	DM001V3	Determining speed limit values	Recommended speed limit values shall be determined using real-time information available in SunGuide.	VSL	3
FEAT30.2.6	DM002V	Alert operator	SunGuide shall be able to alert the operator to recommend changes to the VSL within one minute of determining that such a change is needed.	VSL	3
FEAT30.2.7	DM005V1	Storing recommended values	Recommended speed limit values to be stored in the SunGuide VSL application shall be specified by the FDOT.	VSL	3
FEAT30.2.8	DM005V2	Recommendations available to operator	Speed limit recommendations shall be made available to operators within two minutes of reduced speed limit criteria having been met and require acknowledgement.	VSL	3
FEAT31		Operational Data Store (ODS)		ODS	3
FEAT31.1		General		ODS	3
FEAT31.1.1	OD001	Accommodate growth in data collected	SunGuide shall accommodate 100% growth in the amount of data being collected, archived, and disseminated based on the size of the system at project initiation.	ODS	3

FEAT31.1.2	OD001D	Flexibility for data addition, reconfiguration, redefinition	SunGuide shall be flexible to allow for the periodic addition, reconfiguration, or redefinition of data provided by the SunGuide, without the loss of current or past data.	ODS	3
FEAT31.1.3	OD001E	Generating error messages	The Direct Information Feed (Data Archive) shall be capable of generating error messages in cases where the data slated for delivery is currently unavailable.	ODS	3
FEAT31.1.4	OD007D	Data formats	Data available from the ODS via the Direct Information Feed shall be available in an ITS standards based XML or other commonly used and approved format, capable of being imported into an ITS products-based application.	ODS	3
FEAT31.1.5	OD003D	Degradation in data quality	No degradation in data quality, accuracy, or granularity shall occur between reception of data by the ODS and output of that data to licensed users.	ODS	3
FEAT31.1.6	OD003	Accept data from data bus	The reporting function shall be capable of accepting data from the SunGuide Data Bus.	ODS	3
FEAT31.1.7	OD005	Provide feed to external users	SunGuide shall provide a Direct Information Feed using center-to-center to external users.	ODS	3
FEAT31.1.8	OD006	Forecast traffic volumes	SunGuide shall provide an on-line capability to select and display a date/time range of archived traffic volumes in order to forecast traffic volumes with a growth factor.	ODS	3
FEAT31.1.9	OD008R	Data stored with timestamp	The data processed by the ODS will be stored with a timestamp.	ODS	3
FEAT31.1.10	OD007	Use of master clock	SunGuide Software shall use a Network Time Protocol Time Server as the system master clock to ensure uniform timestamps.	ODS	3

FEAT31.1.11	OD008	Availability for ODS	The Direct Database Feed shall be available for use by the ODS at least 98% of the time measured annually, except for service disruptions beyond the Contractor's control, excluding scheduled maintenance, during any contiguous 365-day period.	ODS	3
FEAT31.1.12	OD011	Preformatted reports	Users shall be able to view/extract archived data using fifteen (15) preformatted reports.	ODS	3
FEAT31.1.13	OD015	Travel times for instrumented roadways	The ODS shall include travel times for the instrumented roadways.	ODS	3
FEAT31.1.14	OD013	Include links and 511 segments	The ODS shall include data collection links and selected 511 reporting segments.	ODS	3
FEAT31.1.15	DW001	Data provided via direct database connection	SunGuide data shall be provided to the Operational Data Store using a direct database connection called a Direct Database Feed.	ODS	3
FEAT31.1.16	DW003D	Interface Control Document specification	How to implement the Direct Database Feed shall be specified in an Interface Control Document.	ODS	3
FEAT31.1.17	DW005D	Data structure capable of import into database	The Direct Database Feed shall be available in a common data structure capable of being imported into a standard database product for use by the ODS.	ODS	3
FEAT31.1.18	DW003	Error messages when SG is experiencing problems	In instances when SunGuide is experiencing problems, a message shall be provided to inform both the SunGuide operator and the SunGuide error log that the system is not currently operating.	ODS	3
FEAT31.1.19	DW005	No unintended data degradation	No unintended degradation of data shall occur between SunGuide's database and the transfer of that data by the direct database feed.	ODS	3

FEAT31.1.20	DW004	ODS content derived from Data Bus	The content provided to the ODS via the direct database connection shall be derived directly from SunGuide's databus.	ODS	3
FEAT31.1.21	OD014	SunGuide RWIS events included in ODS	The ODS shall include events from the SunGuide RWIS subsystem.	ODS	3
FEAT31.2		Data storage		ODS	3
FEAT31.2.1	OD001S	Data storage times	SunGuide shall store raw detector data for 2 weeks and shall store roll ups of speeds, occupancy, and drive times in 15 minute roll ups for 3 years.	ODS	4.2
FEAT31.2.2	OD004	Configurable amount of time	SunGuide shall store data for a configurable amount of time.	ODS	3
FEAT31.2.3	DW002D	ODS accessible via standard database tool sets	The Direct Database Feed shall be accessible by the ODS through the use of standard database tool sets for storing data, such as database triggers that support periodic data transfers.	ODS	3
FEAT31.2.4	DW004D	Archived data for ODS	SunGuide shall archive link data, travel times, raw weather, raw traffic data, and operator-entered event data.	ODS	3
FEAT31.2.5	OD012	ODBC compliant databases with SQL support	All databases included in the ODS shall be Open Data Base Connectivity (ODBC) compliant and support Structured Query Language (SQL) database queries.	ODS	3
FEAT31.3		Published data		ODS	3
FEAT31.3.1	OD002	Loading records latency	SunGuide shall introduce no more than two minutes latency when loading records from the source data system.	ODS	3
FEAT31.3.2	OD002T	Publication of updates	Updates of the Direct Information Feed shall be published for licensed users at least once every five minutes.	ODS	3
FEAT31.3.3	DW006D	Make data available in one minute or less	SunGuide shall make data available to the Data Archive or ODS in one minute or less of it being available.	ODS	3

FEAT31.4		Viewing archived data		ODS	3
FEAT31.4.1	OD003R	Archived data drop down list	Users shall be able to select the type of archived data to view/extract via a drop down list (e.g., speed, occupancy, and times).	ODS	3
FEAT31.4.2	OD004R	Data field drop down lists	Users shall be able to select the data fields to view/extract via drop down lists (e.g., date range, time).	ODS	3
FEAT31.4.3	OD005R	Time slice drop down lists	Users shall be able to select the time slices of data to view/extract via drop down lists for dates and times (e.g., 1 minute, 15 minute).	ODS	3
FEAT31.4.4	OD006R	Keep normal performance	Viewing/extraction of archived data shall not prevent the normal performance of ODS functions.	ODS	3
FEAT31.4.5	WS012	Viewing detector counts	A SunGuide supervisor with appropriate permissions shall have the capability of viewing detector counts by detector station for the last 48 hours.	ODS	3
FEAT31.4.6	WS013	Select time range and data type	The Operator Interface shall provide the ability for the operator to select the time period range (time of day and date) and the type of data (i.e., raw, smooth, or forecast) pertaining to the displayed traffic conditions from Central Florida and statewide traffic sensors.	ODS	3
FEAT31.5		Message logs		ODS	3
FEAT31.5.1	OD010	Included logs and sign recommendations	The ODS shall include DMS Message Logs (SunGuide and OOCEA), 511 message logs and VSL sign recommendations.	ODS	3
FEAT31.5.2	OD001M	Indicate data unavailable	These messages shall indicate whether all data slated for delivery is unavailable, or only a portion of the data is unavailable.	ODS	3

FEAT31.5.3	DW001D	Standard tool sets capable of generating error messages	The standard tool sets used to carry out the Direct Database Feed shall be capable of generating error messages in cases where the data slated for delivery is currently unavailable.	ODS	3
FEAT31.5.4	DW004D1	Consistent format for error messages	SunGuide shall use a consistent format for error messages across all applications.	ODS	3
FEAT31.5.5	DW001E	Messages indicate data availability	These messages shall indicate whether all data slated for delivery is unavailable, or only a portion of the data is unavailable.	ODS	3
FEAT31.5.6	OD009	Error messages indicate data availability	Error messages shall indicate whether all data slated for delivery is unavailable, or only a portion of the data is unavailable.	ODS	3
FEAT32		Data Fusion System (DFS)		DFS	4
FEAT32.1		General		DFS	4
FEAT32.1.1	DF001	Abilities of DFS	The Data Fusion subsystem shall have the ability to extract data from data streams and present alerts to the SunGuide operator for approval.	DFS	4.2
FEAT32.1.2	DF007	Use of metadata for interpretation	The Data Fusion subsystem shall contain metadata necessary to interpret the data and shall have an identifier of the source of the data.	DFS	4
FEAT32.1.3	DF008	DFS to not degrade data accuracy	The Data Fusion subsystem shall not degrade the accuracy of the received data.	DFS	4
FEAT32.1.4	DF015	Allow for periodic reconfiguration	The Data Fusion subsystem shall allow periodic addition, reconfiguration or redefinition of roadway segments and ITS devices without any loss of current or past data.	DFS	4
FEAT32.1.6	DF025	Synchronized to universal time standard	The Data Fusion Subsystem shall be synchronized to a universal time standard obtained through the internet.	DFS	4

FEAT32.1.8	DF022F	Select FDOT modified SAE codes	SunGuide Data Fusion shall automatically select FDOT modified SAE J-2540 codes that describe an event.	DFS	4
FEAT32.1.8.2	DF022F2	SAE Code 2980 Message	The system shall present the message 'On-ramp lanes blocked' for events which are identified as SAE Code 2980.	DFS	4.3
FEAT32.1.8.3	DF022F3	SAE Code 2981 Identify	The system shall identify an event with more than one contiguous lanes blocked on the left of an on ramp as SAE Code 2981.	DFS	4.3
FEAT32.1.8.4	DF022F4	SAE Code 2981 Message	The system shall present the message 'On-ramp left lanes blocked' for events which are identified as SAE Code 2981.	DFS	4.3
FEAT32.1.8.5	DF022F5	SAE Code 2983 Identify	The system shall identify an event with more than one contiguous lanes blocked on the right of an on ramp as SAE Code 2983.	DFS	4.3
FEAT32.1.8.6	DF022F6	SAE Code 2983 Message	The system shall present the message 'On-ramp right lanes blocked' for events which are identified as SAE Code 2983.	DFS	4.3
FEAT32.1.8.7	DF022F7	SAE Code 2982 Identify	The system shall identify an event with more than one contiguous lanes blocked in the center of an on ramp as SAE Code 2982.	DFS	4.3
FEAT32.1.8.8	DF022F8	SAE Code 2982 Message	The system shall present the message 'On-ramp center lanes blocked' for events which are identified as SAE Code 2982.	DFS	4.3
FEAT32.1.8.9	DF022F9	SAE Code 2984 Identify	The system shall identify an event which blocks the left shoulder of an on ramp as SAE Code 2984.	DFS	4.3
FEAT32.1.8.10	DF022F10	SAE Code 2984 Message	The system shall present the message 'On-ramp left shoulder blocked' for events which are identified as SAE Code 2984.	DFS	4.3
FEAT32.1.8.11	DF022F11	SAE Code 2985 Identify	The system shall identify an event which blocks the right shoulder of an on ramp as SAE Code 2985.	DFS	4.3

FEAT32.1.8.12	DF022F12	SAE Code 2985 Message	The system shall present the message 'On-ramp right shoulder blocked' for events which are identified as SAE Code 2985.	DFS	4.3
FEAT32.1.8.13	DF022F13	SAE Code 2986 Identify	The system shall identify an event with more than one noncontiguous lane blocked of an off ramp as SAE Code 2986.	DFS	4.3
FEAT32.1.8.14	DF022F15	SAE Code 2987 Identify	The system shall identify an event with more than one contiguous lanes blocked on the left of an off ramp as SAE Code 2987.	DFS	4.3
FEAT32.1.8.15	DF022F16	SAE Code 2987 Message	The system shall present the message 'Off-ramp - left lanes blocked' for events which are identified as SAE Code 2987.	DFS	4.3
FEAT32.1.8.16	DF022F17	SAE Code 2988 Identify	The system shall identify an event with more than one contiguous lanes blocked in the center of an off ramp as SAE Code 2988.	DFS	4.3
FEAT32.1.8.17	DF022F18	SAE Code 2988 Message	The system shall present the message 'Off-ramp center lanes blocked' for events which are identified as SAE Code 2988.	DFS	4.3
FEAT32.1.8.18	DF022F19	SAE Code 2989 Identify	The system shall identify an event which blocks the right lanes of an off ramp as SAE Code 2989.	DFS	4.3
FEAT32.1.8.19	DF022F20	SAE Code 2989 Message	The system shall present the message 'Off-ramp right lanes blocked' for events which are identified as SAE Code 2989.	DFS	4.3
FEAT32.1.8.20	DF022F21	SAE Code 2990 Identify	The system shall identify an event which blocks the left shoulder of an off ramp as SAE Code 2990.	DFS	4.3
FEAT32.1.8.21	DF022F22	SAE Code 2990 Message	The system shall present the message 'Off-ramp left shoulder blocked' for events which are identified as SAE Code 2990.	DFS	4.3
FEAT32.1.8.22	DF022F23	SAE Code 2991 Identify	The system shall identify an event which blocks the right shoulder of an off ramp as SAE Code 2991.	DFS	4.3

FEAT32.1.8.23	DF022F24	SAE Code 2991 Message	The system shall present the message 'Off-ramp right shoulder blocked' for events which are identified as SAE Code 2991.	DFS	4.3
FEAT32.1.8.24	DF022F25	SAE Code 2992 Identify	The system shall identify an event which blocks more than one noncontiguous express lane as SAE Code 2992.	DFS	4.3
FEAT32.1.8.25	DF022F26	SAE Code 2992 Message	The system shall present the message 'X Express lanes blocked' for events which are identified as SAE Code 2992, where X is the number of lanes which are blocked.	DFS	4.3
FEAT32.1.8.26	DF022F27	SAE Code 2993 Identify	The system shall identify an event with more than one contiguous lanes blocked on the left of an express lanes segment as SAE Code 2993.	DFS	4.3
FEAT32.1.8.27	DF022F28	SAE Code 2993 Message	The system shall present the message 'X Left express lanes blocked' for events which are identified as SAE Code 2993, where X is the number of lanes which are blocked.	DFS	4.3
FEAT32.1.8.28	DF022F29	SAE Code 2994 Identify	The system shall identify an event with more than one contiguous lanes blocked in the center of an express lanes segment as SAE Code 2994.	DFS	4.3
FEAT32.1.8.29	DF022F30	SAE Code 2994 Message	The system shall present the message 'X Center express lanes blocked' for events which are identified as SAE Code 2994, where X is the number of lanes which are blocked.	DFS	4.3
FEAT32.1.8.30	DF022F31	SAE Code 2995 Identify	The system shall identify an event with more than one contiguous lanes blocked on the right of an express lanes segment as SAE Code 2995.	DFS	4.3

FEAT32.1.8.31	DF022F32	SAE Code 2995 Message	The system shall present the message 'X Right express lanes blocked' for events which are identified as SAE Code 2995, where X is the number of lanes which are blocked.	DFS	4.3
FEAT32.1.8.32	DF022F14	SAE Code 2986 Message	The system shall present the message 'Off-ramp lanes blocked' for events which are identified as SAE Code 2986.	DFS	4.3
FEAT32.2		Database		DFS	4
FEAT32.2.1	DF001D	Maintain log of all events	The Database Component shall maintain a log of all events.	DFS	4
FEAT32.2.2	DF002D	Archive only operator designated data	The Database Component shall save only the data designated by the SunGuide Administrator as archive data.	DFS	4
FEAT32.2.3	DF003D	Repository for data collected or generated	The database component shall contain a repository for all data collected by or generated by the data fusion system.	DFS	4
FEAT32.2.6	DF007D	Relational database	The database component shall be a relational database.	DFS	4
FEAT32.3		Data Output		DFS	4
FEAT32.3.2	DF004	Third party feed for public/private sectors	The Data Fusion subsystem shall provide a third party feed that supports both public- and private-sector services.	DFS	4
FEAT32.3.3	DF013	Use modified C2C plug-in to provide fused data	The Data Fusion subsystem shall use a modified SunGuide Center-to-Center Plug-in component to make fused traveler information available to the Information Dissemination Subsystem.	DFS	4

FEAT32.3.5	DF006F	Fields to include in data fusion output	For events, SunGuide shall include a Location ID, The location referenced by the Location ID will have the following fields as a minimum: - a City; - a County; - a Metro Area Otherwise null data shall be provided in the fields. SunGuide shall not require these fields to be populated at the time the location is configured.	DFS	4
FEAT32.3.6	DF006F1	Information passed to IDS use standard codes	The information shall be passed to the IDS using FDOT Modified SAE J2540 codes, EM Location references and other standard traveler information codes.	DFS	4
FEAT32.3.7	DF007F	DFS data documented in C2C ICD	The data provided by the DFS shall be documented in a Center-to-Center Interface Control Document (ICD).	DFS	4
FEAT32.3.8	DF011F	Provide travel times and delays to the IDS	The Data Fusion component shall provide travel times and travel delays to the IDS.	DFS	4
FEAT32.3.9	DF017F	Incorporate received weather conditions	The Data Fusion Subsystem shall incorporate weather conditions received through an automatic feed provided by DTN.	DFS	4
FEAT32.3.10	DF019F	Provide secure data to third parties	The Data Fusion component shall provide data to third parties that are secure behind a firewall that prohibits unauthorized access and manipulation of the information.	DFS	4

FEAT32.3.11	DF001C	Use TMDD standard	The Data Fusion subsystem shall use Transmission Control Protocol/Internet Protocol (TCP/IP) connectivity, the Hypertext Transfer Protocol (HTTP), and XML data format based shall be consistent with TMDD 2.1 (and NTCIP 2306) and the emerging TMDD 3.0 (and NTCIP 2306) using FDOT modified SAE J2540 IITS codes to capture event information for transmission to the IDS.	DFS	4
FEAT32.3.12	DF002C	Fused events associated with latitude and longitude	Each fused traveler information event shall be associated with a latitude and longitude.	DFS	4
FEAT32.3.13	DF003C	Fused traveler information standards	Fused traveler information shall be formatted and transmitted in accordance with NTCIP 2306 protocol and the J2540-1 July 2002 Tables 2 and 11 message set.	DFS	4
FEAT32.3.14	DF004C	Provide FDOT location tables to be used by IDS	The Center-to-Center interface shall provide the FDOT location table to be used for a District by the Information Dissemination Subsystem.	DFS	4
FEAT32.3.15	DF018F	Designate data accessible to third parties	A SunGuide Administrator shall be able to designate what data will be accessible as a limited data feed to third parties.	DFS	4
FEAT32.4		Engine		DFS	4
FEAT32.4.2	DF026	Calculate travel time and speeds	The Data Fusion Subsystem shall calculate travel time and speeds along instrumented roadways for FDOT defined links.	DFS	4
FEAT32.4.4	DF001F	Associate real-time info for current event	SunGuide shall provide a list of active events within a configurable number of tenths of a mile. If no data is available, an empty list shall be provided.	DFS	4

FEAT32.4.5		Associate info within 200 feet of construction event	The Data Fusion component shall associate real-time information within 200 feet of a road construction event with the road construction event, if no data is available, a null value or blank shall be provided.	DFS	4
FEAT32.4.6	DF003F	Travel times never less than speed limit	Travel time information for dissemination shall never be less than the travel time computed using the posted speed limit, if no data is available, a null value or blank shall be provided.	DFS	4
FEAT32.4.7	DF004F	Associate real-time emergency events	SunGuide shall allow the operator to associate external events (e.g. FHP events) that are within configurable number of tenths of a mile to active events. If no data is available, an empty list shall be provided.	DFS	4
FEAT32.4.8	DF005F	Identify conflicting event reports	SunGuide shall provide a list of nearby active events within a configurable number of tenths of a mile to the operator when an external event is received.	DFS	4
FEAT32.4.9	DF006F2	Blank values for unavailable fields	If the information for a field is not available, a null value or blank shall be provided.	DFS	4
FEAT32.4.11	DF011F2	Calculate delay times based on speed limits	The Data Fusion Component shall calculate delay times based on posted speed limits for the defined road segments.	DFS	4
FEAT32.4.13	DF013F	External sources documented in an ICD	The Data Fusion component shall receive data from external sources documented in an ICD.	DFS	4
FEAT32.4.14	DF016F	Alert operator for conflict between sources	SunGuide shall provide a list of nearby active events to the operator when external events are received.	DFS	4

FEAT32.4.15	DF016F1	Calculate flat earth distance between events	The Data Fusion component shall compare the latitude and longitude of an event with other event latitude and longitudes and calculate a flat earth straight line distance between the events.	DFS	4
FEAT32.4.16	DF016F2	Alert operator for event conflicts	The Data Fusion component shall alert the operator to a possible duplication or conflict of events if two or more events are within a configurable distance of each other.	DFS	4
FEAT32.5		Performance		DFS	4
FEAT32.5.1	DF002	Fuse data within 1 minute	The Data Fusion subsystem shall assemble and fuse traveler information within 1 minute of receipt of applicable data from external sources including operator entered events.	DFS	4
FEAT32.5.4	DF017	Monitor system performance	The Data Fusion Subsystem shall be able to monitor system performance, status of interfaces and alert the operator and designated personnel to system problems.	DFS	4
FEAT32.5.8	DF005D	Information available within 12 seconds	Information from the database shall be retrieved and presented to the operator within 12 seconds of the submission of the request for data.	DFS	4
FEAT32.6		Data Sources		DFS	4
FEAT32.6.1	DF006	Provide synchronous data from various sources	The Data Fusion subsystem shall provide synchronous data from various sources having no duplicate information within a single status report on a segment.	DFS	4
FEAT32.6.2	DF011	Latest info on current transporation status	The Data Fusion subsystem shall provide the latest information on the current status of FDOT-designated transportation services.	DFS	4.2

FEAT32.6.3	DF016	Support automated and data entry for events	The Data Fusion subsystem shall be able to support automated and manual data entry for all event types.	DFS	4
FEAT32.6.4	DF020	Receive weather alerts from DTN	SunGuide shall receive weather alerts from DTN and provide operators with an alert that can be used to create an event.	DFS	4.2
FEAT32.6.5	DF024	Use FDOT-specified location tables	The Data Fusion Subsystem shall use location tables specified by FDOT that can be redefined or added to while the system is operating.	DFS	4
FEAT32.6.7	DF011F4	Obtain travel time and speeds from SunGuide	For sites that are SunGuide equipped, the DFS shall obtain travel time and speeds from SunGuide.	DFS	4
FEAT32.6.8	DF023F	Access the DTN	SunGuide shall access the DTN automated feed using a "web method" that connects to a DTN server via the public Internet.	DFS	4
FEAT32.7		Reporting		DFS	4
FEAT32.7.1	DF012	Locally archive selected data	The Data Fusion Subsystem shall locally archive selected data and messages.	DFS	4
FEAT32.7.2	DF014	Generate reports with selected parameters	The Data Fusion subsystem shall be able to generate reports according to parameters selected by the system administrator.	DFS	4
FEAT32.7.3	DF029	Generate reports based on data saved	The Data Fusion subsystem shall be able to generate reports based on data saved.	DFS	4
FEAT32.7.4	DF009F	Generate report using any database fields	The system administrator shall be able to generate a report using any of the database fields, or combination of fields, as filters.	DFS	4

FEAT32.7.5	DF012F	Generate minimum of fifteen standard reports	The Data Fusion component shall generate a minimum of fifteen standard reports to view archived data. Note: Based on negotiations it has been agreed that the DFS contractor (i.e. SwRI) has included a "level of effort" to discuss and review reports with FDOT but that the actual generation of the reports is not assigned to the DFS Contractor (i.e. SwRI).	DFS	4
FEAT32.7.5.1	DF012F1	Content and format specified by FDOT	The content and format of the reports shall be specified by FDOT.	DFS	4
FEAT32.7.6	DF014F	Generate custom reports with SQL interface	Users shall be able to generate custom reports using an SQL interface embedded within the archived data page.	DFS	4
FEAT32.7.7	DF015F	Reports generated in PDF, Word, and Excel format	All reports shall be generated in PDF, Word and Excel format.	DFS	4
FEAT32.8		Alternate Roads		DFS	4
FEAT32.8.1	DF002E2	Alternate road description	When an alternative road is presented for operator selection a description shall be displayed if available.	DFS	4
FEAT32.8.2	DF001E	Alternate roads from EM locations	The SunGuide Administrative Editor shall allow primary and secondary alternate roads (along with descriptions) to be maintained for each EM Location.	DFS	4
FEAT32.8.3	DF002E	Select primary/secondary alternate roads	A SunGuide operator shall be able to select either a primary or a secondary alternative road if configured for the location of the event that the operator selected.	DFS	4
FEAT32.8.4	DF020F1	Send weather events to IDS via C2C	The Data Fusion component shall send weather events to the IDS using the C2C.	DFS	4
FEAT33		Pricing System (PS)		PS	3.1
FEAT33.1		General		PS	3.1

FEAT33.1.1	ML012P	Restart state in open/time-of-day rate mode	If the Express Lanes module goes down, starts for the first time, or needs to be restarted, it shall start/restart in Open/Time-Of-Day Rate mode.	PS	4.3
FEAT33.1.1.2	ML013P	Delay used for starts/restarts	If the approved toll rate for a segment upon restart is known to be greater than the currently posted rate, the software shall use the default Maximum Transit Time for Toll Rate DMS and in other cases the software shall use the default Minimum Transit Time.	PS	4.3
FEAT33.1.2	ML007D	DMS interface as direct communications path	The managed lanes module shall use the most direct communications path available to update the Toll Rate DMS and Lane Status DMS.	PS	4.3
FEAT33.1.2.1	ML007D1	Bypass message arbitration for toll rate DMS signs	Toll Rate DMS and Lane Status DMS shall not use message arbitration.	PS	4.3
FEAT33.1.3	ML008A	Included segments	The software shall be designed to support all segments of Phase 1 and 1B at a minimum. All segments currently in operation shall be available in configuration, operations screens and displays wherever segments are utilized.	PS	3.1
FEAT33.1.4	ML011S	Timestamp XML communications	The Pricing subsystem shall record and timestamp all incoming and outgoing XML communications between Pricing subsystem and Data Bus to the database.	PS	4.3
FEAT33.1.6		Data Storage		PS	4.3

FEAT33.1.6.1	ML017S	Data stored for successful rate/mode	Data stored for successful rate/mode requests shall include: oSegment ID oUser ID oMode (or Middleware Rate Adjustment) oRate oRequest Time oEffective Time oEnding Time (if provided) oTransit Times (if provided) oEvent ID (if provided) oComments (if provided) oSunGuideID	PS	4.3
FEAT33.1.6.2	ML018S	Data stored for pricing alerts	Data stored for pricing alerts shall include: oClient-unique ID if available oSunGuide Alert ID oDate/Time oAlert Details (text presented to user)	PS	4.3
FEAT33.1.6.3	ML019S	Data stored for alert acknowledgements	Data stored for alert acknowledgements shall include: oSunGuide Alert ID oUser ID oTime Acknowledged (time received/stored by SunGuide)	PS	4.3
FEAT33.1.6.4	ML020S	Data stored for successful rate acknowledgements	Data stored for a successful rate acknowledgement (from middleware) shall include: oSunGuide ID oSunpass ID oDate/Time of acknowledgement	PS	4.3

FEAT33.1.6.5	ML021S	Data stored for a middleware interface	Data stored for a middleware interface error shall include: oSegment ID oSunGuide ID of message to middleware oError Details (error string returned by middleware)	PS	4.3
FEAT33.1.6.6	ML032U2	Data stored for Express Lanes Alters Acknowledgments	Data stored by the software for Express Lanes Alerts Acknowledgements shall include the unique alert ID and the User ID supplied in the acknowledgement.	PS	4.3
FEAT33.1.7		Offline Update Synchronization	When Sunpass imports rates using an offline rate file exported from SunGuide, Sunpass will provide a file that specifies which of these rates have been successfully imported into Sunpass so that SunGuide can import this information and record these as successfully delivered.	PS	4.3
FEAT33.1.7.1	ML028A	Import file	The SunGuide software shall provide a means for a user to select a file and for SunGuide to import the specified file containing the SunGuide ID, Sunpass ID, rate, effective time and status for each rate that was imported into Sunpass via an offline file.	PS	4.3
FEAT33.1.7.2	ML029A	Record File Information	For each rate reported in this file that was not successfully transferred prior to the loss of communications, SunGuide shall then record this information as if it had been transferred via the normal communications channel, except that a status indication shall be included to indicate that this was an offline update.	PS	4.3

FEAT33.1.7.3	ML035A	File Creation	The software shall create a file on a daily basis with all rates not delivered to the Middleware, except rate messages that were rejected by the middleware with unrecoverable errors and those previously successfully exported, formatted the same as those sent when connected to the Middleware.	PS	4.3
FEAT33.1.8	ML012M	Communication between the software and Express Lanes clients	Communications between the software and Express Lanes clients shall be in XML, including requests and responses for configuration data, alerts, status messages and commands.	PS	4.3
FEAT33.1.9		Sequence for selecting Transit Time parameters	The software shall use the following decision sequence for selecting the Transit Time parameters when the parameters have not been provided by a client request: 1.If there is no pending rate (posted on at least one toll rate DMS, but not yet on gantry) or there is a pending rate and the new rate is equal to the pending rate, use the default Minimum Transit Times if the new rate is less than or equal to the active rate on the gantry and use the default Maximum Transit Times if the new rate is greater than the active rate on the gantry. 2.Else if there is a pending rate use the default Minimum Transit Times if the new rate is less than the pending rate and use the default Maximum Transit Times if the new rate is greater than the pending rate.	PS	4.3
FEAT33.2		Configuration		PS	3.1

FEAT33.2.1	ML003A	Delay parameter configuration	Authorized users shall be able to edit the maximum and minimum Toll Rate Transit Time Parameters for each Toll Rate DMS, in seconds, using the Administrative Editor.	PS	4.3
FEAT33.2.1.2	ML015P	Effective time of changes to delays	The software shall use the new default Toll Rate Transit Time parameters for rate changes that occur (i.e. initial DMS posting is scheduled to occur) after the new default parameter value is set and shall not apply the change to a pending rate update (i.e. one already in the process of being posted).	PS	4.3
FEAT33.2.1.3	ML003A1	Change to maximum or minimum transit time	The Administrative Editor shall not permit a change to a maximum or minimum transit time that would result in the maximum transit time being less than the minimum transit time.	PS	4.3
FEAT33.2.2	ML009A	Daily rate schedule configuration	Authorized users shall be able to create and maintain a 24-hour Daily Rate Schedule using the Administrative Editor.	PS	3.1
FEAT33.2.2.1	ML004P2	Time configuration	For a Daily Rate Schedule, the user shall be able to enter the time a rate begins in at least 15 minute increments, starting at midnight, for the entire 24 hour period (HH:00, HH:15, HH:30, HH:45).	PS	3.1
FEAT33.2.2.2	ML010A	Toll rate configuration	For a Daily Rate Schedule, the user shall be able to enter the toll rate charged for each period in dollars and cents.	PS	3.1
FEAT33.2.2.3	ML011A	Daily rate schedule lock	The user shall not be allowed to change a Daily Rate Schedule once this table has been used (i.e. used to generate a toll rate sent to the middleware).	PS	3.1
FEAT33.2.3	ML004P3	Segment rate schedule configuration	The user shall be able to create and edit a Segment Rate Schedule for a week.	PS	3.1

FEAT33.2.3.1	ML002A	Selection of the segments and start date	When creating/editing a Segment Rate Schedule, the user shall be able to set the Segment(s) the toll rates apply to and Start Date for the rates in the table.	PS	3.1
FEAT33.2.3.2	ML004P4	Table rows for days of the week	For each day of the week, the user shall be required to select a Daily Rate Schedule to use with the following day or table types for that day of the week: Normal, Holiday/Special Event, Observed Holiday	PS	3.1
FEAT33.2.3.3	ML012A	Segment rate schedule locking	The user shall not be allowed to change a Segment Rate Schedule once this table has been used (i.e. used to generate a toll rate sent to the middleware).	PS	3.1
FEAT33.2.4	ML013A	Viewing and editing TOD assignments	The software shall provide a means for a user to view and edit Type-of-Day assignments (Holiday/Special Event or Observed Holiday) for current and future dates via the Administrator Editor.	PS	3.1
FEAT33.2.4.1	ML014A	Treatment of past dates	The software shall not allow a user to edit assignments for past dates.	PS	3.1
FEAT33.2.4.2	ML015A	Menu for TOD selection	When the user selects a date to change the Type-of-Day, the software shall provide a menu, set of radio buttons, or similar means that restricts the user to selecting Holiday or Observed Holiday values.	PS	3.1
FEAT33.2.5	ML016A	Notification for start date/time in the past	If the user creates or modifies an entry with a start date and time that is prior to the current date and time, the software shall not save the entry and shall notify the user that the entry shall not be allowed.	PS	3.1
FEAT33.2.6	ML017A	Express lanes DMS configuration	Authorized users shall be able to configure DMS for the Express Lanes facility using the Administrative Editor or Configuration files.	PS	3.1

FEAT33.2.6.1	ML007A	DMS type selection	The user shall be able to select if a DMS displays standard DMS messages (Lane Status DMS), if it displays toll rates and is mounted on an approach (Toll Rate DMS), or if it displays toll rates and is mounted on the toll gantry (Toll Gantry DMS).	PS	3.1
FEAT33.2.6.2	ML002D	Association of multiple DMS signs per segment	The software shall support the association of multiple DMS, whether Lane Status, Toll Rate or Toll Gantry, with a segment.	PS	4.3
FEAT33.2.6.3	ML018A	Toll rate DMS segment association	The user shall be able to select the segment(s) whose rate (or combined rate) is displayed on a Toll Rate DMS.	PS	3.1
FEAT33.2.6.4	ML019A	Toll rate/gantry DMS static text	The user shall be able to enter and edit the text that is on the static sign associated with each Toll Rate DMS or Toll Gantry DMS.	PS	3.1
FEAT33.2.6.5	ML020A	Toll rate/gantry DMS default messages	A user with permissions to configure Express Lanes shall be able to configure mode-specific one-line messages via the Administrative Editor that will be posted for Toll Rate DMS and Toll Gantry for Closed and Zero Rate, and for Lane Status DMS for Closed, Zero Rate and Operating/Tolling (Time-of-Day, Dynamic and Manual modes shall share one message).	PS	4.3
FEAT33.2.6.6	ML021A	Default message validation	The software shall prevent the user from entering default messages longer than 6 characters for a Toll Rate DMS.	PS	3.1
FEAT33.2.6.7	ML022A	Addition and removal of DMS signs	The software shall allow DMS to be added and removed from operating with the express lanes module using the Administrative Editor.	PS	3.1
FEAT33.2.6.7.1	ML022A1	Sign removal affects for pending rate messages	The removal of a DMS from the express lanes module shall affect future and current pending rate messages.	PS	3.1

FEAT33.2.6.8	ML027A	Entering default message for Lane Status DMS	The software shall prevent the user from entering default messages longer than 18 characters for a Lane Status DMS.	PS	4.3
FEAT33.2.7	ML023A	Operator interface parameters and permissions	Authorized users shall be able to configure parameters related to the Operator Interface using the Administrative Editor or configuration file.	PS	3.1
FEAT33.2.7.1	ML005A	TOD pricing permissions	The user shall be able to assign permissions to users or user classes to place Express Lanes into an mode via buttons on the Express Lanes Tab.	PS	4.3
FEAT33.2.7.2	ML005A1	Express lanes alert permissions	The user shall be able to assign permissions to users or user classes to receive and acknowledge alerts for the express lanes as defined in requirement ML010U.	PS	3.1
FEAT33.2.7.3	ML006A	Require event association flag	The user shall be able to set a flag on whether a Closed or Open/Zero Rate Override is required to be associated to an event.	PS	3.1
FEAT33.2.7.4	ML023A1	Non-TOD alert frequency	The user shall be able to set the frequency, in seconds, in which a TMC Operator is alerted when the express lanes are not operating in TOD mode.	PS	3.1
FEAT33.2.7.5	ML023A2	Maximum effective time adjustment	The user shall be able configure the maximum amount of time, in minutes, that the effective time of an override can be adjusted. The initial value shall be 10 minutes.	PS	3.1
FEAT33.2.8	ML024A	Toll systems interface parameters and permissions	Authorized users shall be able to configure parameters related to the Toll System Interface using the Administrative Editor or configuration file.	PS	3.1

FEAT33.2.8.1	ML007I	Middleware response alert period	The user shall be able to set the minimum time in minutes and seconds before the Middleware Response Alert is activated.	PS	3.1
FEAT33.2.8.4	ML024A2	Middleware heartbeat rate	The user shall be able to set the time in minutes and seconds between attempts by the software to request a heartbeat message from the Middleware.	PS	3.1
FEAT33.2.9	ML025A	Segment configuration	The user shall be able to configure parameters related to the configuration of the Express Lanes segments using the Administrative Editor or configuration file.	PS	3.1
FEAT33.2.9.1	ML025A1	Segment start point	The user shall be able to define the start location of the segment based on latitude/longitude.	PS	3.1
FEAT33.2.9.2	ML025A2	Segment end point	The user shall be able to define the end location of the segment based on latitude/longitude.	PS	3.1
FEAT33.2.10	ML003D	Association of multiple toll rate signs	SunGuide shall support the association of multiple Toll Rate signs where a single physical sign houses two Toll Rate DMS.	PS	3.1
FEAT33.2.11		Configuring Requests for Express Lanes		PS	4.3
FEAT33.2.11.1	ML003M	Retrieval of configuration	The software shall allow an authenticated Express Lanes client to retrieve the configuration of the express lanes. The response shall include segment-specific configuration data for each segment and segment-independent configuration data for the Express Lanes.	PS	4.3

FEAT33.2.11.2	ML003M1	Express Lane Configuration Data	The Express Lanes configuration data provided in response to a request for the configuration of the express lanes configuration shall include the default text used for Closed, Zero Rate and Operating/Tolling modes for Toll Rate DMS and for Lane Status DMS, the value of the Require Event Association flag, the Retroactive Adjustment Limit, the Maximum Rate Update Interval, the Suppress Rate Change Alerts flag and a list of Express Lane Segment IDs and associated segment names.	PS	4.3
FEAT33.2.11.3	ML003M2	Data provided in response to request for configuration	The segment data provided in response to a request for the configuration of the express lanes configuration shall include for each segment the Segment Maximum Toll Rate and a list of Toll Rate Signs (including Toll Gantry Sign(s)) and Lane Status Signs, including name and function for each in the order specified in the segment configuration; and including for each Toll Rate Sign and Gantry Sign, a list of DMS IDs and associated static text in the order specified in the configuration, and for each DMS, the associated segment ID(s) along with the Minimum Transit Time, Maximum Transit Time and distance to gantry (in feet).	PS	4.3
FEAT33.2.11.4	ML006M	Request segment Time-of-Day	The software shall support a request for segment Time-of-Day table and shall respond with each segment and the rate and time for each scheduled rate for that segment and date.	PS	4.3

FEAT33.2.12	ML038A	Lane Status DMS selection	An authorized user shall be able to select in Adminstrative Editor the Lane Status DMS associated with a segment.	PS	4.3
FEAT33.2.13	ML039A	Configure Maximum Rate Update Interval	A user with permissions to configure Express Lanes shall be able to configure the Maximum Rate Update Interval, which shall be specified in minutes and shall have a default value of 15 minutes.	PS	4.3
FEAT33.2.14	ML031A	Configure "Suppress Rate Change Alerts"	A configurable "Suppress Rate Change Alerts" flag shall be provided that a user with permission to configure Express Lanes can set via Administrative Editor.	PS	4.3
FEAT33.2.15	ML040A	Specify distance to Gantry for Toll Rate DMS	The software shall provide a Distance to Gantry for each Toll Rate DMS that specifies the distance to the associated gantry in feet that is configurable via the Administrative Editor by users with permissions to configure Express Lanes.	PS	4.3
FEAT33.3	ML001	Rate selection	SunGuide shall be responsible for managing rate schedules and coordinating Toll Rate DMS rate display and rate selection.	PS	3.1
FEAT33.3.1	ML016P	Rate selection and dissemination	The software shall select a toll rate and disseminate to DMS.	PS	3.1
FEAT33.3.1.1	ML001I	Rate selection for open/normal rate mode	The software shall select the toll rate for the time-of-day for each segment using the rules in requirements ML017P, ML018P, ML019P, ML020P, and ML021P when that segment is in the Open/Time of Day mode.	PS	3.1
FEAT33.3.1.1.1	ML021P	Segment selection	For each segment operating in Time-of-Day mode, the software shall use rate entries that are for that particular segment.	PS	4.3

FEAT33.3.1.1.2	ML017P	Time-of-day rate entry	When the segment is in the Open/Time of Day Rate mode: The software shall use the rate entry with the most recent Time-of-Day on or before the current time.	PS	4.3
FEAT33.3.1.1.3	ML018P	Type-of-day rate entry	When the segment is in the Open/Time-of-Day Rate mode: If the current date has been configured to be a Holiday or Observed Holiday, the software shall use the corresponding Holiday or Observed Holiday rate table. Otherwise, the software shall use the rate table for that day of the week.	PS	4.3
FEAT33.3.1.1.4	ML019P	Start date selection	When the segment is in the Open/Time-of-Day Rate mode: The software shall use the rate table of the correct type with the most recent start date on or before the current date.	PS	4.3
FEAT33.3.1.1.5	ML020P	Table type selection	When the segment is in the Open/Time of Day Rate mode: The software shall use the Time of Day Table Type unless the operator has placed the segment into an override mode, in which case the software shall use the rate entered or otherwise selected according to the override mode selected by the operator.	PS	4.3
FEAT33.3.1.2	ML009D	DMS message dissemination	The software shall communicate the toll rates in time for them to be displayed on DMS as described in the following subrequirements.	PS	3.1

FEAT33.3.1.2.1	ML009D1	Communication of rate to toll rate DMS	At every time that is a whole multiple of fifteen minutes (:00, :15, :30 and :45), the software shall update each Toll Rate DMS, the Gantry DMS and Lane State DMS and send the rate to the Middleware, even if the rate is not changing, except if there is a pending rate, using the current rate in effect, except when in Time of Day mode, in which the rate shall be based on the Time of Day rate table.	PS	4.3
FEAT33.3.1.2.1.1	ML009D2	Communication of increased rate to toll gantry signs	If a Toll Gantry DMS is configured for a segment, the software shall communicate an increased rate to a segment's Toll Gantry DMS at a time equal to the applicable Maximum Toll Rate Change Delay added to the applied time of the toll rate change.	PS	4.3
FEAT33.3.1.2.2	ML009D4	Toll rate DMS and toll gantry rate message retry	The software shall resend a toll rate or lane status message at a configurable rate defined by the DMS Resend Rate until the Toll Rate DMS, Toll Gantry DMS or Lane Status DMS acknowledges receipt, a new toll rate/mode is submitted, or the Maximum DMS Resends is reached whichever comes first.	PS	4.3
FEAT33.3.1.2.3	ML009D5	Actions when rate superseded	If the software suspends sending a message to a Toll Rate DMS, Toll Gantry DMS or Lane Status DMS because of a new toll rate or operating mode, the software shall clear the old message in pricing module buffers/queues and record the failure.	PS	4.3

FEAT33.3.1.2.4	ML009D6	Override of manual message by new rate message	When a new rate is selected for display on a Toll Rate DMS, Toll Gantry DMS or Lane Status DMS currently displaying a manually-selected message, the software shall replace the manual message with the new rate message.	PS	4.3
FEAT33.3.1.2.5	ML007P	Updates to toll rate signs	When in Time-of-Day mode, SunGuide shall update the Toll Rate DMS associated with a segment having the greatest Toll Rate Transit Time at the scheduled time of each rate change, then update the other Toll Rate DMS associated with that segment at times specified by ML009D10.	PS	4.3
FEAT33.3.2	ML005P	Rate schedule time definition	The rate schedule time, in rate schedule table, shall be the time the toll rate is first sent to a Toll Rate DMS.	PS	3.1
FEAT33.3.3	ML011P3	Max/min time parameters	The default Maximum and Minimum Transit Times parameters shall not vary by time-of-day.	PS	4.3
FEAT33.4		Incident management		PS	3.1
FEAT33.4.1	ML013E	Events with express and general purpose lanes	The software shall provide a means to manage the facility in response to Express Lanes and general purpose lanes events.	PS	3.1
FEAT33.4.1.1	ML014E	Event response	The software shall respond to events in the Express Lanes and general purpose lanes.	PS	3.1
FEAT33.4.1.1.1	ML015E	Toll rate/gantry sign functions	Toll Rate and Toll Gantry DMS shall perform special functions as decribed in the following subrequirements.	PS	3.1
FEAT33.4.1.1.1.1	ML015E1	Manual control and TOD/override messages	Toll Rate and Toll Gantry DMS shall treat Manual Control Messages and TOD/Override messages as of equal priority (the last message posted will be displayed).	PS	3.1

FEAT33.4.1.1.1.2	ML015E2	TOD messages not sent for overrides	Toll Rate and Toll Gantry DMS shall not be sent TOD messages when a segment Override Message is in effect.	PS	3.1
FEAT33.4.1.1.1.3	ML015E3	Event messages not sent	Toll Rate and Toll Gantry DMS shall not be sent Event Messages.	PS	3.1
FEAT33.4.1.1.4	ML002E1	General purpose DMS and other device response	When an event is declared blocking Express Lanes, the software shall treat the Express Lanes as if they are part of the General Purpose lanes and include General Purpose DMS and other devices and means of dissemination in the suggested response plan following standard SunGuide rules.	PS	3.1
FEAT33.4.1.2	ML018E	General handling of overrides	When a client changes the segment's mode and/or rate or issues or discontinues a Middleware Rate Adjustment, other segments shall remain unaffected.	PS	4.3
FEAT33.4.1.2.1	ML018E1	Suspension of TOD rate communication to Middleware	When a segment is placed in an override mode, the software shall not communicate any toll rate changes for that segment from Open/Normal Rate mode while the segment remains in override.	PS	3.1
FEAT33.4.1.2.2	ML018E2	Segment independence for overrides/return to normal	When a segment is placed into or taken out of an Override mode, all other segments shall remain in their current operating mode.	PS	3.1
FEAT33.4.1.3	ML019E	Resuming TOD operation	When an Operator returns a segment to Open/Time of Day Rate mode, the software shall perform the following actions: (subrequirements)	PS	4.3
FEAT33.4.1.3.1	ML019E1	Rate selection	The software shall select and implement the rate that is in effect for the time the previous mode is ended.	PS	4.3

FEAT33.4.1.3.2	ML019E2	Middleware communication	The software shall communicate to the Middleware the new rate with an effective time as specified by requirement ML010P depending on if the new toll rate is higher or lower than the previous mode toll rate for the segment.	PS	4.3
FEAT33.4.1.4	ML004E	Open/closed override specific actions	The software shall operate the Express Lanes in response to a segment being placed into Closed or Open/Zero Toll mode.	PS	3.1
FEAT33.4.1.4.1	ML004E2	Toll rate/gantry DMS message on open/closed segment	When a segment is in Closed or Zero Rate mode, the software shall automatically post the appropriate Toll Rate DMS, Toll Gantry DMS and Lane Status DMS default message to Toll Rate DMS, Toll Gantry DMS and Lane Status DMS associated with a segment.	PS	4.3
FEAT33.4.1.4.2	ML004E1	Open/closed mode toll rate	The software shall set the toll rate to $0.00 for the duration of the override.	PS	3.1
FEAT33.4.1.4.3	ML004E4	Open/closed mode toll rate default effective time	When a segment is placed in Closed or Open/Zero Toll mode, the software shall default the effective time of the Override Toll Rate to the time the Operator applies the override or as specified by the TMC Operator.	PS	3.1
FEAT33.4.1.4.4	ML020E	Open/closed mode toll rate Middleware dissemination	When a segment is placed in Closed or Open/Zero mode, the software shall send the Middleware the rate message for the mode toll rate within 5 minutes of the Operator entering the segment override.	PS	4.3
FEAT33.4.1.4.5	ML021E	Open/closed toll rate/gantry DMS dissemination	The software shall send the messages for Toll Rate DMS, Toll Gantry DMS and Lane Status DMS to associated Toll Rate DMS, Toll Gantry DMS and Lane Status DMS within 30 seconds of the TMC operator approving Closed and Zero Rate modes.	PS	4.3

FEAT33.4.1.5.1	ML022E1	Send toll rate to client	The software shall send the toll rate provided by the client to the Middleware for a Middleware Rate Adjustment upon its creation.	PS	4.3
FEAT33.4.1.5.2	ML022E2	Open/manual rate mode toll rate default effective time	When a segment is placed in Open/Manual Toll mode, the software shall default the effective time of the Override Toll Rate to the time the Operator applies the override or as specified by the TMC Operator.	PS	4.3
FEAT33.4.1.5.3	ML022E3	Toll rate/gantry DMS operation	The software shall not update the Toll Rate DMS and Toll Gantry DMS for when entering Open/Manual Rate.	PS	3.1
FEAT33.4.1.5.5	ML024E	Time-of-Day/Dynamic/manual rate mode	When a segment is changed into Time-of-Day, Dynamic or Manual Rate mode, the software shall automatically post the Operation/Tolling Lane Status DMS default message to the Lane Status DMS associated with the segment.	PS	4.3
FEAT33.4.1.5.6	ML022E5	Toll Rate/Ganry DMS not updateable	The software shall not update the Toll Rate DMS and Toll Gantry DMS upon the creation of a Middleware Rate Adjustment.	PS	4.3

FEAT33.4.1.5.7	ML038U	Active Middleware Rate Adjustment for a segment	If a Middleware Rate Adjustment is active for a segment when an operator or Client changes the rate/mode or the software sends a periodic (15 minute) rate update to the middleware, the new rate shall be submitted to the middleware (even if the same as the previous rate or the current adjusted rate) and the software shall pop up an alert and send an alert message to Express Lanes authorized clients to inform the operator that a rate/mode change/update was implemented with a Middleware Rate Adjustment in effect and to ask whether the Adjustment should continue or end unless for a periodic rate, the previous rate was submitted within the prior 15 minutes and the periodic rate is the same as the previous rate, in which case the Adjustment shall automatically continue without generating an alert or requiring confirmation.	PS	4.3
FEAT33.4.1.6	ML023E	Open/manual rate mode specific actions	The software shall meet the following requirements while entering, maintaining or exiting the Open/Manual Rate mode.	PS	4.3
FEAT33.4.1.6.1	ML023E1	Open/congested rate mode toll rate	The software shall use the toll rate selected by the operator.	PS	3.1
FEAT33.4.1.6.3	ML023E3	Toll rate/gantry DMS operation	The software shall update the Toll Rate DMS and Toll Gantry DMS with the High Congestion toll rates following the rules of requirement ML009D.	PS	3.1
FEAT33.4.1.6.4	ML023E4	Selct Time-of-Day rates	When a client changes the mode to Time-of-Day mode, the software shall select the current Time-of-Day rate within 30 seconds and disseminate to DMS and Middleware.	PS	4.3

FEAT33.4.1.7	ML030E	Rate/Mode change	When a rate/mode change occurs the Lane Status DMS shall be updated at the time that the first Toll Rate sign is updated.	PS	4.3
FEAT33.5		Tabbed GUI		PS	3.1
FEAT33.5.1	ML001U	TMC GUI	The SunGuide Tabbed GUI shall provide an Express Lanes Tab containing controls and real-time status information to allow TMC operators to operate the Express Lanes.	PS	3.1
FEAT33.5.1.1	ML006U	Current rate display	The Express Lanes Tab shall include the toll rate and historical or projected effective times for the current and next projected toll rates for each segment, if known; operating mode for the rate; and an indication if a Middleware Rate Adjustment is in progress.	PS	4.3
FEAT33.5.1.2	ML007U	Current DMS display	The Express lanes Tab will include the current message displayed on each Toll Rate and Toll Gantry as determined by sign status update messages.	PS	3.1
FEAT33.5.1.3	ML015U	Express lanes event data	Data on active event associated with an express lanes override to include event id and short event description.	PS	3.1
FEAT33.5.1.4	ML021U	Express lanes alert box	The Express Lanes Tab shall include an Alert Box capable of displaying alerts from the Express Lanes module as defined in requirement ML010U.	PS	3.1
FEAT33.5.1.5	ML022U	Toll rate/gantry DMS static display	The graphic for Toll Rate DMS and Toll Gantry DMS shall include the static text configured in the system for the Toll Rate Sign housing the DMS.	PS	3.1

FEAT33.5.1.6	ML023U	Tab information update	The software shall update the data displayed in the Express Lanes tab with current data within 5 seconds of change (or of confirmation of change by a field device or remote interface) without interrupting any operation the Operator is performing or causing loss of operator entered data, so long as adequate machine and network resources are available.	PS	3.1
FEAT33.5.2	ML003U	Segment override	The Tabbed GUI shall provide tools in the Express Lanes Tab allowing the user to place a segment into Time-of-Day, Closed, Zero Rate, or Manual Rate mode.	PS	4.3
FEAT33.5.2.1	ML003U1	Mode permissions	The Mode controls shall either be not visible or should be inactive to users not authorized to use them.	PS	4.3
FEAT33.5.2.2	ML024U	Override prompt	When an Operator changes an Express Lanes segment's mode, the Tabbed GUI shall allow the user to enter additional parameters related to the change in mode.	PS	4.3
FEAT33.5.2.2.1	ML007E	Select effective time	The Express Lanes Mode Selection shall allow the user to edit the Effective Time for Closed and Zero Rate modes.	PS	4.3
FEAT33.5.2.2.2	ML024U1	No effective time editing for open/manualrate mode	The Override Prompt shall not allow the user to edit the Override Effective Time for the Open/Manual Rate mode.	PS	4.3
FEAT33.5.2.2.3	ML004E6	Override default time	As the default for the Override Time Prompt, the software shall use the system time when the prompt was created.	PS	3.1
FEAT33.5.2.2.4	ML005U	Mode text field	The mode functionality shall allow the Operator to enter text that is stored as part of the record for a segment mode.	PS	4.3

FEAT33.5.2.2.5	ML004U	Event association capability	The Mode Selection and Middleware Rate Adjustment functionality shall allow the Operator to associate the mode or adjustment with an active event by selection from a list of current open events.	PS	4.3
FEAT33.5.2.2.5.1	ML004U1	When event association is required	If the Event Association flag has been set in the configuration, the Operator Prompt shall require the Operator to associate the Closed and Zero Rate modes with an active event before the mode can be applied. Event Association shall remain optional for Manual Rate, Time-of-Day, and Dynamic modes, and the Middleware Rate Adjustment process.	PS	4.3
FEAT33.5.3	ML010U	Alerts	The Tabbed GUI shall alert all Operators granted Express Lanes Alert Permission by generating an alert via the Alert Bar and Alert Box(s) for the scenarios in requirements ML010U1, ML010U2, and ML012U.	PS	3.1
FEAT33.5.3.1	ML010U1	No DMS update	If a Toll Rate DMS or Lane Status DMS has not updated successfully after Maximum DMS Resends retries, a DMS Update Failure Alert shall be sent to subscribed Express Lanes clients.	PS	4.3
FEAT33.5.3.2	ML010U2	Unsuccessful Middleware communication	When the Middleware has not responded to a rate change message, not including retries of that message, within the time period specified by the Middleware Response Alert.	PS	3.1

FEAT33.5.3.3	ML011U	Non-open/normal rate operation	The software shall provide a pop-up operator alert when an Express Lanes segment is not operating in Open/Normal Rate or Dynamic mode. The alert shall have a period of the Non-TOD Alert Frequency.	PS	4.3
FEAT33.5.3.4	ML012U	Associated event closed	The software shall provide an alert to subscribed Express Lanes clients if a segment's operating mode is associated with an event and that event is closed while the segment is still in that mode or if the segment state associated with an event is CLOSED and has not been changed within 5 minutes after all travel lane blockages have been removed from the associated event.	PS	4.3
FEAT33.5.3.5	ML031A1	Rate Change Alerts not visible if flag set	If the "Suppress Rate Change Alerts" flag is set, Rate Change Alerts shall no longer be presented to users in the Tabbed GUI.	PS	4.3
FEAT33.5.3.6	ML010U3	Alert for middleware rate transmission	The software shall generate an alert message if middleware rate transmission fails.	PS	4.3
FEAT33.5.3.7	ML010U4	Send tranmission failure alert messages to clients	The software shall send the middleware rate transmission failure alert messages to subscribed Express Lanes clients; the message shall include a unique alert ID, segment ID, SunGuide ID, Sunpass message ID (if error reported by Sunpass), error message (if provided), rate, effective time, failure type (SunGuide-reported or Sunpass-reported) and time last attempted.	PS	4.3
FEAT33.5.3.8	ML010U5	Details of failure in message	The middleware rate transmission failure alert messages shall provide details of middleware failure if provided by the middleware.	PS	4.3

FEAT33.5.3.9	ML034U	Suport alert for an incorrect DMS message	The software shall support an alert for an incorrect DMS Message message from an authenticated Express Lanes client; the alert shall include client-generated unique alert ID, a DMS ID, the currently posted message and suggested DMS message.	PS	4.3
FEAT33.5.4	ML013U1	Express lanes DMS	The Tabbed GUI shall provide tools in the Express Lanes Tab and/or elsewhere for controlling the Toll Rate and Toll Gantry DMS.	PS	3.1
FEAT33.5.4.1	ML025U	Toll rate/gantry DMS availability	Toll Rate DMS, Toll Gantry DMS and Lane Status DMS shall only be controllable by operators with a combination of DMS permissions and additional Express Lanes or Express Lanes DMS permissions.	PS	4.3
FEAT33.5.4.2	ML026U	Current rates displayed	The Tabbed GUI shall provide a means to set the toll rate message displayed on the DMS.	PS	3.1
FEAT33.5.5	ML009U	Other tabbed GUI elements	The software shall have the following (subrequirements) other elements to support TMC Operator management of the Express Lanes.	PS	3.1
FEAT33.5.5.1	ML009U1	Lane layout display	The display of the lane layout in all Event Management GUI screens shall include a double white line delineation between the Express Lanes and General Purpose Lanes.	GUI	3.1
FEAT33.5.5.2	ML009U2	Express lanes event creation	The Tabbed GUI shall allow operators to create events in the Express Lanes in accordance to existing SunGuide rules for event creation.	PS	3.1
FEAT33.5.6	ML037U	Middleware Rate Adjustment	The Tabbed GUI shall provide tools in the Express Lanes Tab allowing the user to manage a Middleware Rate Adjustment.	PS	4.3

FEAT33.5.6.1	ML037U1	Middleware Rate Override permissions	The Middleware Rate Adjustment controls shall either be hidden or inactive for users not authorized to use them.	PS	4.3
FEAT33.5.6.2	ML037U2	User Edit	In the Middleware Rate Adjustment dialog, the software shall allow a user to edit the rate, Effective Time, and comment and to associate the Adjustment with an event.	PS	4.3
FEAT33.5.7		Express Lanes Tabbed GUI		PS	4.3
FEAT33.5.7.1	ML002I	User send messages	Except for startup configuration, the Express Lanes tabbed GUI shall not allow a user to send messages including rates whose effective time is earlier than the current time minus the Retroactive Adjustment Limit parameter.	PS	4.3
FEAT33.5.7.2	ML044U	Current Rate and Date/Time	The Express Lanes Tab shall show the current rate and its effective date and time as well as the next rate expected to go into effect (if one is available), whether a pending or scheduled rate, along with its effective date and time.	PS	4.3
FEAT33.5.7.3	Ml046U	Include DMS message	The Express Lanes Tab will include the DMS message sent by the Pricing Subsystem and the time that DMS message was sent for each Toll Rate DMS.	PS	4.3
FEAT33.6	ML002	Toll system interface	The software shall communicate toll rate changes to Turnpike systems via Turnpike's Middleware.	PS	3.1
FEAT33.6.1	ML004I	Turnpike WSDL conformance	The software shall send and receive messages that conform to the WSDL specification provided by the Turnpike.	PS	3.1
FEAT33.6.2	ML006I	Confirming receipt of variable rate messages	SunGuide shall process the receipt or non receipt of a SunGuide Response Message from the Middleware confirming receipt of the VariableRate message.	PS	3.1

FEAT33.6.3	ML010I	Latest send time of toll rate messages	The software shall begin sending a new toll rate to the Middleware no later than 1 minute after the calculation or setting of the effective time.	PS	3.1
FEAT33.6.3.1	ML002I	Maximum delay in sending rate messages	The software shall only send messages whose effective time is no earlier than the current time minus the Middleware Maximum Time After parameter.	PS	3.1
FEAT33.6.4	ML010P	Toll rate effective time determination	The software shall determine the effective time of a toll rate prior to sending to the Middleware.	PS	3.1
FEAT33.6.4.1	ML011P5	Effective time for rate increases	The effective time for a toll rate change on a segment in Time-of-Day, Dynamic and Manual Rate modes shall be the greatest Minimum Transit Time or greatest Maximum Transit Time, as appropriate (as specified by client or per ML009D7), for Toll Rate DMS associated with the segment added to the current time.	PS	4.3
FEAT33.6.4.4	ML012I	Manual DMS override handling	If a Toll Rate DMS or Toll Gantry DMS is under manual control, the software shall not send a rate change message to the Middleware with the manual rate.	PS	3.1
FEAT33.6.4.5	ML013I	Effective time for closed and open/zero rate modes	When the express lanes are placed into the Closed or Zero Rate modes, the software shall send a rate message to the Middleware with an effective time that is the time the mode was entered or otherwise adjusted by the operator.	PS	4.3
FEAT33.6.4.6	ML014I	Effective time for open/manual rate mode	The effective time for a rate change during Open/Manual Rate mode shall follow the requirements for rate changes during Open/Time-of-Day Rate mode.	PS	4.3

FEAT33.6.4.7	ML003E	Rates follow normal operation rules	The Toll Rate DMS, Lane Status DMS and the toll rates communicated to the Turnpike Middleware shall continue to follow normal operational rules regardless of the event entered by an operator.	PS	4.3
FEAT33.6.5	ML015I	Middleware heartbeat	The software shall verify that communications with the Middleware is still active at the Middleware Heartbeat Rate.	PS	3.1
FEAT33.7	ML004S	Reporting	The software shall store in the SunGuide database information - as described in the following requirements- to enable system personnel to review changes to configuration items, Express Lane status and DMS usage and to produce reports if desired.	PS	3.1
FEAT33.7.1	ML005S	Crystal reports accessibility	The data shall be stored in the SunGuide database and accessible with Crystal Reports.	PS	3.1
FEAT33.7.2	ML006S	Activity tracking	The software shall track activities related to the Express Lanes.	PS	3.1
FEAT33.7.2.1	ML001S	Rate table change tracking	The software shall store current and expired rate tables.	PS	3.1
FEAT33.7.2.2	ML003S	Effective toll rate change tracking	The software shall store any change attempts to toll rates via the Middleware to include new toll rate, segment, effective time, response or lack thereof from the Middleware, and time of the response.	PS	3.1
FEAT33.7.2.3	ML007S	Cessation of change attempts	The software shall store any occasions where the software could not send or ceased to send rate messages to the Middleware due to exceeding the number of retries or a rate message being too old.	PS	3.1

FEAT33.7.2.4	ML002S	Effective DMS change tracking	The software shall store any change attempts to Express Lanes DMS to include, message content, DMS ID, success in displaying new message or lack thereof, effective time of the DMS display, and error messages related to changing a DMS message.	PS	3.1
FEAT33.7.2.5	ML008S	Store changes in mode, rate	The software shall store changes in mode, rate, Middleware Rate Adjustments or end of Middleware Rate Adjustment in the database, including the User ID who submitted the request, the request time, rate, effective time, ending time (if provided), Comments Field, segment affected, and event associations.s.	PS	4.3
FEAT33.7.2.6	ML009S	Middleware heartbeat tracking	The software shall keep a record of failed Middleware Heartbeats to include time attempted.	PS	3.1
FEAT33.8		Maximum Rate Support		PS	4.3
FEAT33.8.1	ML032A	Setting maximum toll rate	An authorized user will be able to set the Segment Maximum Toll Rate for each segment in Administrative Editor.	PS	4.3
FEAT33.8.2	ML033A	Selecting of Daily Rate Schedule	For a Segment Rate Schedule, the user shall only be able to select Daily Rate Schedules in which no rate exceeds the Segment Maximum Toll Rate.	PS	4.3
FEAT33.8.3	ML045U	Express Lane Tab's Mode Selection functionality	The Express Lanes Tab's Mode Selection functionality shall only apply a mode change if the rate is less than or equal to the Segment Maximum Toll Rate for the selected segment and shall notify a user who attempts to submit a rate that exceeds the limit.	PS	4.3

FEAT33.8.4	ML034A	Setting Maximum Toll Rate Parameter	If an attempt is made to set the Segment Maximum Toll Rate parameter for a segment and current or future Segment Rate Schedules associated with that segment include a rate that exceeds the new Segment Maximum Toll Rate, the software shall not implement the change and shall notify the user of the conflict, specifying the Segment Rate Schedule(s) with conflicts and the Daily Rate Schedule(s) used by those Segment Rate Schedule(s) that contain the conflicting rates.	PS	4.3
FEAT33.9		Restart Handling		PS	4.3
FEAT33.9.1	Ml039U	Display starting state	For each segment upon restart, the software shall display the starting state to the user and allow the user to modify and approve the starting state. The starting state of a segment is defined to be the operating mode, toll rate, effective time, rate history, whether a Middleware Rate Adjustment process is active for the segment and, if so, the rate and effective time.	PS	4.3

FEAT33.9.1.1	ML039U1	Last known Mode Time of Day	Upon restart, if the last known mode for a segment was Time of Day and the current rates posted on the Toll Rate DMS for a segment are the same, match the last known rate posted and match the Time Of Day rate that would have been in effect for that segment at that time and the Lane Status DMS for that segment matches the text specified for "Operating/Tolling", the suggested mode for that segment shall be Time of Day and the suggested rate shall be the rate shown in the Time of Day tables for the current time and the rate actually posted shall be the rate in effect at the time the operator approves the recommendation, which may be different from what was recommended.	PS	4.3
FEAT33.9.1.2	ML039U2	Last knwon Mode Manual or Dynamic	Upon restart, if the last known mode for a segment was either Manual or Dynamic and the current rates posted on the configured Toll Rate DMS for a segment are the same and match the last known rate posted for that segment and the Lane Status DMS for that segment matches the text specified for "Operating/Tolling", the suggested mode for that segment shall be Manual and the suggested rate shall be the rate currently posted on the Toll Rate DMS.	PS	4.3

FEAT33.9.1.3	ML039U3	Last Known Mode Closed	Upon restart, if the current rates posted on the configured Toll Rate DMS for a segment match the text specified for Closed mode and the Lane Status DMS message for that segment matches the text specified for Closed mode and either the last known mode was Closed or the text specified for Closed mode differs from that for Zero Rate mode, the recommended mode shall be Closed and the recommended Toll Rate and Lane Status messages shall be those specified for Closed mode.	PS	4.3
FEAT33.9.1.4	ML039U4	Suggested Mode Zero Rate	Upon restart, if the current rates posted on the configured Toll Rate DMS for a segment match the text specified for Zero Rate mode and the Lane Status DMS message matches the text specified for Zero Rate mode for that segment and either the last known mode for that segment was Zero Rate mode or the text specified for Zero Rate mode differs from that for Closed mode, the recommended mode shall be Zero Rate and the recommended Toll Rate and Lane Status messages shall be those specified for Zero Rate mode.	PS	4.3

FEAT33.9.1.5	ML039U5	Time-of-Day mode	Upon restart, if the current rates posted on the configured Toll Rate DMS for a segment are the same and do not match the last known rates posted but do match the current rate for Time-of-Day mode, the suggested mode will be Time-of-Day mode with the suggested rate being the rate in the Time-of-Day table for the time when activated, which may be different than the rate shown to the operator due to the time required to review and approve the recommended starting state.	PS	4.3
FEAT33.9.1.6	ML039U6	Suggested Mode Manual Mode	Upon restart, if the current rates posted on the configured Toll Rate DMS for a segment are the same, but neither match the last known rates posted nor the current rate for Time-of-Day mode, the suggested mode will be Manual mode with the suggested rate being the posted rate.	PS	4.3
FEAT33.9.1.7	ML039U7	No suggestion for Operating mode	Upon restart, if a current message posted on a Toll Rate DMS for a segment cannot be interpreted as a valid rate or if the rates on the configured Toll Rate DMS for that segment are not the same or if the Lane Status DMS is not consistent with the text associated with the mode indicated by the rate comparisons, the software shall make no suggestion to the user for the operating mode or the rate to enter.	PS	4.3

FEAT33.9.1.8	ML039U8	Recommend Middleware Rate Adjustment	Upon restart, if the last known state of a segment had a Middleware Rate Adjustment active and a rate update message had been delivered or queued for delivery after the last Middleware Rate Adjustment was delivered or queued for delivery, a Middleware Rate Adjustment will be recommended as the first entry in the rate history, independent of the mode and rate, with the last known Middleware Rate Adjustment rate and an effective time set to the effective time of the oldest rate delivered or queued for delivery to the Middleware after the last Middleware Rate Adjustment that was delivered or queued for delivery to the Middleware.	PS	4.3
FEAT33.9.1.9	ML039U9	Middleware Rate Override	If a middleware rate adjustment was active in the last known state of the segment prior to restart, a middleware rate override recommendation will be inserted immediately after each rate change with an effective time one second prior to the associated rate update and having a rate matching that of the last known middleware rate override.	PS	4.3
FEAT33.9.2	ML039U10	User selected Modes	Upon restart, the user shall only be able to select modes that can be manually selected through the Express Lanes Tab.	PS	4.3

FEAT33.9.3	ML039U11	User specifies mode and rate	Before starting, the user will be required to specify the mode and whether a Middleware Rate Adjustment is in effect and, if so, its rate and effective time. If Manual mode is specified, the user will also be required to specify the rate for the mode. If Closed or Zero Rate mode is specified, the user will also be required to specify the effective time for the mode.	PS	4.3
FEAT33.9.4	ML039U12	Assist operator in establishing initial status	Upon restart, and prior to the start of tolling, the Express Lanes GUI shall display the state of the Toll Rate, Toll Gantry and Lane Status signs as it does in normal operation, to assist the operator in establishing the initial status.	PS	4.3
FEAT33.9.5	ML039U13	Prevent operations if middelware rate override	The software shall produce an error and prevent submission of the rate history and prevent starting of operations for a segment if the history contains a middleware rate override that would override a rate that was previously successfully delivered or queued for delivery to the middleware and an intervening rate message exists whose effective time is at least 2 hours later than the effective time of the middleware rate adjustment.	PS	4.3
FEAT33.9.6	ML021I	Send message after user approval	Upon restart, the software shall not send a new rate to the Middleware or message to Toll Rate, Toll Gantry or Lane Status DMS until the user has approved the restart mode.	PS	4.3

FEAT33.9.7	ML020I	Begin approved mode for segment	Upon user approval of the restart mode, rate, and middleware rate adjustment data for a segment, including edits performed by the operator, the software shall begin the approved mode for that segment.	PS	4.3
FEAT33.9.8	ML015S	Store user ID and selection in database	Upon user approval and start of operations, the user ID and user selections shall be stored in the database in the same way that they would be stored if issued as "Set Mode/Rate" and Middleware Rate Adjustment requests.	PS	4.3
FEAT33.9.9	ML019I	Prevent start of operations based on rate	The software shall produce an error and prevent submission of the rate history and prevent starting of operations for a segment if a rate in the rate history has an effective time less than or equal to the effective time of the last rate successfully delivered or queued for delivery to the Middleware.	PS	4.3
FEAT33.9.10	ML019I	Prevent submission of rate history	The software shall produce an error and prevent submission of the rate history and prevent starting of operations for a segment if a rate in the rate history has an effective time less than or equal to the effective time of the last rate successfully delivered or queued for delivery to the Middleware.	PS	4.3
FEAT33.10		Data Consistency	Maintain data consistency posted to toll rate and gantry dynamic message signe (DMS) and the SunPass Patron system	PS	4.3
FEAT33.10.1	Ml016I	Unique SunGuide IDs	The Express Lanes module shall use unique sequentially assigned SunGuide IDs with each toll rate message.	PS	4.2

FEAT33.10.2	ML017I	Seding rate requests	If the Express Lanes module goes down or is restarted, it shall resume trying to send to the Middleware all rate requests pending prior to the restart.	PS	4.2
FEAT33.10.3	ML017I1	Storage of pending rate requests	Pending rate requests shall be stored in non-volatile memory, i.e. table(s) in the current SunGuide database.	PS	4.2
FEAT33.10.4	ML017I2	Start up mode of Express Lanes	Upon restart, Express Lanes module shall start up in the Open/Normal mode according to the referenced requirements ML012P, ML017P, ML018P, ML019P and ML020P.	PS	4.2
FEAT33.10.6		Encounter Error Communication	Speicifies what is recorded when SunGuide encounters and error communication	PS	4.3
FEAT33.10.6.1	ML018I	Record rate request details	When SunGuide encounters an error communicating a rate message to the middleware, SunGuide shall record in the database with the rate request details regarding the error.	PS	4.2
FEAT33.10.6.2	ML018I1	Record rate message	When SunGuide encounters an error communicating a rate message to the middleware, SunGuide shall record in the database the rate message.	PS	4.2
FEAT33.10.6.3	ML018I2	Record indication of cause of failure	When SunGuide encounters an error communicating a rate message to the middleware, SunGuide shall record in the database an indication of the cause of the failure (e.g. sending of message or Middleware processing of the message).	PS	4.2

FEAT33.10.6.4	ML018I3	Record error string	When SunGuide encounters an error communicating a rate message to the middleware due to middleware processing failure, SunGuide shall record in the database with the rate request the error string returned by the Middleware.	PS	4.2
FEAT33.10.6.5	ML018I4	Record rate request information	When SunGuide encounters an error communicating a rate message to the middleware due to communications failure, SunGuide shall record in the database with the rate request information available regarding possible cause of the communications error.	PS	4.2
FEAT33.10.7	ML016R	Record SunPass Rate ID	SunGuide shall record the returned SunPass Rate ID with SunGuide rate requests when a rate request succeeds.	PS	4.2
FEAT33.10.8	ML016R1	Display SunPass Rate ID	SunGuide Toll Viewer shall display the SunPass Rate ID with the SunGuide Rate ID in the Toll Viewer when in detail mode.	PS	4.2
FEAT33.10.9	ML026A	Configure toll rates	The Express Lanes module shall automatically verify at defined configurable frequency for a configurable period that toll rates used by the Middleware match those recorded by Express Lanes module.	PS	4.2
FEAT33.10.9.1	ML026A1	Format summary	This module shall format a summary of the comparison to be sent by email.	PS	4.2
FEAT33.10.9.2	ML026A2	Run Frequency	The comparison shall run at a configurable frequency.	PS	4.3
FEAT33.10.9.3	ML026A3	Process Data	The comparison shall process data from a configurable period.	PS	4.2
FEAT33.10.9.4	ML026A4	Configurable Email List	The email shall be sent to a configurable email list.	PS	4.2
FEAT33.10.9.5	Ml026A5	Email Content	The email shall contain a list of discrepancies found.	PS	4.2

FEAT33.10.9.6	ML026A6	Summary content	If no discrepancies found the summary shall so state.	PS	4.2
FEAT33.10.9.7	ML026A7	Comparison content in email	The email shall state when the comparison occurred and what period the comparison processed.	PS	4.2
FEAT33.10.9.8	ML026A8	Summary sections	The summary shall be divided into sections, each section shall provide the summary for an individual toll segment.	PS	4.2
FEAT33.10.10	ML017R	Additional view of toll viewer	An additional view of the Toll Viewer shall provide the rates in effect with starting and ending date and time.	PS	4.2
FEAT33.10.10.1	ML017R1	Defintion of ending time	The ending time shall be subsequent starting time minus one second.	PS	4.2
FEAT33.10.10.2	ML017R2	Additional choices for Toll Viewer	This view shall be an additional choice added to the Toll Viewer labeled appropriately.	PS	4.2
FEAT33.10.10.3	ML017R3	Time Period display	Consecutive time periods during which the rate and reason do not change shall appear as a single entry with the beginning time from the first period for that rate and the ending time from the last period with that rate.	PS	4.2
FEAT33.10.10.4	ML017R4	"Reason" for the toll	The view shall include a "reason" for the toll.	PS	4.2
FEAT33.10.11	ML010S	Logging to a text file	SunGuide shall output all logged DMS messages, toll rate messages, override, and applicable event data to a formatted text file.	PS	4.2
FEAT33.10.11.1	ML010S1	Frequency of logging	This process shall run daily (The use of the word process is not meant to imply this is a separate Windows process.)	PS	4.2
FEAT33.10.11.2	ML010S2	Log file content	Each file produced shall contain 24 hours of data, beginning at 00:00:00 and ending with 23:59:59.	PS	4.2

FEAT33.10.11.3	ML010S3	Output data	At the time the process runs it shall output data for all previously missed data runs.	PS	4.2
FEAT33.10.11.4	ML010S4	Output file format	The file format shall be XML of the same format generated by the Toll Viewer Web Service for inclusion in its SOAP messages.	PS	4.2
FEAT33.10.11.5	ML010S5	Generation of files	The process shall generate one file per segment per data period.	PS	4.2
FEAT33.10.11.6	ML010S6	Option to execute logging process	There shall be an option to cause SunGuide to execute this process on demand and specify the starting date, segment identifier, file name and "destination of the file."	PS	4.2
FEAT33.10.11.7	ML010S7	Order in Log file	File contents shall be chronologically ordered by the time sent for toll rates and sign messages, time the override was entered by the operator, and event creation time.	PS	4.2
FEAT33.11		Set Mode/Rate Request		PS	4.3
FEAT33.11.1	ML001M	Allow client to set the mode/rate of segment	The software shall allow an authorized client to set the mode / rate of a segment to include specifying Toll Rate Transit Times for each toll rate DMS and a unique client ID in the DataBus ICD-specified refID message field.	PS	4.3
FEAT33.11.2	ML001M6	Reject request to set mode/rate of a segment	The software shall reject a request to set the mode / rate of a segment whose rate exceeds the Segment Maximum Toll Rate for the submitted segment.	PS	4.3

FEAT33.11.3	ML001M7	Parameter required to set the mode of segment	The software shall require requests to set the mode of a segment to dynamic rate to have Toll Rate Transit Time parameters for Toll Rate DMS associated with the segment. In requests to set the mode of a segment to other modes, the request may have all, some or none of these parameters provided.	PS	4.3
FEAT33.11.4	ML001M8	Request to set mode doesn not contain Transit Time parameters	When a request to set the mode / rate of a segment does not contain Transit Time parameters, the Minimum Transit Time or Maximum Transit Time default values for each Toll Rate DMS shall be used per ML009D7.	PS	4.3
FEAT33.11.5	ML001M9	Response for each Toll Rate DMS	While performing the operations directed by an accepted request to set mode/rate of a segment, the software shall provide an individual response for each Toll Rate DMS (including the Gantry DMS) indicating the SunGuide ID associated with the mode/rate request, DMS ID, success or failure to post the rate and the posting time or, if unsuccessful, the last attempted posting time and error message if provided, at the time of such success or failure.	PS	4.3
FEAT33.11.6	ML001M10	Receipt of a valid request	Upon receipt of a valid request to set mode/rate of a segment, the software shall provide a response containing the client-unique ID provided with the request and the SunGuide ID associated with the mode/rate request.	PS	4.3

FEAT33.11.7	ML001M11	Send messages to subscribed express laness clients	The software shall send messages to subscribed express lanes clients indicating success or failure of rate attempts to the middleware. These messages shall include the SunGuide ID, and the time sent or, if unsuccessful, time last attempted, error message (if provided) and identification of source of error report (SunGuide or Sunpass).	PS	4.3
FEAT33.11.8	ML002M	Support request for middleware rate adjustment	The software shall support a request for a middleware rate adjustment for a segment from an Express-Lanes approved user, regardless of the current operating mode of that segment, which includes the user ID, a client-unique ID, segment ID, rate, effective time and, optionally, ending time, comment and event ID. The event ID shall be required if the Require Event Association Flag is set.	PS	4.3
FEAT33.11.8.1	ML002M1	Actions performed upon receipt of a valid request	Upon receipt of a valid request for a middleware rate adjustment for a segment, the software shall automatically perform the appropriate actions to send the appropriate rate message(s) to the middleware without user approval or intervention.	PS	4.3
FEAT33.11.8.2	ML002M3	Provide response containing unique ID	Upon receipt of a valid request for a middleware rate adjustment for a segment, the software shall provide a response containing the client-unique ID and the SunGuide ID associated with the request.	PS	4.3

FEAT33.11.9	ML025E	SendRequest for mode/rate change	If a client sends a request for a mode/rate change or a Middleware Rate Adjustment, and specifies an effective time that is in the future or is earlier than the current time minus the number of minutes specified as the Retroactive Adjustment Limit, the software shall reject the request with an "Invalid Effective Time".	PS	4.3
FEAT33.11.10	ML009D9	Post submitted rate on the Toll Rate DMS	If a valid rate request is submitted, the software shall immediately post the submitted rate on the Toll Rate DMS associated with a segment with the greatest Toll Rate Transit Time for the Time-of-Day, Dynamic and Manual Rate modes.	PS	4.3
FEAT33.11.11	Ml009D10	Posing Time for toll rate	The posting time for a toll rate on a Toll Rate DMS in Time-of-Day, Dynamic and Manual Rate modes shall be the effective time minus that DMS' appropriate (as specified by client or per ML009D7) Transit Time.	PS	4.3
FEAT33.12		Alerts		PS	4.3
FEAT33.12.1		Suppress Rate Change Alerts		PS	4.3
FEAT33.12.1.1	ML031A2	Pending rate change alert	If the "Suppress Rate Change Alerts" flag is set, the software shall automatically acknowledge pending rate change alerts for a segment when a new rate change alert is generated for that segment.	PS	4.3
FEAT33.12.1.2	ML031A3	Store pending rate change alert	The software shall store whether a pending rate change alert was automatically or manually acknowledged.	PS	4.3
FEAT33.12.2		Express Lanes alerts		PS	4.3
FEAT33.12.2.1	ML040U	Send alerts to subscribed clients	The software shall send Express Lanes alerts to subscribed Express Lanes clients.	PS	4.3

FEAT33.12.2.2	ML035U	Generate alerts	Upon receipt of an Express Lanes alert from a subscribed Express Lanes client, the software shall generate an alert in the Alert Bar and Alert Box with the data from the alert message.	PS	4.3
FEAT33.12.2.3	ML032U	Acknowledge alerts	The software shall allow authorized express lanes clients to acknowledge express lanes alerts.	PS	4.3
FEAT33.12.2.4	ML032U1	Software stores alerts	Express Lanes Alert acknowledgements shall be stored by the software.	PS	4.3
FEAT33.12.2.5	ML033U	Request Unacknowledged alerts	The software shall provide a means for an authorized Express Lanes client to request unacknowledged alerts for the Express Lanes and shall send the alert content exactly as it was sent at the time it was created, including the original unique alert ID, the time at which the alert was generated and associated data.	PS	4.3
FEAT33.12.2.6	ML036U	User acknowledgment of alert	Upon user acknowledgment of an alert from an authenticated express lanes client the software shall send an acknowledgment to subscribed Express Lanes clients; the acknowledgement shall include the alert originator-generated unique alert ID and user ID.	PS	4.3
FEAT33.12.3	ML042U	Dynamic Mode Failure Alert	When in Dynamic mode and the software does not receive an updated rate from the Express Lanes client sometime within a fifteen minute time-of-day interval (i.e. :00-:15, :15-:30, :30-:45 or :45-:00), the software shall send a Dynamic Mode Failure Alert to subscribed Express Lanes clients.	PS	4.3
FEAT33.12.4		Middleware Rate Adjustment alert		PS	4.3

FEAT33.12.4.1	ML027E	Choose adjustment continue	When a user receives a Middleware Rate Adjustment alert and chooses to have the Adjustment continue, the software shall issue a new rate message to the Middleware, using the Middleware Adjustment rate from the continued adjustment, with an effective time of the previously sent toll rate (the toll rate that triggered the alert), overriding that rate in the middleware.	PS	4.3
FEAT33.12.4.2	ML028E	End of Adjustment Rate	When a user receives a Middleware Rate Adjustment alert and chooses to have the Adjustment continue, the software shall issue a new rate message to the Middleware, using the Middleware Adjustment rate from the continued adjustment, with an effective time of the previously sent toll rate (the toll rate that triggered the alert), overriding that rate in the middleware.	PS	4.3
FEAT33.12.4.3	ML016S	Archive resolution	The software shall archive the creation and resolution of Middleware Rate Adjustment alerts.	PS	4.3
FEAT33.12.5	ML027U	Support subscription request for DMS status changes	The software shall support a subscription request for DMS status changes that provides the following data: oMessage ref ID oDMS ID oNew status	PS	4.3
FEAT33.13		Current State Requests		PS	4.3

FEAT33.13.1	ML011M	Support request for express lane states	The software shall support a request for express lanes states from Express Lanes clients and shall respond with all configured segments, their current operating state, pending (in progress) state and and whether a Middleware Rate Adjustment is in effect and, if so, the associated rate..	PS	4.3
FEAT33.13.1.1	ML011M2	Pending state of each segment	The pending state of each segment reported in response to a request for express lanes state shall include pending modes, rates & effective times, DMS IDs and scheduled update times for each associated Toll Rate DMS and associated Event IDs.	PS	4.3
FEAT33.13.1.2	ML011M1	Current state of segment	The current state of each segment reported in response to a request for express lanes state shall include current mode, rate & effective time, associated Event IDs, DMS IDs, and messages and posting times for associated DMS (Toll Rate, Toll Gantry, Lane Status), as provided by the Pricing Subsystem.	PS	4.3
FEAT33.13.1.3	ML011M3	Middleware Rate Adjustment of each segment	The Middleware Rate Adjustment of each segment reported in response to a request for express lanes state shall include whether a Middleware Rate Adjustment is in effect for the segment, and if so, the rate and effective time and associated Event IDs.	PS	4.3
FEAT33.14		Dynamic Mode		PS	4.3
FEAT33.14.1	ML029E	Support Dynamic Operating Mode	The software shall support a Dynamic operating mode for each segment that can be entered from other modes or exited to other modes.	PS	4.3

FEAT33.14.1.1	ML029E1	Use toll rate	The software shall use the toll rate sent by the valid client request upon entering or maintaining Dynamic mode.	PS	4.3
FEAT34	ML001R2	Toll Viewer (TV)	A web based browser application shall be available for users to view data related to the Express Lanes.	TV	3.1
FEAT34.1	ML002R	Detail levels	The browser shall provide two levels of informational detail: Summary and Detailed	TV	3.1
FEAT34.2	ML003R	Browser support	The Toll Viewer shall support Internet Explorer 7.	TV	3.1
FEAT34.3	ML002R1	Summary view	The Summary View shall provide information for a Customer Service Representative (CSR) to confirm the customer experience during facility usage.	TV	3.1
FEAT34.3.1	ML004R	Segment selection	The user (of the Toll Viewer) shall be able to select one or all configured segments (or Toll Gantry) to view data for.	TV	3.1
FEAT34.3.2	ML001R3	Date selection	The user shall be able to select a transaction date and time and time range to view data for.	TV	3.1
FEAT34.3.3	ML001R5	Toll rate/gantry DMS messages	The Toll Viewer Detail Report shall contain DMS message changes only, including the initial request to change, even if it did not succeed, and actual changes (such as when operation is restored); listing the posted message, starting time (time at which that toll rate DMS was requested to change when an update fails and the actual update time when an update succeeds) and ending time (1 second prior to next successful posting time), which may be beyond the end of the reporting period or may be blank if the message is still active at the current time.	TV	4.3

FEAT34.3.4	ML005R	Historical rates charged	For the selected segment, the software (the Toll Viewer) shall display the most recent toll rate update, prior to the selected transaction time, communicated to the Middleware (not including retries), the effective time of the toll rate, and the time acknowledged by the Middleware.	TV	3.1
FEAT34.3.5	ML015R	Event data	For the selected segment, the software will display the following information (subrequirements) for events on both Express and general purpose lanes during the selected time period.	TV	3.1
FEAT34.3.5.1	ML015R1	Event type	For the selected segment, the software will display the type of event for events on both Express and general purpose lanes during the selected time period.	TV	3.1
FEAT34.3.5.2	ML015R2	Event start and end time	For the selected segment, the software will display the start and end time of the event for events on both Express and general purpose lanes during the selected time period.	TV	3.1
FEAT34.3.5.3	ML015R3	Event location	For the selected segment, the software will display the EM event location of the event described for events on both Express and general purpose lanes during the selected time period.	TV	3.1
FEAT34.3.5.4	ML015R4	Lanes blocked	For the selected segment, the software will display data for any lanes that are blocked to include the maximum lane blockage for events on both Express and general purpose lanes during the selected time period.	TV	3.1

FEAT34.3.5.5	ML006R	Overrides	For the selected segment, the software (the Toll Viewer) shall display information for overrides during the selected time period.	TV	3.1
FEAT34.3.5.6	ML007R	Event geographical range	The software (the Toll Viewer) shall include all events located between the configurable segment start and end points, and on parallel pieces of roadway in the opposite direction, both Express and general purpose lanes. The event must have been active during the selected time range.	TV	3.1
FEAT34.3.6	ML008R	Ordering of viewed data	The data in the Toll Viewer shall be presented in chronological order by gantry.	TV	3.1
FEAT34.3.7	ML009R	DMS name displayed	The software (the Toll Viewer) shall use the DMS Name for CSRs for each DMS displayed in the Basic View.	TV	3.1
FEAT34.4	ML010R	Detailed view	The Detailed View of the Toll Viewer shall provide information to perform detailed, historical operations reviews	TV	3.1
FEAT34.4.1	ML010R1	Summary view as basis	The Detailed View of the Toll Viewer shall include meeting all requirements of the Summary View in addition to these subrequirements unless an explicitly stated otherwise.	TV	3.1
FEAT34.4.2	ML011R	Additional DMS data	In addition to the basic data, the user of the Toll Viewer shall be able to view all DMS message requests, whether they were successful; if unsuccessful, the reason and time as can best be determined; the time of the request; and the time of message posting, if successful.	TV	3.1

FEAT34.4.3	ML012R	Additional toll rates data	The user of the Toll Viewer shall be able to view all toll rates sent to the Middleware, if they were communicated successfully, time of communication, number of retries and confirmation, and time they took effect.	TV	3.1
FEAT34.4.4	ML001R6	Additional override data	The Toll Viewer Detail Report shall contain who entered the mode, who ended the mode, associated events, and changes to the mode's effective time.	TV	4.3
FEAT34.4.5	ML013R	Toll viewer access	The Toll Viewer application shall be able to be installed on a server located in the SunGuide DMZ.	TV	3.1
FEAT34.4.6	ML014R	Toll viewer web service	SunGuide shall provide a web service to access SunGuide and provide data to the Toll Viewer application.	TV	3.1
FEAT34.4.7	ML001R0	Data in detail view	The Toll Viewer Detail Report shall present data in the following order: Effective rates; Rate messages to the Middleware; Mode Changes; Toll Rate DMS messages; Event data	PS	4.3
FEAT34.4.8	ML001R14	Highlight DMS Rows	The Toll Viewer Detail Report shall highlight DMS rows in which the message on the sign does not match the scheduled message based on the time at which the message should have been posted.	PS	4.3
FEAT34.4.9	ML001R11	Posting Time display	The Toll Viewer Detail Report shall contain the rate on the sign at the beginning of the requested reporting period, and shall show its actual posting time.	PS	4.3
FEAT34.4.10	ML001R12	Changing data/time selection	The Toll Viewer shall allow a user to change the date and time period selection criteria from the data results webpage for the report.	PS	4.3

FEAT34.4.11	ML001R13	Date Entry	The Toll Viewer shall provide a combined date/time text box for entry of the date and time to support pasting a date/time copied from other applications and calendar/dropdown selection controls to support manual entry with the Toll Viewer automatically updating the values in one if the other is changed by the user. This text box shall allow entry of a date formatted as 'M/D/YYYY H:MM:SS AM'.	PS	4.3
FEAT35		Florida Highway Patrol / Computer Aided Dispatch (FHP/CAD)		FHPCAD	4
FEAT35.1		General		FHPCAD	4
FEAT35.2		System		FHPCAD	4
FEAT35.2.1	CA001	External event alert	An external event alert shall be presented to the SunGuide operator within 60 seconds of a traffic incident for a requested location being placed on the FHP CAD FTP server.	FHPCAD	4
FEAT35.2.2	CA002	Filter FHP incidents by county	The system shall support filtering of FHP traffic incidents by county.	FHPCAD	4
FEAT35.2.3	CA003	Filter FHP incidents by roadway	The system shall support filtering of FHP traffic incidents by a configurable list of FDOT-covered roadways.	FHPCAD	4
FEAT35.2.4	CA004	FHP CAD communication failure notifications	A SunGuide operator shall be notified of FHP CAD interface communication failures.	FHPCAD	4
FEAT35.2.5	CA005	RCC update notifications	SunGuide operator shall be notified if RCC updates are not received at the FHP CAD server within a configurable amount of time.	FHPCAD	4
FEAT35.2.6	CA006	Consistency with 4.0 functionality	Notifications and data entry related to the handling of FHP CAD incidents shall be consistent with SunGuide Release 4.0.0 functionality.	FHPCAD	4

FEAT35.3		Interface		FHPCAD	4
FEAT35.3.1	CA007	Incidents accessed from single location	Traffic incidents shall be accessed from a single configurable location, consisting of separate files from each FHP CAD RCC.	FHPCAD	4
FEAT35.3.2	CA008	Incidents to use existing XML format	Traffic incidents shall be accessed from the FHP CAD server using the existing XML format.	FHPCAD	4
FEAT35.3.3	CA009	Incidents provided via consistent external events format	Incident data shall be provided to SunGuide in a format consistent with the SunGuide External Events XML schema.	FHPCAD	4
FEAT35.3.4	CA003F	Utilize Roadway and Crosstree information	The FHP CAD interface roadway filter shall utilize the Roadway and the Crosstree information within the messages when applying its roadway filter. E.g. if filtering on "I-95" then messages that contain "I-95 at Commercial" and "Commercial at I-95" will both match the filter criteria.	FHPCAD	4.2
FEAT35.4		SunGuide		FHPCAD	4
FEAT35.4.1	CA005A	Incidents update/replace existing alerts	Updated FHP CAD incidents shall update/replace existing unacknowledged alerts.	FHPCAD	4

FEAT35.4.2	CA005A1	External event alert fields	External event alerts from FHP CAD incidents shall include the following fields from the FHP CAD incident, subject to availability in the incoming incident data: - FHP CAD Incident ID - FHP CAD Incident Type - FHP CAD Incident Description and Details (if provided) - Route Designator - Route Direction - Linear Reference, Cross Street, or Mile Marker (if provided) - County - Latitude and Longitude (if provided) - Incident Creation Timestamp - Incident Update Timestamp (if update) - Trooper Dispatch Timestamp (if provided) - Trooper Arrival Timestamp (if provided) - Originating RCC of the Incident	FHPCAD	4
FEAT35.4.3	CA005A2	External event alert action choices	External event alerts with no prior association to SunGuide events shall provide the SunGuide operator with the following action choices: - Create New Event (creates association) - Create Secondary Event (creates association) - Associate with existing SunGuide event - Acknowledge, take no action - Dismiss (providing a reason, e.g. False Alarm)	FHPCAD	4

FEAT35.4.4	CA003N	Provide list of active SunGuide events within radius	If the FHP CAD incident has not been associated with a SunGuide event, a list of active SunGuide events within a configurable radius shall be presented to the operator.	FHPCAD	4
FEAT35.4.5	CA003N1	Prepopulate event created from FHP CAD incident	A SunGuide event created from an acknowledged FHP CAD incident shall be populated initially from the FHP incident alert data.	FHPCAD	4
FEAT35.4.6	CA002D	Incident data stored in database	All FHP CAD incident data received by SunGuide will be stored in the SunGuide database with appropriate timestamps, preserving the original data received including maintaining latitude/longitude data in micro degrees, updates to the data and operator responses to alerts generated by SunGuide.	FHPCAD	4
FEAT35.4.7	CA002D1	Incident alert data stored in database	If an operator dismisses an alert from an FHP CAD incident, the alert and reason for dismissal will be stored in the SunGuide database.	FHPCAD	4
FEAT35.4.8	CA002D2	No new alerts created for dismissed incident	If an FHP CAD incident has been dismissed (i.e. as a false alarm), the SunGuide will not create new alerts from the updates to the FHP CAD incident.	FHPCAD	4
FEAT35.4.9	CA003G	Display FHP CAD events on map	SunGuide events created from FHP CAD incidents shall be displayed on the SunGuide operator map.	FHPCAD	4
FEAT35.4.10	CA006A	Generate alert upon received updates	When SunGuide receives updates to alerts that have been acknowledged (only) it will generate an alert as if it had not been previously received.	FHPCAD	4

FEAT35.4.11	CA005A3	Edit to Existing Events without obtaining permission	Edits to existing SunGuide events shall be performed without obtaining further permission using the following rules: - If the event is owned by the operator handling the alert, the event edits shall be performed without further operator action. - If the event is (a) un-owned, (b) owned by a "system" user, or (c) owned by a user that is not logged in, event ownership shall be obtained and event edits shall be performed without further operator action.	FHPCAD	4.2

FEAT35.4.12	CA005A4	Edit to Existing Event after obtaining permission	Edits to existing SunGuide events shall be performed after obtaining permission using the following rule and exception:
			- If the event is owned by a logged-in user other than the user handling the FHP alert, the owning user shall be presented a dialog containing a description of the requested event change and the following three action choices:
			  + Perform the requested edit while retaining ownership
			  + Relinquish ownership to the requesting user
			  + Deny the action by the requesting user
			- If the event-owning user logs out before selecting an option, event ownership shall be relinquished to the requesting user.
				FHPCAD	4.2

FEAT35.4.13	CA005A5	Change requested by one operator to another	When a change requested by one operator to another fails, an alert shall be displayed to the requesting operator, and the dialog from which the request was initiated will be redisplayed if it was previously closed.	FHPCAD	4.2

FEAT35.4.14	CA005B	Alert Box Display Choices	The Alert Box shall allow users to selectively display or hide any combination of individual classes of alerts	FHPCAD	4.2
FEAT35.4.15	CA005B1	Compositiion of Alert classes in alert box	Alert classes in the alert box shall be broken out based on the source of the alert. (If multiple types of alerts are received from one subsystem, each type shall be an independent class)	FHPCAD	4.2
FEAT35.4.16	CA005C	Response to an FHP event	When SunGuide detects that an FHP event correspondign to a non-dismissed FHP CAD Alert was in the "previous stream," but not in the current stream, SugGuide shall generate an alert indicating the event was closed.	FHPCAD	4.2
FEAT35.4.16.1	CA005C1	Archive alert	This alert shall be archived in SunGuide.	FHPCAD	4.2
FEAT35.4.16.2	CA005C2	Alert chronology	This alert shall be part of the event chrono indicating the FHP CAD closed the event	FHPCAD	4.2
FEAT35.4.16.3	CA005C3	Alert option to set FHP departure time	This alert shall include an option to set the FHP departure time unless the FHP departure time has already been set or the FHP arrival time has not been set	FHPCAD	4.2
FEAT35.4.16.4	CA005C4	Alert option to set FHP arrival and departure	If this alert includes an FHP arrival time then the alert shall have an option to set FHP arrival and departure	FHPCAD	4.2
FEAT35.4.16.5	CA005C5	Checks upon receiving the first FHP CAD stream	Sunguide shall not perform the alert checks upon receiving the first FHP CAD stream after subsystem startup	FHPCAD	4.2
FEAT35.4.22	CA005E	Alert processed by an operator	When an FHP CAD alert is processed by an operator to create or update a SunGuide event the alert shall become part of the event chrono.	FHPCAD	4.2

FEAT35.4.23	CA005S1	Recording of responder arrival time based on reported arrival time	When setting a responder arrival timestamp based on an FHP alert, if the reported trooper arrival time is available and is prior to the current system time, the reported trooper arrival time shall be recorded as the responder arrival time	FHPCAD	4.2
FEAT35.4.24	CA005S2	Recording of responder arrival time based on current system time	When setting a responder arrival timestamp based on an FHP alert, if the reported trooper arrival time is not available or is later than the current system time, the current system time shall be recorded as the responder arrival time	FHPCAD	4.2
FEAT35.4.25	CA005S3	Setting reponder arrival time for FHP alert	When setting a responder arrival time for an FHP Alert, SunGuide shall use FHP as the arriving agency	FHPCAD	4.2
FEAT35.4.26	CA005S4	Setting FHP arrival time	When an operator creates an event from an FHP alert and the "trooper arrival time" is in the FHP CAD data, then SunGuide shall set the FHP arrival time in the event.	FHPCAD	4.2
FEAT35.4.27	CA0006D	Archiving alerts from FHP CAD system	SunGuide shall archive alerts from the FHP CAD system	FHPCAD	4.2
FEAT35.4.27.1	CA006D1	Archive timestamp	SunGuide shall archibe generated timestamps associated with those alerts.	FHPCAD	4.2
FEAT35.4.27.2	CA006D2	Archive first received alert	SunGuide shall archive the first received alert with its timestamp.	FHPCAD	4.2
FEAT35.4.27.3	CA006D3	Archive alert changes	SunGuide shall archive changes to the alerts with their timestamps.	FHPCAD	4.2
FEAT35.4.27.4	CA006D4	Archive "last alert"	SunGuide shall archive the "last alert" with its generated timestamp which corresponds to the time that SunGuide detected it was not in the FHP CAD data.	FHPCAD	4.2
FEAT35.5		Operator Interaction		FHPCAD	4.3
FEAT35.5.1	US001	Logged-in users	THe GUI Preference Manager shall maintain a list of currently logged-in users.	FHPCAD	4.2

FEAT35.5.2	US001P	User permission	The GUI Preference Manager shall define a user permission which allows a user with that permission to retrieve and subscribe to the list of currently logged-in users.	FHPCAD	4.2
FEAT35.5.3	US001R	Retrieving logged-in user	The list of currently logged-in users shall be retrievable by a logged-in user, provided that user has the appropriate permission	FHPCAD	4.2
FEAT35.5.4	US001S	Subscribing for user updates	The GUI Preference Manager shall allow a logged-in user to subscribe to updates of currently logged-in users, provided that user has the appropriate permission.	FHPCAD	4.2
FEAT35.5.5	US002	User Type attribute	SunGuide users shall have a User Type attribute associated to their user record.	FHPCAD	4.2
FEAT35.5.5.1	US002H	User Type attribute "belonging to" a human	The User Type attribute shall allow a user record to be identified as "belonging to" a human.	FHPCAD	4.2
FEAT35.5.5.2	US002S	User Type attribute "belonging to" a system	The User Type attribute shall allow a user record to be identified as "belonging to" a system application	FHPCAD	4.2
FEAT35.5.8	US003	Maintain list of users	The GUI Preference Manager shall maintain a list of all defined users.	FHPCAD	4.2
FEAT35.5.9		List all defined users	The list of all defined users shall include the User Type attribute of each user.	FHPCAD	4.3
FEAT35.5.10	US003P	Definition of user Permission	The GUI Preference Manager shall define a user permission which allows a user with that permission to retrieve and subscribe to the list of all defined users.	FHPCAD	4.2
FEAT35.5.11	US003R	Retrieval of users based on permission	The list of all defined users shall be retrievable by a logged-in user, provided that user has the appropriate permission.	FHPCAD	4.2
FEAT35.5.12	US003S	Subscribing to user updates	The GUI Preference Manager shall allow a logged-in user to subscribe to updates of all defined users, provided that user has the appropriate permission.	FHPCAD	4.2

FEAT35.5.13	US004	Request Action on another user	The GUI Preference Manager shall provide a method for a user to request an action of another user.	FHPCAD	4.2
FEAT35.5.14	US004D	Record user requests	The GUI Preference Manager shall record all user to user requests and any selected responses to those requests in the database.	FHPCAD	4.2
FEAT35.5.15	US004R	Requesting from one user to another with responses	A user request to another user shall include some number of possible responses the receiver of the request may choose from.	FHPCAD	4.2
FEAT35.5.16	US004R1	Possible response of request with text description	A possible response shall include a text description of the action selecting that response will invoke.	FHPCAD	4.2
FEAT35.5.17	US004R2	Possible response with XML messages	A possible response shall allow for the inclusion of one or more XML messages that could be sent to one or more SunGuide processes by the receiver of the request.	FHPCAD	4.2
FEAT35.5.18	US004T	Request from one user to another with text description	A user request to another user shall include a text description of the requested action.	FHPCAD	4.2
FEAT35.5.19	US005	User's action awaiting response	The GUI shall indicate to a user when an action is awaiting another user's response.	FHPCAD	4.2
FEAT35.5.20	US005P	Indication of request pending	When a user causes a user request to another user to be sent, the GUI shall indicate to the originating user that a request is pending.	FHPCAD	4.2
FEAT35.5.21	US005R	Indicating result of request to user	When a response to a previously-issued user request to another user is received, the GUI shall indicate the result of that request to the originating user.	FHPCAD	4.2
FEAT35.5.22	US006	Display dialog to receiver	The GUI shall manage a request from another user by displaying a pop-up dialog to the receiver of the request.	FHPCAD	4.2

FEAT35.5.23	US006U	Sending updated messges to the appropriate subsystems	When the recipient of a user request to another user confirms a response option which contains one or more messages to send to one or more SunGuide subsystems, the GUI shall update those messages with appropriate credentials and send the updated messages to the appropriate subsystems.	FHPCAD	4.2
FEAT35.5.24	US006C	Confirmation of message response	When the recipient of a user request to another user confirms a response option, a message shall be sent to the original requestor indicating the response that was selected.	FHPCAD	4.2
FEAT35.5.25	US006F	Display available options for handling the request	When a user request to another user is received by the other user, a dialog shall be displayed containing the text description of the requested action and the available options for handling the request.	FHPCAD	4.2
FEAT47		Connected Vehicles (CVS)	The software shall implement "Connected Vehicle" functionality.	CVS	5.1
FEAT47.1	CV001	Configure RSEs	The software shall provide the capability to configure roadside equipment (RSE).	CVS	5.1
FEAT47.3	CV002	RSE Radius Configuration	The SunGuide configuration file will include a parameter specifying a maximum distance between an RSE and a presentation region such that the RSE will automatically be included when selecting RSEs for TAMs.	CVS	5.1
FEAT47.4	CV003	RSEs as Detectors	The software shall provide the ability to configure TSS detectors to use RSE probe data as the data source.	CVS	5.1
FEAT47.5	CV004	Zone Id to TSS Link	The software shall provide the ability to associate an RSE Zone Id to a TSS link	CVS	5.1

FEAT47.6	CV005	CV in Response Plans	The software shall provide the ability to configure "Connected Vehicle" messages used by response plans	CVS	5.1
FEAT47.7	CV006	Receive CV data	The software shall be capable of receiving "Connected Vehicle" data	CVS	5.1
FEAT47.8	CV007	Traveler Information	The software shall transmit generated traveler information	CVS	5.1
FEAT47.9	CV008	Presentation Region Offset	The SunGuide configuration file will include a parameter specifying a presentation region offset used when automatically generating a presentation region	CVS	5.1
FEAT47.10	CV009	Archive CV Data	The software shall archive "Connected Vehicle" data	CVS	5.1
FEAT47.11	CV010	CV in the GUI	The software's Graphical User Interface (GUI) shall support the ability to display "Connected Vehicle" data	CVS	5.1
FEAT47.12	CV011	Traveler Advisory Messages	The software shall provide operators the ability to generate and manage Traveler Advisory Messages (TAM)	CVS	5.1
FEAT47.13	CV012	User may Configure RSEs	The software shall provide the user the ability to configure RSEs	CVS	5.1
FEAT47.14	CV015	Review RSE Configuration Errors	The software shall provide a method to review possible errors of configuration of Connected Vehicle TSS integration	CVS	5.1
FEAT47.15	CV013	Add TAM to Response Plan	The software shall provide the ability to add a TAM to a response plan	CVS	5.1
FEAT47.16	CV014	CV in C2C	The software shall broadcast "Connected Vehicle" data via Center-to-Center (C2C)	CVS	5.1
FEAT47.17	CV015	Connected Vehicle SDN Connectivity	The software shall support the ability to communicate with a Service Delivery Node (SDN).	CVS	5.1
FEAT53	TD007	INRIX	SunGuide shall support the use of INRIX traffic data.	GUI	5.1

FEAT53.1	TD007I	Interface Document	SunGuide shall provide an interface to INRIX traffic data source that conforms to ITN-DOT-07/08-9013-JP Probe-based Data Collection Concept Test Project Interface Guide Version 1.2 October 17, 2008.	GUI	5.1
FEAT53.1.1	TD007I1	Publish INRIX Data	An INRIX C2C Publisher component shall publish INRIX traffic data to the C2C infrastructure, thus making it available to SunGuide and FL-ATIS.	INRIX	5.0.4
FEAT53.1.2	TD007I2	County List	The INRIX C2C Publisher component shall only publish data from links within a configurable list of counties.	INRIX	5.0.4
FEAT53.1.3	TD007I3	Traffic Condition Data	The INRIX C2C Publisher component shall publish C2C Traffic Condition data.	INRIX	5.0.4
FEAT53.1.4	TD007I4	Speed Data	The INRIX C2C Publisher component shall publish C2C Speed data.	INRIX	5.0.4
FEAT53.1.5	TD007I5	Link and Node Data	The INRIX C2C Publisher component shall publish C2C Link and Node data relevant to the Traffic Condition and Speed links being published.	INRIX	5.0.4
FEAT53.1.6	TD007I6	NAVTEQ Source Data	The INRIX C2C Publisher component shall publish link midpoints based on known map information in a NAVTEQ map source.	INRIX	5.0.4
FEAT53.1.7	TD007I7	Comm Failures	The INRIX C2C Publisher component shall notify SunGuide of INRIX data source communication failures.	INRIX	5.0.4
FEAT53.2	TD007O	INRIX GUI	The SunGuide Operator Map shall support the display of C2C Traffic Condition data.	INRIX	5.0.4
FEAT53.2.1	TD007O1	Display Traffic Condition Data	The SunGuide Operator Map shall display C2C Traffic Condition data using on-map link diagrams.	INRIX	5.0.4
FEAT53.2.2	TD007O2	Selected Networks	The SunGuide Operator Map shall only display C2C Traffic Condition data from networks selected by the operator.	INRIX	5.0.4

FEAT53.3	TD007O3	INRIX Access	SunGuide shall support limiting access of INRIX traffic data to authorized users.	INRIX	5.0.4
FEAT53.3.1	TD007O4	CSV Writing	The SunGuide Data Archive component shall block the writing of restricted data to the TSS CSV files.	INRIX	5.0.4
FEAT53.3.2	TD007O5	ODS Data to show Centers	The SunGuide Data Archive component shall include data in the ODS tables that will specify the centers from which the data was gathered.	INRIX	5.0.4
FEAT53.3.3	TD007O6	C2C Mark Restricted Data	The SunGuide C2C Publisher component shall mark data which was gathered or derived from a restricted source as not for redistribution to third parties.	INRIX	5.0.4
FEAT57		SPARR	SunGuide shall support a Road Ranger Application on a smart phone.	SPARR	5.0.5
FEAT59	DAR001	DAR		DAR	5.1.1
FEAT59.1	DAR002	TSS Archive Data	The software shall archive configuration and operational data from TSS. 1.AddDetectorResp 2.ModifyDetectorResp 3.DeleteDetectorResp 4.MapDetectorResp 5.retrieveDataResp (initial data from Databus) 6.statusUpdateInfo (link)	DAR	5.1.1

FEAT59.2	DAR003	Event Archive Data	The software shall archive configuration and operational data from EM. 1.AddActivityResp 2.ModifyActivityResp 3.RemoveActivityResp 4.AddAgencyResp 5.ModifyAgencyResp 6.RemoveAgencyResp 7.AddAgencyContactResp 8.ModifyAgencyContactResp 9.RemoveAgencyContactResp 10.AddColorResp 11.ModifyColorResp 12.RemoveColorResp 13.AddCountyResp 14.ModifyCountyResp 15.RemoveCountyResp 16.AddEventStatusResp 17.ModifyEventStatusResp 18.RemoveEventStatusResp 19.AddCommentTypeResp 20.ModifyCommentTypeResp 21.RemoveCommentTypeResp 22.AddInjuryTypeResp 23.ModifyInjuryTypeResp 24.RemoveInjuryTypeResp 25.AddOrganizationResp	DAR	5.1.1
FEAT59.3	DAR004	Configurable Time Interval	The software shall compress the archive on a configurable time interval.	DAR	5.1.1
FEAT59.4	DAR005	UTC in Filename	The software shall use a UTC time stamp as part of the filename for of each of the archive files and compressed file	DAR	5.1.1

FEAT59.5	DAR006	FTP Disconnection	In the event the FTP is unavailable, the software shall write the archive files to the local file system.	DAR	5.1.1
FEAT59.5.1	DAR006A	FTP reconnection	When the FTP becomes available, the local archive files that were not uploaded, will be sent to the FTP site.	DAR	5.1.1
FEAT59.5.2	DAR006B	Remove temporary archive files	When the local archive files are successfully sent to the FTP site they will be removed from the local file system	DAR	5.1.1
FEAT62		Not used yet			

Appendix B:

SUB REQUIREMENTS

SUB	SunGuide ID	Name	Requirement Text	Traced-from	Subsystem	Version
SUB1		EH - Executive Handler	Requirements for the EH system.		EH	1
SUB1.1		General			EH	1
SUB1.1.1		Configurable parameters	The following shall be configurable parameters of the EH process:· Host name· TCP port number	FEAT3.2	EH	1
SUB1.1.2		Log level	The system shall allow the logging level to be modified.	FEAT3.11	EH	1
SUB1.2		EH process			EH	1
SUB1.2.1		Control processes	The system shall be able to stop and start processes running on machines reachable on the local network.	FEAT3.3	EH	1
SUB1.2.2		Heartbeat	The system shall be capable of receiving a heartbeat from the system processes.	FEAT3.9	EH	1
SUB1.3		EH viewer			EH	1
SUB1.3.1		Visibility of processes	The system viewer shall be capable of viewing the status of processes for computers on the local network.	FEAT3.9	EH	1
SUB1.3.2		Process health	The system viewer shall display the health of the various processes in a configurable manner.	FEAT3.9	EH	1
SUB2		IMS - Inventory Management System			IMS	1
SUB3		IM - Incident			IM	1
SUB3.1		Associate events	The system shall allow an operator to associate a new incident with another, existing incident.	FEAT5.3.14	IM	1
SUB3.2		Response plans			IM	1

SUB3.2.1	Recommend response plans	The IM subsystem shall recommend a response plan based on incident location and incident severity.	FEAT5.3.4	IM	1
SUB3.2.2	Predefined response plans	The IM subsystem shall recommend a predefined response plan if one is defined that matches incident location (roadway and direction).	FEAT5.3.4	IM	1
SUB3.2.3	Generated response plan	If no predefined response plan exists, then the IM subsystem shall recommend a set of DMS and HAR equipment and messages for each.	FEAT5.3.4	IM	1
SUB3.3	Message formats			IM	1
SUB3.3.1	Message fields	IM recommended messages shall consist of fields that indicate lane or roadway blockage, proximity to reference location and reference location (cross street).	FEAT5.3.4	IM	1

SUB3.3.2	Lane nomenclature	Within an IM recommended message, roadway blockage shall indicate lanes using standard lane nomenclature. If all lanes are blocked the message will use the verb 'CLOSED'. From innermost lane: - If the lane is ever an HOV lane, then lane is named "HOV LANE'. - The leftmost lane which is not an HOV lane shall be named 'LEFT LANE'. - A lane which begins at an on ramp and ends at an off ramp shall be named 'ON/OFF LANE'. - The rightmost lane which is not an ON/OFF LANE shall be named 'RIGHT LANE'. - Lanes between the LEFT LANE and RIGHT LANE shall be named CENTER LANE.	FEAT5.3.4	IM	1
SUB3.3.3	Single lane blockages	Messages which describe single lane blockages shall indicate which lane is blocked (i.e., HOV LANE BLOCKED, LEFT LANE BLOCKED).	FEAT5.3.4	IM	1

SUB3.3.4	Multi-lane blockages	Messages which describe multi-lane blockages shall include the number of lanes blocked (as a word: TWO, THREE, etc) and whether the blockage is on the LEFT, CENTER, or RIGHT. All blockages around which traffic may flow in travel lanes are CENTER lane blockages.	FEAT5.3.4	IM	1
SUB3.3.5	Signs off incident roadway	Messages for signs not on the roadway with the incident shall include the roadway on which the incident is located and the direction.	FEAT5.3.4	IM	1
SUB3.3.6	Exit ramp blockage	Messages which refer to exit ramp blockage shall begin with the phrase EXIT RAMP followed by the destination roadway and the lane configuration. - Full closure of the exit ramp shall state the ramp is CLOSED. - Closure of a mulit-lane exit ramp shall use standard lane configuration nomenclature (LEFT, RIGHT). - Messages posted on roadways other than that where the incident occurs shall include direction and roadway from which traffic is exiting.	FEAT5.3.4	IM	1
SUB4	DD - Data Distribution			DD	1

SUB4.1	Subsystem requests	The client shall be able to send subsystem requests to the data distribution function and receive subsystem responses.	FEAT1.7.12	DD	1
SUB4.2	Route requests to subsystems	The data distribution function shall distribute requests from clients to the appropriate subsystems.	FEAT1.7.12	DD	1
SUB4.3	Subscribe	The data distribution function shall enable the client to subscribe to status update notifications.	FEAT6.3	DD	1
SUB4.4	ICD	The data distribution function shall provide a published Interface Control Document for client connections.	FEAT6.1	DD	1
SUB4.5	Provider template	The data distribution function shall require subsystem ICDs to conform to a provider template.	FEAT1.7.12	DD	1
SUB4.6	Status request	The client shall be able to request status information from all provider subsystems currently in the system.	FEAT6.2	DD	1
SUB5	GUI - Graphical User Interface (General)			GUI	1
SUB5.1	General			GUI	1
SUB5.1.1	Modify system configuration	The system shall provide a configuration editor component to allow authorized users to modify system configuration, including user permissions, equipment setup and device communication.	FEAT1.2.11	GUI	1

SUB5.1.2	Reports	The system shall provide authorized users a method of selecting and customizing data reports.	FEAT1.7.10	GUI	1
SUB5.1.3	Security Levels	The following security levels will be allowed for the various subsystems: Administrator, Manager, Operator, Guest (local), and Guest (remote).	FEAT1.1.7	GUI	1
SUB5.1.4	Configuration Editor			GUI	1
SUB5.1.4.1	Editing configurable items	The system shall allow the editing of configurable items in the configuration file.	FEAT1.9.2.1	GUI	1
SUB5.1.5	Administrative editor			GUI	1
SUB5.1.5.1	Event management pages	Administrative Editor Event Management subsystem pages shall be provided for the configuration of roadways, cross streets, relevant lane configurations and Road Ranger activities.	FEAT1.9.2.1	GUI	1
SUB5.1.5.2	Reporting subsystem pages	Administrative Editor Reporting Subsystem Pages shall be added for the configuration of Performance Measures.	FEAT1.9.2.1	GUI	1
SUB5.2	Map			GUI	1
SUB5.2.1	Map-based primary GUI	A Scalable Vector Graphics (SVG) map shall serve as the primary user interface for operators' daily traffic management activities.	FEAT7.2.4	GUI	1

SUB5.2.2	Map icons	The map shall display icons for roadway devices, incidents, and other resources (e.g., fire hydrants).	FEAT5.1.4	GUI	1
SUB5.2.3	Device status	The map shall provide a method for displaying the current status of any roadway device displayed on the map.	FEAT1.7.12	GUI	1
SUB5.2.4	Device control	The map shall provide a method for sending appropriate commands to any roadway device displayed on the map.	FEAT1.7.12	GUI	1
SUB5.3	CCTV			GUI	2
SUB5.3.1	CCTV icon colors	The colors associated with cctv status icons shall be configurable.	FEAT7.3.3	GUI	2
SUB5.3.2	CCTV error messages	If an error occurs communicating with CCTV, the error message shall be displayed in the status message window.	FEAT7.3.4	GUI	2
SUB5.3.3	CCTV display all data	The GUI shall provide a way to display all data from the CCTV driver for each device.	FEAT7.3.6	GUI	2
SUB5.4	DMS			GUI	2
SUB5.4.1	DMS icon colors	The colors associated with dms status icons shall be configurable.	FEAT7.3.3	GUI	2
SUB5.4.2	DMS error messages	If an error occurs communicating with DMS, the error message shall be displayed in the status message window.	FEAT7.3.4	GUI	2
SUB5.4.3	DMS display all data	The GUI shall provide a way to display all data from the DMS driver for each device.	FEAT7.3.6	GUI	2

SUB5.4.4	TM013R1	Blank a queue	The User Interface shall provide a method allowing the MAS queue of a DMS to be blanked	FEAT7.5.6	GUI	5.1.1
SUB5.4.5	TM013R2	Blank a non-Active sign	SunGuide shall allow an operator to set the reported message of a DMS to blank if the DMS is not in an Active state.	FEAT7.5.6	GUI	5.1.1
SUB5.4.6	TM013R3	Operator notification	If the DMS is not in an Active operational state, the users will be warned that a message will not be sent to the DMS and only the status of the sign shall blank.	FEAT7.5.6	GUI	5.1.1
SUB5.5		HAR			GUI	2
SUB5.5.1		HAR icon colors	The colors associated with har status icons shall be configurable.	FEAT7.3.3	GUI	2
SUB5.5.2		HAR error messages	If an error occurs communicating with HAR, the error message shall be displayed in the status message window.	FEAT7.3.4	GUI	2
SUB5.5.3		HAR display all data	The GUI shall provide a way to display all data from the HAR driver for each device.	FEAT7.3.6	GUI	2
SUB5.6		RWIS			GUI	2
SUB5.6.1		RWIS icon colors	The colors associated with rwis status icons shall be configurable.	FEAT7.3.3	GUI	2
SUB5.6.2		RWIS error messages	If an error occurs communicating with RWIS, the error message shall be displayed in the status message window.	FEAT7.3.4	GUI	2
SUB5.6.3		RWIS display all data	The GUI shall provide a way to display all data from the RWIS driver for each device.	FEAT7.3.6	GUI	2

SUB5.7	RMS			GUI	2
SUB5.7.1	RMS icon colors	The colors associated with rms status icons shall be configurable.	FEAT7.3.3	GUI	2
SUB5.7.2	RMS error messages	If an error occurs communicating with RMS, the error message shall be displayed in the status message window.	FEAT7.3.4	GUI	2
SUB5.7.3	RMS display all data	The GUI shall provide a way to display all data from the RMS driver for each device.	FEAT7.3.6	GUI	2
SUB5.8	SB			GUI	2
SUB5.8.1	SB icon colors	The colors associated with sb status icons shall be configurable.	FEAT7.3.3	GUI	2
SUB5.8.2	SB error messages	If an error occurs communicating with SB, the error message shall be displayed in the status message window.	FEAT7.3.4	GUI	2
SUB5.8.3	SB display all data	The GUI shall provide a way to display all data from the SB driver for each device.	FEAT7.3.6	GUI	2
SUB5.9	TSS			GUI	2
SUB5.9.1	TSS icon colors	The colors associated with tss status icons shall be configurable.	FEAT7.3.3	GUI	2
SUB5.9.2	TSS error messages	If an error occurs communicating with TSS, the error message shall be displayed in the status message window.	FEAT7.3.4	GUI	2
SUB5.9.3	TSS display all data	The GUI shall provide a way to display all data from the TSS driver for each device.	FEAT7.3.6	GUI	2

SUB6	CCTV - Closed Circuit Television	Requirements for the CCTV system.		CCTV	1
SUB6.1	Resource arbitration			CCTV	1
SUB6.1.1	Lock camera	The system shall allow a client to request locking of a camera for sole usage.	FEAT8.1.4	CCTV	1
SUB6.1.2	Unlock camera	The system shall allow a client to request unlocking of a camera.	FEAT8.1.4	CCTV	1
SUB6.1.3	Breaking locks	A lock shall be broken by a user with a higher security level requesting the camera or by a timeout from last use of the camera.	FEAT8.1.4	CCTV	1
SUB6.2	Control camera			CCTV	1
SUB6.2.1	Camera accessibility	The system shall allow a camera to be placed online (accessible) or offline (inaccessible).	FEAT8.1.2	CCTV	1
SUB6.2.2	Blackout button	The system shall allow an operator to block a camera from being assigned to a predetermined list of outputs.	FEAT8.4.5	CCTV	1
SUB6.3	Camera presets			CCTV	1
SUB6.3.1	Set preset	The system shall allow a preset to be saved for a camera containing the pan, tilt, and zoom positions.	FEAT5.1.4	CCTV	1
SUB6.3.2	Select preset	The system shall allow saved preset position information to be sent to a particular camera.	FEAT5.1.4	CCTV	1
SUB6.4	Video tours			CCTV	1
SUB6.4.1	Configure video tours	The system shall allow a video tour to be created, modified or deleted.	FEAT8.4.5	CCTV	1

SUB6.4.2	Video tour parameters	The system shall allow a video tour to be created of a set of cameras in sequence with a dwell time.	FEAT8.4.5	CCTV	1
SUB6.5	System			CCTV	1
SUB6.5.1	Logging	The system shall log events and actions including the user name, camera (if applicable), and the status of the event.	FEAT1.7.12	CCTV	1
SUB7	DMS - Dynamic Message Signs	Requirements for the DMS system.		DMS	1
SUB7.1	Control DMS			DMS	1
SUB7.1.1	Send message	The system shall be able to send a message containing MULTI text, display duration, owner and priority of the message to one or more DMSs.	FEAT9.3	DMS	1
SUB7.1.2	Terminate message	The system shall be able to terminate the message on one or more DMSs.	FEAT9.3	DMS	1
SUB7.1.3	Set operational status	The system shall be able to set the operational status of one or more DMSs to "Active" or "Out of Service".	FEAT9.2	DMS	1
SUB7.1.4	Set brightness	The system shall be able to set the brightness mode of a DMS to "Auto", "Day" or "Night".	FEAT9.2	DMS	1
SUB7.1.5	Control mode	The system shall be able to set the control mode for one or more DMSs.	FEAT9.2	DMS	1
SUB7.1.6	Exercise shutters	The system shall be able to exercise the shutters of a DMS.	FEAT9.2	DMS	1

SUB7.1.7		Reset controller	The system shall be able to reset the controller of one or more DMSs.	FEAT9.2	DMS	1
SUB7.1.8		Synchronize clock	The system shall be able to synchronize the clock on one or more DMSs with the current system time.	FEAT9.2	DMS	1
SUB7.1.9	DM023	Blanking a sign (blank queue)	When a MAS Blank Queue command is executed for a DMS, if the DMS is not out of service, SunGuide shall send a blank sign message to the target DMS.		DMS	5.1.1
SUB7.2		Query DMS			DMS	1
SUB7.2.1		Status poll	The system shall be able to query one or more DMSs for their current status. Current status includes operational status, power status, control mode, short lamp status, short pixel status, fan status, brightness mode, temperature (if supported) and the current display.	FEAT9.2	DMS	1
SUB7.2.2		Echo message	The system shall be able to query a DMS for the current message display including the MULTI text, the remaining display duration, owner, and priority of the message.	FEAT9.2	DMS	1
SUB7.2.3		Fan status	The system shall be able to query a DMS for the status of the fans.	FEAT9.2	DMS	1

SUB7.2.4	Lamp status	The system shall be able to query a DMS for the current lamp status including stuck on and stuck off lamps.	FEAT9.2	DMS	1
SUB7.2.5	Pixel status	The system shall be able to query a DMS for the current status of the pixels on the display.	FEAT9.2	DMS	1
SUB7.3	System			DMS	1
SUB7.3.1	Configure messages	The system shall allow messages to be composed and saved in the database.	FEAT9.4	DMS	1
SUB7.3.2	Approved words	The system shall check messages contain only approved words before saving to the database or sending to a DMS.	FEAT9.5	DMS	1
SUB7.3.3	System defaults	The system shall maintain system defaults including a default message and poll cycle times.	FEAT9.6	DMS	1
SUB7.3.4	Automatic polls	The system shall poll DMSs for their current status information on a cyclic basis.	FEAT9.2	DMS	1
SUB7.3.5	Logging	The system shall log events and actions including the user name, DMS (if applicable), message (if applicable), and the status of the event.	FEAT1.7.12	DMS	1
SUB7.3.6	Timed messages	The system shall allow specific messages to be identified with specific DMSs. A set of such messages can be activated to run on specific DMSs at specific days of the week and times.	FEAT9.3	DMS	1

SUB7.3.7	DM020	DMS Polling Interval	The DMS subsystem shall poll each device at the interval specified for that device.	DMS	
SUB7.3.8	DM020A	DMS Slow Poll	The DMS subsystem shall increase the polling interval for a device which has failed to respond to a configurable number of commands.	DMS	
SUB7.3.9	DM021	DMS Polling Data Fields	The DMS subsystem shall include the following timestamps for DMS status: last successful poll, last successful send message, and last communication attempt.	DMS	
SUB7.3.10	DM022	Update clients with blank message	Upon receipt of a blank status request from a user with permissions for a non-Active sign, the DMS subsystem shall send an update to clients reporting a blank message as the status for the sign until a successful poll indicating a different message is received.	DMS	5.1.1
SUB7.4	DMS04	Color DMS		DMS	6
SUB7.4.1	DMS041	NTCIPv2 Support	The software shall additionally support the NTCIP version 2 protocol	DMS	6
SUB7.4.2	DMS042	Color DMS Templates	The software shall have a standard color DMS layout for creating color DMS messages and templates	DMS	6
SUB7.4.2.1	DMS042A	Standard DMS layout	The standard color DMS layout shall include one graphic and one text message per phase	DMS	6

SUB7.4.2.2	DMS042B	Graphic Height	The graphic shall occupy the entire height of the sign	DMS	6
SUB7.4.2.3	DMS042C	Graphic Aspect Ratio	The graphic shall maintain its aspect ratio	DMS	6
SUB7.4.2.4	DMS042D	Graphic Left Justified	The graphic shall be left justified within the layout	DMS	6
SUB7.4.2.5	DMS042E	DMS Text Area	The text area shall be the remaining portion of the layout not occupied by the graphic	DMS	6
SUB7.4.2.6	DMS042F	Centered Text	The text message shall be centered within the text area	DMS	6
SUB7.4.2.7	DMS042G	Text Too Large	In the event that the text is too large to fit in the text area, text will be placed on the next phase on the DMS message.	DMS	6
SUB7.4.2.8	DMS042H	Removing the Graphic	When generating a response plan, if the text is too large to fit in the text area after abbreviations are applied a response plan shall remove the image and the text area will occupy the entire layout.	DMS	6
SUB7.4.2.8.1	DMS042H1	Adding sign to a response plan	If a message generated using templates within a response plan is unable to fit on the DMS sign, the user shall have the option of adding the sign to the response plan and manually specifying the message.	DMS	6
SUB7.4.3	DMS043	Graphics Library	The software shall have a graphics library with add and delete functionality for color DMS images to be used in the messages or templates.	DMS	6

SUB7.4.3.1	DMS043A	Icon type	The graphics shall have information stored with them to indicate if they are a shield of a roadway, an icon associated with an event type, or just an image with no association.	DMS	6
SUB7.4.3.2	DMS043B	Content of message to sign	The software shall verify images and messages each time a message is activated on the sign using a cyclic redundancy check on the message and on each image	DMS	6
SUB7.4.3.3	DMS043C	Deleting graphics in use	The software shall handle the scenario of a user attempting to delete a graphic that is associated to one or more stored or active messages.	DMS	6
SUB7.4.3.3.1	DMS043C1	User Notification	The user will be notified of the list of messages that have the graphic associated to them.	DMS	6
SUB7.4.3.3.3.1	DMS043C3A	Unable to Disassociate Notification	If a subsystem which uses DMS graphics is not running when a user attempts to delete a graphic, the user shall be notified this check cannot be performed.	DMS	6
SUB7.4.3.3.4	DMS043C4	Notification of graphic use	If the graphic is in use in a stored or active message at the time the user tries to delete the graphic, the user shall be unable to delete the graphic and be notified of the locations where the graphic is in use.	DMS	6

SUB7.4.4	DMS044	Color DMS message template generation	The software shall support color DMS message and color DMS message template generation	DMS	6
SUB7.4.4.1	DMS044A	Background and Text Color	The software shall allow the user to change the default background and default text color of messages and message templates.	DMS	6
SUB7.4.4.1.1	DMS044A1	MUTCD Colors	For user defined color schemes, the software shall present the user with options of color that are allowed by the MUTCD.	DMS	6
SUB7.4.4.1.1.1	DMS044A1A	Text Color Options	Text color options are red, white, yellow, orange, fluorescent yellow-green, fluorescent pink, and amber.	DMS	6
SUB7.4.4.1.1.2	DMS044A1B	Background Color Options	Background color options are black, blue, green	DMS	6
SUB7.4.4.1.2	DMS044A2	Default Colors for EM templates	The software shall provide a default background color of black and default text color of yellow for event management templates.	DMS	6
SUB7.4.4.1.3	DMS044A3	Background Colors other than EM	The software shall provide a default background color of black and default text color of amber for all templates other than event management templates.	DMS	6
SUB7.4.4.1.4	DMS044A4	Using graphics in templates	The software shall generate color DMS messages from templates for events using graphics available in the graphic library	DMS	6

SUB7.4.4.1.4.1	DMS044A4A	Using Event Type Graphic	If the event type graphic is available, it shall be used		DMS	6
SUB7.4.4.1.4.2	DMS044A4B	Using Shield Graphic	If the event type graphic is not available and the shield corresponding to the incident's location is available, the shield graphic shall be used		DMS	6
SUB7.4.4.1.5	DMS044A5	Travel time template shield graphic	The software shall allow the user to select the appropriate shield graphic for a device's travel time template.		DMS	6
SUB7.4.5	DMS045	Color DMS Display	The software shall support color DMS message status display showing a visual representation of each pixel of the sign that shall appear in the short status, detailed status, and hover over of the DMS sign from the operator map.		DMS	6
SUB8		TSS - Transportation Sensor System	Requirements for the TSS system.		TSS	1
SUB8.1		Raw data	The system traffic flow information output shall include raw data.	FEAT10.8	TSS	1
SUB8.1.1	TD020	Possible Reporting Lanes	The software shall support the reporting of speed, volume, and occupancy by lane, when available, for at least 10 lanes from a single detector.			
SUB8.1.2	TD021	Link Status Dialog Content	The TSS Link Data status dialog shall support the reporting of speed, volume, and occupancy for at least 10 lanes of travel from a single TSS link.			

SUB8.1.3	TD022	Archiving Lane Status	SunGuide shall support archive speed, volume, and occupancy by lane for at least 10 lanes of a TSS link.			
SUB8.2		Smoothed data	The system output shall include smoothed traffic flow information.	FEAT10.8	TSS	1
SUB8.3		Smoothing algorithm	The system shall support a smoothing algorithm that takes a simple average of raw traffic flow data over a given sampling period.	FEAT10.8	TSS	1
SUB8.4		Automatic polls	The system shall poll TSSs for their current status information on a cyclic basis.	FEAT1.7.12	TSS	1
SUB8.5		Logging	The system shall log events and actions including the user name, TSS (if applicable), message (if applicable), and the status of the event.	FEAT1.7.12	TSS	1
SUB8.6		Traffic Detector Failure Alerts				
SUB8.6.1	TD016A	Email Alerts	When a traffic detector's operational status changes to the failed state and remains there at least as long as the Traffic Detector Failure alert delay period, the software shall send a Traffic Detector Failure alert via email to users with permission to receive these alerts.		TSS	5.1

SUB8.6.2	TD016B	Email alert content	Traffic Detector Failure alerts shall contain the detector and the time the detector entered the failed state	TSS	5.1
SUB8.6.3	TD016C	Status Logger Alerts	Traffic Detector Failure alerts shall be logged in the Status Logger	TSS	5.1
SUB8.7		System-wide Traffic Detector Alerts		TSS	5.1
SUB8.7.1	TD017A	System Wide Configurable Threshold	The SunGuide Admin Editor shall contain configurable value for the threshold of a System-wide Traffic Detector Failure alert, stored as a percentage.	TSS	5.1
SUB8.7.2	TD017B	Email Alert	When the percentage of traffic detectors with a failed operational state exceeds the threshold configured in the SunGuide Admin Editor and remains above the threshold at least as long as the System-wide Traffic Detector Failure alert delay period, the software shall send a System-wide Traffic Detector Failure alert email to users with permission to receive these alerts	TSS	5.1

SUB8.7.3	TD017C	System-wide alert permission	When the percentage of traffic detectors with a failed operational state exceeds the threshold configured in the SunGuide Admin Editor and remains above the threshold at least as long as the System-wide Traffic Detector Failure alert delay period, the software shall send a System-wide Traffic Detector Failure alert to logged-in users with permission to receive these alerts	TSS	5.1
SUB8.7.4	TD017D	Percentage Calculation	When determining the percentage of traffic detectors with a failed operational state, the number of detectors in the failed operational state shall be compared to the total number of detectors, excluding detectors with an out of service operational status	TSS	5.1
SUB8.7.5	TD017E	System Message	The System-wide Traffic Detector Failure alert shall be presented to users in the System Messages dialog	TSS	5.1
SUB8.7.6	TD017F	Status Log Message	System-wide Traffic Detector Failure alerts shall be logged in the Status Logger	TSS	5.1
SUB8.8		Invalid Detector Data Alerts		TSS	5.1

SUB8.8.1	TD018A	Detector Thresholds	From the SunGuide Admin Editor, an authorized user will be able to configure a set of timed thresholds for all detectors for generating Invalid Detector Data alerts.	TSS	5.1
SUB8.8.2	TD018A1	Detector Threshold	An Invalid Detector Data alert threshold shall consist of a start time of day, an end time of day, and minimum and maximum Speed, Occupancy, and Volume values	TSS	5.1
SUB8.8.3	TD018A2	Threshold Configuration Overlap	The software shall not allow a user to create or modify an Invalid Detector Data alert threshold if it would overlap with the time range defined by another existing threshold	TSS	5.1
SUB8.8.4	TD018B	Alert Initial Generation Criteria	The software shall generate an Invalid Detector Data alert when it detects an invalid detector data condition that remains there at least as long as the Invalid Detector Data alert delay period	TSS	5.1
SUB8.8.5	TD018B1	Threshold Effective Times	A threshold shall be considered in effect if the current time of day is greater than or equal to the start time of the threshold and is less than the end time of the threshold	TSS	5.1

SUB8.8.6	TD018B2	Alert Generation Criteria	A lane shall be considered to be reporting invalid data if that lane's reported speed, occupancy, or volume are outside the bounds of the effective threshold for the current time of day	TSS	5.1
SUB8.8.7	TD018B3	Email Alert	If a lane reports invalid data for at least as long as the Invalid Detector Data alert delay period, the software shall send an Invalid Detector Data alert via email to users with permission to receive these alerts	TSS	5.1
SUB8.8.8	TD018C	Email Alert Content	Invalid Detector Data alerts shall contain the detector, link, and lane that generated the alert	TSS	5.1
SUB8.8.9	TD018D	Status Log Message	Invalid Detector Data alerts shall be logged in the Status Logger	TSS	5.1
SUB8.9		Alert Generation Delay Threshold		TSS	5.1
SUB8.9.1	TD019A	Delay Threshold Content	The delay threshold shall be the number of minutes the conditions generating the alert shall be present before and alert is generated.	TSS	5.1
SUB8.9.2	TD019A1	Delay Threshold Configuration	A delay threshold for Traffic Detector Failure alerts shall be configurable in the SunGuide Configuration File	TSS	5.1
SUB8.9.3	TD019A2	Delay Threshold Configuration	A delay threshold for System-wide Traffic Detector Failure alerts shall be configurable in the SunGuide Configuration File	TSS	5.1

SUB8.9.4	TD019A3	Delay Threshold Configuration	A delay threshold for Invalid Detector Data alerts shall be configurable in the SunGuide Configuration File	TSS	5.1
SUB8.9.5	TD019B	Resend Conditions	The software shall not send a new Traffic Detector Failure, System-wide Traffic Detector Failure, or Invalid Traffic Detector Data alerts until the conditions that caused the alert no longer exist for a period of time equal to the delay threshold corresponding to the alert type	TSS	5.1
SUB8.10		Classification Data		TSS	5.1
SUB8.10.1	TD023	Classification Data Collection	The software shall support the reporting of up to 8 different vehicle classifications from a single detector.	TSS	5.1
SUB8.10.2	TD024	Archive Classification Data	The software shall archive up to 8 different vehicle classifications for a single detector.	TSS	5.1
SUB8.10.3	TD025	Rollup Classification Data	The software shall average the classification data on 15 minute, 1 hour, and 24 hour intervals	TSS	5.1
SUB8.10.4	TD026	Purge Classification Data	The software shall purge raw classification data from the database at a configurable interval	TSS	5.1

SUB8.11	TM025A	Tag Discard Horizon	TAG_DISCARD_HORIZON [seconds]: The software will store non-discarded matches and previously read tags in volatile memory for both matching and duplicate detection purposes until the match or tag has been stored for the amount of time specified by this value, at which time they will be discarded.	TSS	5.1.1
SUB8.12	TM025B	Speed Anomaly Threshold	SPEED_ANOMALY_TH [MPH]: The software will discard matches that calculate to a speed higher than the SPEED_ANOMALY_TH.	TSS	5.1.1
SUB8.13	TM025C	Maximum Speed Threshold	MAXIMUM_SPEED_TH [MPH]: The software will change the value of the speed in a match to the MAXIMUM_SPEED_TH if the raw speed value is greater than the MAXIMUM_SPEED_TH and less than or equal to the SPEED_ANOMALY_TH	TSS	5.1.1
SUB8.14	TM025D	Storing matches	The algorithm will independently store the non-discarded matches as filtered matches as well as unfiltered matches.	TSS	5.1.1
SUB8.14.1	TM025D1	Filtered matches	Filtered matches are the set of non-discarded matches that also passed through the filter condition and are averaged for the final speed output	TSS	5.1.1

SUB8.14.2	TM025D2	Unfiltered matches	Unfiltered matches are the set of the non-discarded matches regardless if they were filtered and will be used as the set of matches to average for the current conditions for which to use in the filtering stage of the algorithm	TSS	5.1.1
SUB8.15	TM025E	Sample size	SAMPLE_SIZE [number of matches]: The software shall not calculate a speed average unless the amount of samples available is greater than the SAMPLE_SIZE parameter.	TSS	5.1.1
SUB8.16	TM025F	Speed Threshold (delta)	SPEED_TH [delta MPH]: The software will filter any matches from being used in the final output value if the speed value of the match differs from the current conditions by more than the SPEED_TH value	TSS	5.1.1
SUB8.17	TM025H	Final Speed output	The average of the speed values from the filtered matches will be used as the final speed output and the average of the speed values from the unfiltered matches will be used as the unfiltered speed value, which is used for comparison between incoming matches and current conditions.	TSS	5.1.1

SUB8.17.1	TM025H1	Sample Size usage (filtered avg)	If the number of filtered matches available in volatile memory is less than the SAMPLE_SIZE, then the speed average will not be produced	TSS	5.1.1
SUB8.17.2	TM025H2	Using historical filtered matches	If the number of filtered matches available in volatile memory within a speed calculation period is less than the SAMPLE_SIZE, then the most recent filtered matches will be used until the sample size is equal to the SAMPLE_SIZE parameter	TSS	5.1.1
SUB8.17.3	TM025H3	Speed output calculation criteria	If the number of filtered matches available within a speed calculation period is greater than or equal to the SAMPLE_SIZE, then the filtered matches within the speed calculation period will be averaged to calculate the average speed value	TSS	5.1.1
SUB8.17.4	TM025H4	Limited sample size behavior	If the number of unfiltered matches available in volatile memory is less than the SAMPLE_SIZE, then the average speed will not be calculated	TSS	5.1.1

SUB8.17.5	TM025H5	Sample Size usage (unfiltered average)	If the number of unfiltered matches available within a speed calculation period is less than the SAMPLE_SIZE, then the most recent unfiltered matches in volatile memory will be used until the sample size is equal to the SAMPLE_SIZE parameter. The average of this data set will be the unfiltered speed value.		TSS	5.1.1
SUB8.17.6	TM025H6	Unifiltered average calculation	If the number of unfiltered matches available within a speed calculation period is greater than or equal to the SAMPLE_SIZE, then the unfiltered matches within the speed calculation period will be averaged to calculate the unfiltered speed value		TSS	5.1.1
SUB9		EC - Evacuation Coordination			EC	1
SUB9.1		EG - Evacuation Guidance			EC	1
SUB9.1.1		General			EC	1
SUB9.1.1.1		Distinguish between evacuation zones	SunGuide shall distinguish between evacuation zones that are currently under government orders to evacuate and those that are not.	FEAT11.4.1	EC	1
SUB9.1.1.2		Ability to define geoboundaries	EG shall provide a means for the operator to specify boundaries based on describable features and landmarks that will be used to define evacuation zones.	FEAT11.4.4	EC	1

SUB9.1.1.3	Categories of evacuees	EG shall provide the ability for the user to specify up to N number of evacuation categories and allocate the categories to each evacuation zone.	FEAT11.4.4	EC	1
SUB9.1.1.4	EOC priority	Priority is given to SERT/SEOC for access to and control of ITS devices at all SunGuide TMCs when a state of emergency has been declared.			1
SUB9.1.2	Inputs			EC	1
SUB9.1.2.1	Determine evacuation zone input	Information relevant to the evacuation zones shall include boundaries of the evacuation zones and their extent on the GUI map display.	FEAT11.4.1	EC	1
SUB9.1.2.2	Evacuation zone input	EG shall provide a graphical tool for the marking of evacuation zones using pre-determined boundaries tied to describable features and identifiable landmarks.	FEAT11.4.4	EC	1
SUB9.1.2.3	Shelter-in-place input	Information relevant to the need to shelter-in-place shall be entered into the system via manual data entry forms.	FEAT11.4.3	EC	1
SUB9.1.2.4	Destinations input	Manual data entry forms shall be provided for the user to enter information relative to the alternate evacuation destination.	FEAT11.4.5	EC	1

SUB9.1.2.5	Evacuation shelter input	Information relevant to evacuation shelters shall be entered into the system via manual data entry forms.	FEAT11.4.8	EC	1
SUB9.1.2.6	Hazardous conditions input	Information relevant to hazardous conditions shall be entered into the system via manual data entry forms.	FEAT11.5.3	EC	1
SUB9.1.2.7	Weather conditions input	Information relevant to weather conditions shall be entered into the system via manual data entry forms.	FEAT11.5.4	EC	1
SUB9.1.2.8	Transportation modes input	Information relevant to transportation modes shall be entered into the system via manual data entry forms.	FEAT11.5.5	EC	1
SUB9.1.2.9	Evacuation guidance input	Information relevant to evacuation guidance shall be entered into the system via manual data entry forms.	FEAT11.5.6	EC	1
SUB9.1.2.10	Lodging availability input	Information relevant to lodging availability shall be entered into the system via manual data entry forms.	FEAT11.5.7	EC	1
SUB9.1.3	Displays			EC	1
SUB9.1.3.1	Display evacuation zones	Evacuation zone information shall be provided to potential evacuees via a static web page accessible through the Internet.	FEAT11.4.4	EC	1
SUB9.1.3.2	Shelter-in-place display	Shelter-in-place information shall be available through the Internet via a static web page accessible through the Internet.	FEAT11.4.3	EC	1

SUB9.1.3.3	Evacuation destinations display	Alternative evacuation destinations information shall be provided via a static web page accessible through the Internet.	FEAT11.4.5	EC	1
SUB9.1.3.4	Information fields	The EG shall, at a minimum, provide a free text field that can contain up to 255 alpha-numeric characters.	FEAT11.4.5	EC	1
SUB9.1.3.5	Shelter display	Evacuation shelters information shall be provided via a static web page accessible through the Internet.	FEAT11.4.8	EC	1
SUB9.1.3.6	Weather conditions display	Weather conditions information shall be provided via a static web page accessible through the Internet.	FEAT11.5.4	EC	1
SUB9.1.3.7	Transportation modes display	Transportation modes information shall be provided to potential evacuees via a static web page accessible through the Internet.	FEAT11.5.5	EC	1
SUB9.1.3.8	Evacuation guidance display	Evacuation guidance information shall be provided via a static web page accessible through the Internet.	FEAT11.5.6	EC	1
SUB9.1.3.9	Lodging availability display	Lodging availability information shall be provided via a static web page accessible through the Internet.	FEAT11.5.7	EC	1
SUB10	RWIS - Road Weather Information System			RWIS	2
SUB11	C2C - Center to Center	Requirements for the C2C system.		C2C	2

SUB11.1	System			C2C	2
SUB11.1.1	Network ID	The SunGuide system shall require each connection (i.e., TMC or remote user) to supply a network identifier.	FEAT13.3	C2C	2
SUB11.1.2	Retrieve data	The system shall allow a network to retrieve device status information from another network.	FEAT13.3	C2C	2
SUB11.1.3	Incidents	The system shall allow a network to send incident information to another network.	FEAT13.3	C2C	2
SUB11.1.4	Traffic data	The system shall allow a network to send traffic data including speed, volume, occupancy and travel times to another network.	FEAT13.3	C2C	2
SUB11.1.5	Roadway segments	Roadway segments shall be designated by two nodes and a link as defined in the ICD.	FEAT13.3	C2C	2
SUB11.2	Status			C2C	2
SUB11.2.1	DMS	The system shall maintain the most current DMS status information for DMSs in the connected networks.	FEAT13.3	C2C	2
SUB11.2.2	HAR	The system shall maintain the most current HAR status information for HARs in the connected networks.	FEAT13.3	C2C	2
SUB11.2.3	CCTV	The system shall maintain the most current CCTV status information for CCTVs in the connected networks.	FEAT13.3	C2C	2

SUB11.2.5	RWIS	The system shall maintain the most current RWIS status information for RWISs in the connected networks.	FEAT13.3	C2C	2
SUB11.3	Control			C2C	2
SUB11.3.1	DMS	The system shall allow a network to send a command request to a DMS in another network.	FEAT13.3	C2C	2
SUB11.3.2	HAR	The system shall allow a network to send a command request to a HAR in another network.	FEAT13.3	C2C	2
SUB11.3.3	CCTV	The system shall allow a network to send a command request to a CCTV in another network.	FEAT13.3	C2C	2
SUB12	DA - Data Archiving			DA	2
SUB12.1	General			DA	2
SUB12.1.1	Archive frequency	The Data Archive shall be tunable to archive each data type in the range of 0 minute to 60 minutes (a 0 indicates no logging is to occur for the data type).	FEAT14.2	DA	2
SUB12.1.2	Missing data	If data is not available, an entry of "n/a" shall be included in the detailed data line.	FEAT14.2	DA	2
SUB12.1.3	Organization	Each subsystem's data that is archived shall be in a separate data file.	FEAT14.2	DA	2

SUB12.1.4	Formatting	SunGuide archived data shall be in comma separated values (CSV) format that can be converted to fixed field length data by the FDOT.	FEAT14.4	DA	2
SUB12.2	Archive files			DA	2
SUB12.2.1	File duration	Archive files shall contain 24 hours of data (midnight to midnight).	FEAT14.2	DA	2
SUB12.2.2	File location	The location of the archive files shall be configurable.	FEAT14.2	DA	2
SUB12.2.3	Filename specifications	The archive file name shall be in the following format: <subsystem name>-<date>-<log interval> Where: <subsystem> acronym for subsystem (e.g. TSS, or RWIS)· <date> is the date in MMDDYYYY format· <log interval> is in an integer in the range of 1 min to 60 min.	FEAT14.2	DA	2
SUB12.2.4	File header contents	The first line (header line) of each data file shall contain comma separated descriptive names for the detailed data to be logged.	FEAT14.5	DA	2
SUB12.2.5	File detailed contents	Each detail line of the archive file shall contain comma separated fields.	FEAT14.5	DA	2
SUB12.3	Types of archives			DA	2
SUB12.3.1	System log archives	The status of the SunGuide processes shall be maintained in the SunGuide Status Logger files.	FEAT14.3	DA	2

SUB12.3.2		Device status archives	The status of SunGuide devices shall be maintained in the SunGuide Status Logger files.	FEAT14.3	DA	2
SUB12.3.3		Incident archives	For each SunGuide incident, the following detailed information shall be archived:· Timestamp (HH:MM:SS 24 hour format)· Incident ID· User· Event details· History of event	FEAT14.3	DA	2
SUB12.3.4	DA03D	Detector data archives	For each TSS detector defined in the SunGuide software, the following detailed information shall be archived:· Timestamp (HH:MM:SS 24 hour format)· Detector identifier· Speed (MPH, range 0 to 65535, in 1 MPH increments)· Occupancy (0 to 100 % in 1% increments)· Volume (raw counts, 0 to 65535), and Classification data in up to 8 bins	FEAT14.3(s)	DA	5.1.1
SUB12.3.4.1	DA03D1	Rollup - Volume Weighted Speed Average	The rollup average for a TSS link shall weight the speed on each vehicle in the rollup interval equally.		DA	6
SUB12.3.5		Travel time archives	For each travel time link defined in the SunGuide software, the following detailed information shall be archived:· Timestamp (HH:MM:SS 24 hour format)· Travel time link identifier· Travel time (in minutes)	FEAT14.3	DA	2

SUB12.3.6	RWIS archives	For each RWIS detector defined in the SunGuide software, the following detailed information shall be archived: -Timestamp (HH:MM:SS 24 hour format)· RWIS identifier· Air temperature · Dew point temperature · Relative humidity · Precipitation type· Precipitation intensity · Precipitation rate · Air pressure · Visibility· Average wind speed· Wind gust speed · -Wind direction · Surface sensor index · Surface temperature · Freeze point · Chemical factor · Ice thickness	FEAT14.3	DA	2
SUB12.3.7	HAR archives	For each HAR device defined in the SunGuide software, the following detailed information shall be provided through the status logger files:· Timestamp· HAR identifier· User issuing command· Message (in text format)· Message duration	FEAT14.3	DA	2
SUB12.3.8	DMS archives	For each DMS device defined in the SunGuide software, the following detailed information shall be provided through the status logger files:· Timestamp· DMS identifier· User issuing command· Message (in text format)· Message duration	FEAT14.3	DA	2

SUB12.3.9	Ramp meter archives	For each Ramp Meter device defined in the SunGuide software, the following detailed information shall be provided through the status logger files:· Timestamp· Ramp meter identifier· User issuing command· Command settings (in text format, i.e., override of metering plan, change of mode, turn on ramp meter)· Metering rate· Mode control (local vs remote) · Communications archive (short term weekly archive, e.g., record of communications with ramp meter)	FEAT14.3	DA	2
SUB13	HAR - Highway Advisory Radio			HAR	2
SUB13.1	System			HAR	2
SUB13.1.1	Automatic polls	The system shall maintain HARs current status information.	FEAT1.7.12	HAR	2
SUB13.1.2	Logging	The system shall log events and actions including the user name, HAR (if applicable), text of the message (if applicable), and the status of the event.	FEAT1.7.12	HAR	2
SUB13.1.3	HAR Interface	The HAR subsystem shall interface to the Highway Information System DR2000 using the DR2000 Software Interface Module.	FEAT1.7.12	HAR	2
SUB13.2	Control HAR			HAR	2

SUB13.2.1	Send message	The system shall allow a text message to be sent to a HAR or multiple HARs.	FEAT5.3.5	HAR	2
SUB13.2.2	Terminate message	The system shall allow the message currently being broadcast on a HAR to be terminated.	FEAT5.3.5	HAR	2
SUB13.2.3	Set operational status	The system shall be able to set the operational status of one or more HARs to "Active" or "Out of Service".	FEAT1.7.12	HAR	2
SUB13.2.4	Activate/deactivate beacon	The system shall allow the beacons to be activated or deactivated independently of broadcasting a message or as part of a message.	FEAT1.7.12	HAR	2
SUB14	SL - Status Logging			SL	1
SUB14.1	General			SL	1
SUB14.1.1	Configurable parameters	The following shall be configurable parameters of the logging process:· Host name· TCP port number· File directory location · Log rollover interval· File reuse.	FEAT1.7.12	SL	1
SUB14.1.2	Message level	The status logger shall support the following four message types:· SLINFO: Informational message· SLWARN: Warning message· SLERROR: Error message· SLDEBUG: Debugging message	FEAT1.7.12	SL	1

SUB14.1.3	Log fields	The status logger shall support the following message fields from clients:· Process Name· Host Name· User ID· Event Code· Event ID· Event Description· Message.	FEAT1.7.12	SL	1
SUB14.2	Logging process			SL	1
SUB14.2.1	Connect	The logging process shall allow a client to connect and disconnect from a TCP/IP TCP socket.	FEAT1.7.12	SL	1
SUB14.2.2	Multiple clients	The logging process shall support multiple simultaneous client connections.	FEAT1.7.12	SL	1
SUB14.3	Log viewer			SL	1
SUB14.3.1	View files	The log viewer shall be capable of viewing in a scrollable window any of the log files generated by the logging process.	FEAT1.7.12	SL	1
SUB14.3.2	Filter messages	The log viewer shall allow the user to filter the view of messages displayed based on the following parameters:· Time logged· Message type· Process name· Host name· User ID· Event code· Event ID· Event description· Message.	FEAT1.7.12	SL	1
SUB14.3.3	ASCII export	The log viewer shall be capable of exporting a log file to an American National Standard Code for Information Interchange (ASCII), tab-delimited file.	FEAT3.12	SL	1

SUB14.3.4	Refresh	The log viewer shall support manual and periodic log file display refresh.	FEAT1.7.12	SL	1
SUB15	USER - User Management			USER	1
SUB15.1	Default group levels	The system shall have five default groups to which users may be assigned: Administrator, Manager, Operator, Local Guest, and Remote Guest.	FEAT1.1.5	USER	1
SUB15.2	Modify individual user privileges	The system shall allow individual user privileges to be modified without affecting the default group levels.	FEAT1.1.7	USER	1
SUB15.3	Modify default group levels	The system shall allow the default group permissions to be modified.	FEAT1.1.7	USER	1
SUB16	WS - Web Server			WS	1
SUB16.1	General			WS	1
SUB16.1.1	Operating system	The web server subsystem shall run as a Windows IIS application so that if a user has internet access to the host computer the web server application may be executed.	FEAT2.1	WS	1
SUB16.1.2	HTML content	The web server shall be implemented using HTML.	FEAT2.1	WS	1
SUB16.1.3	Data source	The source for the data displayed on the Web Server shall be SunGuide Center-to-Center Interface.	FEAT2.1	WS	1
SUB16.2	Video server			WS	1

SUB16.2.1	Snapshot configuration	The SunGuide system administrator shall be able to configure which digital video streams shall be accessible to capture and view snapshots.	FEAT2.2	WS	1
SUB16.2.2	Snapshot availability	Video snapshots (still images) shall be published to the SunGuide Data Bus for dissemination.	FEAT2.2	WS	1
SUB16.3	CCTV control			WS	2
SUB16.3.1	Web CCTV control	The SunGuide CCTV Control GUI shall be used to perform camera operations.	FEAT2.3	WS	2
SUB16.3.2	Web access to SunGuide	Users utilizing the SunGuide CCTV Control GUI shall need web browser access to the SunGuide server hosting the SunGuide GUI application.	FEAT2.3	WS	2
SUB16.4	Map			WS	2
SUB16.4.1	Map GIS source	The source of the graphical map shall be shape files provided by FDOT and shall be the same shape files utilized by the SunGuide Map application.	FEAT2.4	WS	2
SUB16.4.2	SunGuide web data	The map shall be capable of displaying the following types of information through icons and information boxes (these are termed SunGuide Web Data):· Incident data· DMS· RWIS· Travel times· Link speeds (lanes aggregated to a single value)· Video snapshots	FEAT2.4	WS	2

SUB16.4.3	Map icons	Icons shall be used to locate the following SunGuide Web Data:· Incident data· DMS· RWIS· Video snapshots	FEAT2.4	WS	2
SUB16.4.4	Map configuration	The web server shall provide a configuration parameter that allows the administrator to select which maps are displayed on the web site.	FEAT2.4	WS	2
SUB16.4.5	Data updates	SunGuide Web Data shall be automatically refreshed according to a time parameter set by the system administrator. The time will be selectable from every 1 minute to every 15 minutes in increments of 1 whole minute.	FEAT2.4	WS	2
SUB16.4.6	Types of data			WS	2
SUB16.4.6.1	DMS	DMS data shall be displayed so that the viewer can see what is displayed on the roadway.	FEAT2.4	WS	2
SUB16.4.6.2	RWIS	Detailed RWIS data shall be displayed when a RWIS detector is selected on the map display.	FEAT2.4	WS	2

SUB16.4.6.3	Speeds	Highway speeds shall be displayed as one of the following three categories:· Normal (displayed as green)· Moderate slowing (displayed as yellow)· Slow (displayed as red) The SunGuide administrator shall be able to set a threshold for each of the categories (a single threshold applies to all links).	FEAT2.4	WS	2
SUB16.4.6.4	Incident data	Detailed incident data shall be displayed when an incident icon is selected on the map display.	FEAT2.4	WS	2
SUB16.4.6.5	Video snapshots	Video snapshots shall be labeled with the local time and date that the snapshot was gathered when displayed.	FEAT2.4	WS	2
SUB17	EM - Event Management			EM	3
SUB17.1	General			EM	3
SUB17.1.1	EV access permission	Event Management subsystem permissions will include a permission for Event Viewer access.	FEAT22.1.9	EM	3
SUB17.1.2	Notification, on-scene and departure times	The Event Management GUI shall allow operators to enter Road Ranger notification, on-scene, and departure times.	FEAT19.3.28	EM	3
SUB17.2	Response plans			EM	3

SUB17.2.1	EM to use the RPG	The Event Management GUI shall make use of the Response Plan Generation subsystem to regenerate the relevant response plan using the additional sign.	FEAT27.2.1	EM	3
SUB17.2.2	Record response plans and timestamps	The Event Management subsystem shall record suggested Response Plans, activated Response Plans, and associated date and time stamps.	FEAT26.5.1	EM	3
SUB17.3	Email alert messages			EM	3
SUB17.3.1	EM to use RPG to generate email alerts	The Event Management GUI shall make use of the Response Plan Generation subsystem to generate email alert messages that the Event Management subsystem will send to operator selected subscriber groups.	FEAT19.3.30	EM	3
SUB17.3.2	Email alert sensitive information	The Event Management GUI shall allow an operator to add sensitive information to the email alert message; this sensitive alert information will only be sent to those selected subscriber groups that are permitted to receive sensitive information (based on subscriber group configuration).	FEAT19.3.30	EM	3

SUB17.3.3	Required email alert data	The Event Management GUI shall provide the Response Plan Generation Subsystem with all data required to generate an email alert message.	FEAT19.3.31	EM	3
SUB17.4	Event data entry			EM	3
SUB17.4.1	Invoke event data entry page	An operator shall be able to invoke the Event Management GUI's event data entry page with location information pre-filled by right-clicking on an AVL icon and selecting "create new incident at vehicle location."	FEAT7.13.2	EM	3
SUB18	RS - Reporting System			RS	3
SUB18.1	General			RS	3
SUB18.1.1	Data editing page and audit functionality	The Reporting GUI data editing page shall include the audit functionality currently provided by the EMPM GUI Audit tab.	FEAT19.1.5	RS	3
SUB18.1.2	Data editing permissions	Access to the Reporting GUI data editing page will be restricted to users with data editing permissions.	FEAT26.1.5	RS	3
SUB18.2	Reports			RS	3
SUB18.2.1	RR and performance measures reports	The reporting GUI reports page shall include both Road Ranger and Performance Measures reports. Performance Measures reports shall be weekly, monthly, quarterly and yearly, providing both summary and detailed data.	FEAT19.8.1	RS	3

SUB18.2.2	Chronology reports	The reporting GUI reports page, shall include Event Chronology, and Daily Chronology Reports (combining multiple event chronology reports).	FEAT19.2.3	RS	3
SUB18.2.3	Road ranger vehicle status report	The Reporting GUI reports page shall include a Road Ranger Vehicle status report.	FEAT28.3.1(s)	RS	3
SUB18.2.4	Vehicle location report	The Reporting GUI reports page shall include a Vehicle Location Report.	FEAT28.4.1	RS	3
SUB18.2.5	Camera usage report	The Reporting GUI reports page shall include a Camera Usage Report.	FEAT28.5.1	RS	3
SUB18.2.6	Event list report	The Reporting GUI reports page shall include an Event List Report that shall accept as an operator entered input, a vehicle license tag. The resulting Event List Report shall contain only those events that are associated with the relevant vehicle license tag.	FEAT19.2.5	RS	3
SUB18.2.7	Beat/Route coverage summary report	The Reporting GUI reports page shall include a Beat/Route Coverage Summary Report (truck hours per beat/route per time period).	FEAT28.3.9	RS	3
SUB18.2.8	DMS message report	The Reporting GUI reports page shall include a DMS Message report.	FEAT19.3.29	RS	3

SUB18.2.9	Performance measures statistics	The Reporting GUI performance measures page shall allow an operator with appropriate permissions to calculate, re-calculate, and store the performance measures statistics used in the generation of the Performance Measures reports provided by the Reporting GUI reports page.	FEAT28.2.1	RS	3
SUB18.2.10	Calendar date/time range	All reports in the Reporting GUI reports page, with the exception of Performance Measures reports, shall allow an operator to select a calendar Date/Time range of interest (where applicable).	FEAT19.2.7	RS	3
SUB18.2.11	Traffic flow monthly report	The Reporting GUI reports page shall include a Traffic Flow Monthly Report.	FEAT28.7.1(s)	RS	3
SUB18.2.12	Central software reliability report	The Reporting GUI reports page shall include a Central Software Reliability Report.	FEAT28.8.1(s)	RS	3
SUB18.2.13	ITS device status history report	The Reporting GUI reports page, shall include an ITS Device Status History Report.	FEAT28.2.2(s)	RS	3
SUB18.2.14	Traveler information monthly report	The Reporting GUI reports page shall include a Traveler Information Monthly Report.	FEAT28.9.1(s)	RS	3
SUB18.2.16	Incident management monthly report	The Reporting GUI reports page shall include an Incident Management Monthly Report.	FEAT28.10.1	RS	3
SUB19	MAS - Message Arbitration System			MAS	3

SUB19.1		General		MAS	3
SUB19.1.1		Maintain log of posted DMS messages	The MAS Subsystem shall maintain a log of posted DMS messages, which links posted DMS messages to associated events.	FEAT19.3.29	MAS	3
SUB19.2	DM007M3	Message consistentcy	MAS shall attempt to keep the message reported for a DMS consistent with the top message on the MAS queue		MAS	5.1.1
SUB19.3	DM007M4	Send top of queue on Active state change	When a DMS transitions to the Active state from any other state, the top message on the MAS queue shall be sent to the DMS.		MAS	5.1.1
SUB19.4	DM007M5	Resend top message on status change	When a DMS status update reports a DMS message has changed and the message reported does not match the top message on the MAS queue, the software shall resend the top message on the queue		MAS	5.1.1
SUB19.5	DM007M6	Send blank when active	If there are no messages in the MAS queue, MAS shall send a message to blank the DMS when the DMS transitions to the Active state and the DMS status reports a non-blank message present on the sign.		MAS	5.1.1
SUB19.6	DM007M7	MAS queues persist in database on status change	MAS shall store the current list of queues and their contents in the database when any part of the MAS queue status changes.		MAS	5.1.1

SUB19.7	DM007M8	MAS queues retrieved from database on startup	MAS shall retrieve the current list of queues from the database upon startup		MAS	5.1.1
SUB20		EV - Event Viewer			EV	3
SUB20.1		General			EV	3
SUB20.1.1		Accessible via web server	Event Viewer shall be accessible through the web server component of the SunGuide website.	FEAT22.1.2(s)	EV	3
SUB20.1.2		Terminate session with logout button	A user can terminate their session with the logout button.	FEAT22.1.4(s)	EV	3
SUB20.2		Configuration			EV	3
SUB20.2.1		IIS configuration with IP security restrictions	When IIS is configured with appropriate IP security restrictions, the SunGuide Event Viewer Web site shall not be accessible to clients outside the specified IP addresses within IIS.	FEAT22.2.2(s)	EV	3
SUB21		511			511	3
SUB21.1		General			511	3
SUB21.1.1		Incident association to segments	An incident/event shall be considered to be associated with the closest 511 reporting segment(s) that are on the same roadway as the incident/event.	FEAT25.5.10	511	3
SUB21.1.2		Recorded messages available after approval	A specially recorded message shall be considered available after it has been approved.	FEAT25.4.10	511	3
SUB21.2		Reports			511	3

SUB21.2.1	Link report contents with one to four segments	Link Reports shall report travel times, and applicable Incident Link Reports, for a single 511 reporting segment in both directions of travel. There may be from one to four 511 reporting segments per roadway.	FEAT25.5.2	511	3
SUB21.2.2	Summary reports with segments on same roadway	Link Summary Reports shall report travel times, and applicable Incident Link Reports, for an entire roadway. Link Summary Reports may include multiple 511 reporting segments on the same roadway.	FEAT25.5.2	511	3
SUB21.2.4	Support recording of incident reports	SunGuide shall support the recording of incident (a.k.a event) reports for 511 reporting segments.	FEAT25.5.1	511	3
SUB21.2.5	Reports saved for configurable time	Incident Link Reports shall be saved for management review for up to a configurable amount of days.	FEAT25.5.6	511	3
SUB21.2.6	Incident link report playback functionality	The SunGuide operator interface shall allow operators with appropriate permissions to play back current and saved Incident Link Reports for a 511 reporting segment.	FEAT25.5.6	511	3
SUB21.2.7	One incident report per segment	At most one (1) Incident Link Report shall be associated with a 511 reporting segment.	FEAT25.5.9	511	3

SUB21.2.8	Incident reports applicable to link report	If an Incident Link Report exists for a 511 reporting segment, it shall be considered applicable to the Link Report for the 511 reporting segment.	FEAT25.5.9	511	3
SUB21.2.9	Incident reports applicable to link summaries	If an Incident Link Report exists for a 511 reporting segment, it shall be considered applicable to a Link Summary report that includes the 511 reporting segment.	FEAT25.5.9	511	3
SUB21.2.11	Summaries state no incidents if appropriate	If there are no Incident Link Reports for the 511 reporting segments included in a Link Summary Report, the Incident Link Report section of the Link Summary shall state that there are no incidents.	FEAT25.5.17	511	3
SUB21.3	Travel times			511	3
SUB21.3.1	Round times to 5-minute increments	Travel time rounding to 5-minute increments shall be peformed on the total travel time for a Link Report, Link Summary, or Drive Time Summary.	FEAT25.7.1	511	3
SUB21.3.2	Rounding for increasing and decreasing times	Travel times for reporting on 511 shall be rounded up if the travel time is increasing and down if the travel time is decreasing.	FEAT25.7.1	511	3
SUB21.4	Scenarios			511	3

SUB21.4.1	Pre-recorded scenario contents	A pre-recorded Scenario will consist of a description of a 511 reporting segment (or portion of a 511 reporting segment, such as between the start point and mid point of the segment), and a travel time. For example "I4 Southbound from SR 436 to SR 50."	FEAT25.2.2	511	3
SUB21.4.2	Scenario WAV files associated with travel times	The SunGuide Administrative Editor shall allow one pre-recorded Scenario .wav file to be associated with a given travel time (5 mins, 10 min, 15 min, etc) and given portion of a 511 reporting segment (start point to mid point, mid point to end point, end point to mid point, and mid point to start point).	FEAT25.2.2	511	3
SUB21.4.3	Scenario WAV files based on current times	Pre-recorded scenario .Wav files shall be selected based on current 511 reporting segment travel times.	FEAT25.3.2	511	3

SUB21.4.4		WAV files generation based on segments and times	The text associated with a pre-recorded scenario .Wav file shall be generated by SunGuide based on the 511 reporting segment and travel time to which the scenario .wav file is associated. For example, if a scenario .wav file is associated with I4 going southbound from start point SR436 to mid point SR50 for a 5 minute travel time, the text would be "I4 Southbound from SR 436 to SR 50 is 5 mins."	FEAT25.3.2	511	3
SUB22		AVL - Automatic Vehicle Location			AVL	3
SUB22.1		General			AVL	3
SUB23		CVS - Connected Vehicle System			CVS	5.1
SUB23.2		Configuration			CVS	5.1
SUB23.2.1	CV001A	Name RSEs	The software shall provide the capability to specify the name of an RSE.		CVS	5.1
SUB23.2.2	CV001B	Host and Port Numbers	The software shall provide the capability to configure a host and port numbers for TAM communication via the J2735 2009-11 and J2735 VIIPOC standards		CVS	5.1
SUB23.2.3	CV001C	Location	The software shall provide the capability to specify the physical location of an RSE using latitude, longitude, roadway, direction, and description		CVS	5.1

SUB23.2.4	CV001D	Specify Detection Zones	The software shall provide the capability to specify one or more detection zones for each RSE	CVS	5.1
SUB23.2.5	CV001D1	Detection Zone Parameters	For a detection zone, the software shall provide the capability to specify a name, start angle, and end angle for a detection zone.	CVS	5.1
SUB23.2.6	CV001E	RSE Database Storage	Configuration information for an RSE shall be stored in the SunGuide database.	CVS	5.1
SUB23.2.7	CV004A	RSE data as Probe data	If probe data is received for a zone, the probe data shall be used by the TSS link to determine the speed over the given link.	CVS	5.1
SUB23.2.8	CV005A	RSE Default Message Template	The software shall provide the capability to specify a default message template for an RSE.	CVS	5.1
SUB23.2.9	CV005B	Default Template Configuration Amber Alert	The software shall provide the capability to specify a message template for amber alert events	CVS	5.1
SUB23.3		Data Acquisition		CVS	5.1
SUB23.3.1	CV006A	Support Standards	The software shall be capable of receiving messages from "Connected Vehicle" based on SAE J2735 2009-11 and J2735 VIIPOC standards.	CVS	5.1
SUB23.3.2	CV006A	Receiving BSM	The software shall be capable of receiving and reporting the "Connected Vehicle" Basic Safety Messages (BSM)	CVS	5.1

SUB23.3.3	CV006A1A	BSM Data	The software shall retrieve latitude, longitude, elevation, speed, and heading from the reported BSM, as available	CVS	5.1
SUB23.3.4	CV006A2	Receiving PVDM	The software shall be capable of receiving and reporting aggregated Probe Vehicle Data message (PVDM)	CVS	5.1
SUB23.3.5	CV006A2A	PVDM Data	The software shall retrieve latitude, longitude, elevation, speed, heading from the reported PVDM using the SAE J2735 2009-11 and J2735 VIIPOC standards, as available	CVS	5.1
SUB23.3.6	CV007A	Sending TAMs	The software shall provide the ability to send TAMs to RSE devices connected to SunGuide.	CVS	5.1
SUB23.3.7	CV007B	TAM Formatting Standards	The message formats of the TAMs shall be based on SAE J2735 2009-11 and J2735 VIIPOC standards.	CVS	5.1
SUB23.4		GUI		CVS	5.1
SUB23.4.1	CV010A	RSE Icon	The software's GUI shall display an icon representing RSEs on the Operator Map.	CVS	5.1
SUB23.4.2	CV010A1	RSE Icon Presentation	The software shall display the RSE icons consistent with presentation of other field equipment (e.g. signs, cameras, detectors, radios, etc.) icons.	CVS	5.1
SUB23.4.3	CV010A2	RSE Icon displays Operational Status	The software shall modify the display of RSE icons in response to operational status changes.	CVS	5.1

SUB23.4.4	CV010A3	RSE Icon navigate to Status Dialog	When an operator clicks on an RSE icon, a dialog will be shown containing RSE data.	CVS	5.1
SUB23.4.5	CV010A4	RSE Status Content	The software's GUI shall display "Connected Vehicle" data derived from the data reported in the BSM and PVDM.	CVS	5.1
SUB23.4.6	CV010B	RSE Detection Zone Status Content	The "Connected Vehicle" data displayed on the GUI shall include each detection zone configured for the RSE	CVS	5.1
SUB23.4.7	CV010C	RSE Detection Zone Status Content (Speed)	The "Connected Vehicle" data displayed on the GUI shall include the speed of the detection zone that is the most in violation or closest to violation of the speed threshold and indicate if that speed is in violation of the speed threshold.	CVS	5.1
SUB23.4.8	CV011A	TAM Creation	The software shall provide operators the ability to manually construct a TAM.	CVS	5.1
SUB23.4.9	CV011A1	TAM Data Fields	The software shall allow the user to specify the start time, end time, priority, presentation regions, text of message, and RSEs	CVS	5.1
SUB23.4.10	CV011A1A	TAM Presentation Region	The software shall allow the user to specify a presentation region including a polygon made up of latitude/longitude points and directions of travel that the message should be applicable	CVS	5.1

SUB23.4.11	CV011B	TAM Status Dialog	The software shall provide the ability to view current TAMs including the text of the message, priority, event id, start time, end time, number, presentation regions, and the selected RSEs.	CVS	5.1
SUB23.4.11.1	CV011B1	Hyper-linked Event Ids	Event Ids (if available) will be hyperlinked to the existing event.	CVS	5.1
SUB23.4.11.2	CV011B2	Show Presentation Regions	When a presentation region is selected, the defined polygon for that region will be shown on the Operator Map.	CVS	5.1
SUB23.4.13	CV011C	Modify TAMs	The software shall provide the ability to modify current TAMs including start time, end time, priority, presentation regions, text of message, and RSEs	CVS	5.1
SUB23.4.14	CV011D	Delete TAMs	The software shall provide the ability to delete current TAMs	CVS	5.1
SUB23.4.15	CV011E	Filter TAMs	The software shall provide the ability to filter the list of current TAMs based on RSE id and whether or not the TAM has an associated event.	CVS	5.1
SUB23.4.16	CV011F	Automatically select RSEs for TAM	The software shall provide the ability to automatically select applicable RSEs based on the currently selected presentation region.	CVS	5.1

SUB23.4.17	CV012A	RSE Data Fields	The software shall provide the ability for a user to configure the name, host, port for TAM (VIIPOC) messages, port for TAM (2009-11) messages, latitude, longitude, roadway, direction, location description, and detection zones.	CVS	5.1
SUB23.4.18	CV012B	RSE Detection Zone Configuration	For each RSE, the software shall allow the user to configure one or more detection zones, each consisting of a description, start and end angles for the applicable direction of travel	CVS	5.1
SUB23.4.19	CV012C	RSE to TSS Configuration	When an RSE is configured, the software shall attempt to automatically configure TSS to support incoming probe data.	CVS	5.1
SUB23.4.20	CV012C1	Convert RSE to TSS Detectors	If TSS is available when an RSE is configured, the software shall attempt to configure a TSS detector with the same name as the RSE	CVS	5.1
SUB23.4.21	CV012C2	Convert RSE Detection Zones to TSS Links	If a TSS detector is successfully configured, the software shall attempt to create TSS links using the configured detection zones along with the alarm and recovery thresholds	CVS	5.1

SUB23.4.22	CV013A	Automatically Generated Presentation Regions	The software shall automatically generate one or more presentation regions for the TAM based on the device linking file and the radius specified by the user for the area affected by the event	CVS	5.1
SUB23.4.23	CV013B	Automatically selected RSEs Response Plan TAMs	The software shall automatically specify which RSEs should receive an automatically generated TAM	CVS	5.1
SUB23.4.24	CV013B1	RSE selection criteria	RSEs will be selected if the distance between the RSE and any part of the presentation region is less than the configured inclusion distance	CVS	5.1
SUB23.4.25	CV013C	Add, Modify, or Delete Response Plan TAMs	The software shall provide operators the ability to add, modify, or delete TAMs from a response plan	CVS	5.1
SUB23.4.26	CV013D	Default messages for TAMs	The software shall set a default message for a TAM to a predefined template in response plans, if such a template is configured.	CVS	5.1
SUB23.4.27	CV015A	Configuration Inspection (Detectors)	The software shall allow a user to view a list of RSEs with detection zones for which no TSS detectors on a CV driver are defined	CVS	5.1

SUB23.4.28	CV015B	Configuration Inspection (Detectors)	The software shall allow a user to view a list of TSS detectors on a CV driver for which no RSEs with detection zones are defined	CVS	5.1
SUB23.4.29	CV015C	Configuration Inspection (Detectors)	The software shall allow a user to view a list of CVS detection zones for which no TSS lane is defined	CVS	5.1
SUB23.4.30	CV015D	Configuration Inspection (Detectors)	The software shall allow a user to view a list of TSS lanes for which no CVS detection zone is defined	CVS	5.1
SUB23.4.31	CV015E	Configuration Inspection (Detectors)	The software shall allow a user to view a list of CVS detection zones, TSS links, and TSS lanes which are mapped together but which have dissimilar names	CVS	5.1
SUB23.5		Archive		CVS	5.1
SUB23.5.1	CV009A	Archive BSM Data	The software shall archive BSM data.	CVS	5.1
SUB23.5.2	CV009A1	Archived BSM Fields	For a BSM, the software shall archive the received timestamp, latitude, longitude, elevation, speed, and heading, where available for each message to be archived	CVS	5.1
SUB23.5.3	CV009B	Archive PVDM Data	The software shall archive PVDM data.	CVS	5.1

SUB23.5.4	CV009B1	Archived PVDM Fields	For the PVDM, the software shall archive the received timestamp, latitude, longitude, elevation, speed, and heading where available for each message to be archived	CVS	5.1
SUB23.5.5	CV009C	Archive TAM Data	The software shall archive TAM data.	CVS	5.1
SUB23.5.6	CV009C1	Archived TAM Fields	For the TAM, the software shall archive the id of the message, start time, end time, priority, presentation region, text of message, operator, event id, RSEs the message was sent to, time the message was added to the system, and time the message was removed from the system, where the values are available	CVS	5.1
SUB23.5.7	CV009C2	Archived TAM Presentation Regions	For a TAM presentation region, the software shall archive the TAM associated with the region, the directions applicable to the region, and the latitude and longitude of the points that make up the region	CVS	5.1
SUB23.5.8	CV009C3	Archive TAM Modifications	When a TAM is modified by an operator, the software shall update the end time for the current message to the current time and archive a new TAM.	CVS	5.1

SUB23.5.9	CV009C4	Archive TAM End Times	When a TAM is deleted by an operator, the software shall modify the archived end time of the TAM to reflect when the message was ended	CVS	5.1
SUB23.5.10	CV009D	Optional Archiving of BSM and PVDM Data	The SunGuide configuration file will include a parameter specifying if the raw BSM and PVDM data should be archived.	CVS	5.1
SUB23.6		C2C		CVS	5.1
SUB23.6.1	CV014A	Publish PVDM Data	The software shall be capable of broadcasting PVDMs via C2C	CVS	5.1
SUB23.6.2	CV014A1	Published PVDM Format	The C2C PVDM shall contain the data in the SAE J2735 2009-11 and J2735 VIIPOC standards, as available	CVS	5.1
SUB23.6.3	CV014B	Publish TAM Data	The software shall be capable of broadcasting TAM messages	CVS	5.1
SUB23.6.4	CV014B1	Published TAM Format	The C2C TAM shall contain the data in the SAE J2735 2009-11 and J2735 VIIPOC standards, as available	CVS	5.1
SUB23.7		SDN		CVS	5.1
SUB23.7.1	CV015A	Data Standard for SDN Data	The software shall support an outgoing connection that will send J2735 encoded Probe data using the SAE J2735 VIIPOC standard.	CVS	5.1
SUB23.7.2	CV015A	SDN Configuration Data	The software will support configurable parameters for both host and port to configure the SDN connection.	CVS	5.1

SUB23.7.3	CV015A	SDN Data Transfer Protocol	The software shall support sending TAMs to the SDN using the interface defined in the "Advisory Message Distribution Service Users Guide Version 1.1" dated October 22, 2007	CVS	5.1
SUB26		INRIX			
SUB26.1		Interface			
SUB26.1.1	TD007I101	Mark INRIX data with Non-distribution	When publishing TSS traffic condition data records, the INRIX C2C Publisher component shall mark such data records as not for redistribution to third parties.	INRIX	5.0.4
SUB26.1.2	TD007I102	Network and Center Id	The INRIX C2C Publisher component shall include as the network or center ID of each record a configurable value specified in the SunGuide configuration file.	INRIX	5.0.4
SUB26.1.3	TD007I103	Confidence Level	If the confidence value received from the INRIX data source for a C2C link is below a minimum confidence level specified in the SunGuide configuration file, the INRIX C2C Publisher will not publish a update for that C2C link.	INRIX	5.0.4
SUB26.1.4	TD007I104	Configurable Interval	The INRIX C2C Publisher component shall retrieve data from the INRIX traffic data source at a configurable interval determined in the SunGuide configuration file.	INRIX	5.0.4

SUB26.1.5	TD007I201	Retrieve County List	The INRIX C2C Publisher component shall retrieve the list of counties from which to publish data from the SunGuide configuration file.	INRIX	5.0.4
SUB26.1.6	TD007I202	Publish Configured Counties	The INRIX C2C Publisher component shall publish link data for each link provided by the INRIX traffic data source which is identified as belonging to a county included in the list of counties from which to publish data.	INRIX	5.0.4
SUB26.1.7	TD007I301	Publish Most Recent Mean Speed	While the connection to the INRIX traffic data source is established, the INRIX C2C Publisher component shall publish the most recently provided mean speed data from the INRIX traffic data source for each published link.	INRIX	5.0.4
SUB26.1.8	TD007I401	Periodic Publish of Data	While the connection to the INRIX traffic data source is established, the INRIX C2C Publisher component shall periodically publish the averaged speed data from the INRIX traffic data source for each published link.	INRIX	5.0.4
SUB26.1.9	TD007I501	Publish C2C Nodes	The INRIX C2C Publisher component shall publish a list of C2C Nodes containing the start and end locations of each INRIX link being published.	INRIX	5.0.4

SUB26.1.10	TD007I502	Unique Node Ids	The INRIX C2C Publisher component shall assign each published node an identifier unique to that instance of the Publisher.	INRIX	5.0.4
SUB26.1.11	TD007I503	Publish Lat Lon Information	The INRIX C2C Publisher component shall publish the most recently provided latitude and longitude from the INRIX traffic data source for each published node.	INRIX	5.0.4
SUB26.1.12	TD007I504	Link Identifier	The INRIX C2C Publisher component shall assign each published link a unique identifier based on the INRIX link identifier, roadway, direction, county, or other identifying information.	INRIX	5.0.4
SUB26.1.13	TD007I505	Required Link Data	The INRIX C2C Publisher component shall publish the most recently provided roadway name, direction, county, distance, start node, and end node from the INRIX traffic data source for each published link.	INRIX	5.0.4
SUB26.1.14	TD007I506	Midpoint Data	The INRIX C2C Publisher component shall publish link midpoints for each published link where midpoints could be determined.	INRIX	5.0.4

SUB26.1.15	TD007I601	Matching TMC Ids	The INRIX C2C Publisher component shall publish midpoints for any published links which have a TMC Path ID that can be accurately matched to a link in the SunGuide map source.	INRIX	5.0.4
SUB26.1.16	TD007I602	Minimum Midpoint Spacing	The INRIX C2C Publisher component shall read a minimum midpoint spacing parameter from the SunGuide configuration file.	INRIX	5.0.4
SUB26.1.17	TD007I603	Publishing all Midpoints	When publishing midpoints for a published link, the INRIX C2C Publisher shall publish each midpoint defined by the SunGuide map source for the link, unless that midpoint violates the spacing requirements of TD007I604 and TD007I605.	INRIX	5.0.4
SUB26.1.18	TD007I604	Sequential Midpoint evaluation	When determining which midpoints may be published, the INRIX C2C Publisher shall sequentially evaluate each midpoint, beginning with the midpoint nearest the start node of the link.	INRIX	5.0.4

SUB26.1.19	TD007I605	Midpoint Exclusion Criteria	When determining which midpoints may be published, the INRIX C2C Publisher shall publish the midpoint if and only if it is at least the minimum midpoint spacing parameter from the start node, the end node, and all other midpoints already selected for publication.	INRIX	5.0.4
SUB26.1.20	TD007I701	Databus Connection	The INRIX C2C Publisher component shall connect to Databus as other SunGuide providers do.	INRIX	5.0.4
SUB26.1.21	TD007I702	INRIX Permissions	The INRIX C2C Publisher shall allow a client with appropriate permissions to subscribe to communication alert notifications.	INRIX	5.0.4
SUB26.1.22	TD007I703	Disconnection Alert	If the connection to the INRIX data source is determined to be lost, the INRIX C2C Publisher shall send an alert message to all subscribed clients indicating a loss of communication to the INRIX data source.	INRIX	5.0.4
SUB26.1.23	TD007I704	Alert Frequency	While the connection to the INRIX data source is lost, the INRIX C2C Publisher shall send additional alert messages to all subscribed clients indicating the ongoing loss of communication at a frequency specified in the SunGuide configuration file.	INRIX	5.0.4

SUB26.1.24	TD007I705	Alerts in Alert Box	If a communication loss alert is received from the INRIX C2C Publisher, the SunGuide Operator Map shall display the alert in the System Messages dialog.	INRIX	5.0.4
SUB26.2		**GUI**			
SUB26.2.1	TD007O101	C2C Links on Map	The map shall display a C2C link in the same manner as it displays local TSS links.	INRIX	5.0.4
SUB26.2.2	TD007O102	Lane Defination	The map shall display a C2C link using the number of lanes specified by that link's C2C definition if provided, or showing a single lane if the number of lanes is not provided.	INRIX	5.0.4
SUB26.2.3	TD007O103	Number of Lanes	The map shall display all lanes of a single C2C link in the same color.	INRIX	5.0.4
SUB26.2.4	TD007O104	Systemwide Congestion Threshold	The map shall allow a user with permission to set systemwide map settings to specify a single C2C traffic speed "Congested" threshold as a percentage of the speed limit on the roadway that the C2C link is representing, as defined by the SunGuide map source.	INRIX	5.0.4

SUB26.2.5	TD007O105	Systemwide Near-Congestion Threshold	The map shall allow a user with permission to set systemwide map settings to specify a single C2C traffic speed "Near Congested" threshold as a percentage of the speed limit on the roadway that the C2C link is representing, as defined by the SunGuide map source.	INRIX	5.0.4
SUB26.2.6	TD007O106	Congestion Coloring	If the current speed of a C2C link is below the Congested threshold, the map shall display the link using the color used for local TSS lanes in an alarm condition.	INRIX	5.0.4
SUB26.2.7	TD007O107	Near-Congestion Coloring	If the current speed of a C2C link is below the Near Congested threshold, but not below the Congested threshold, the map shall display the link using the color used for local TSS lanes in a near-alarm condition.	INRIX	5.0.4
SUB26.2.8	TD007O108	Freeflow Coloring	If the current speed of a C2C link is above the Near Congested and Congested thresholds, the map shall display the link using the color used for local TSS lanes in a normal (freeflow) condition.	INRIX	5.0.4
SUB26.2.9	TD007O109	Zero Data Coloring	If the current speed of a C2C link is zero or is unavailable, the map shall display the link using the color used for local TSS lanes in a zero data condition.	INRIX	5.0.4

SUB26.2.10	TD007O1010	Speed Limit Coloring	If a speed limit is unavailable for a C2C link, the map shall display the link using the color used for local TSS lanes in a normal (freeflow) condition.	INRIX	5.0.4
SUB26.2.11	TD007O1014	Display Link Status	When an operator left clicks on a C2C link, the SunGuide Operator Map shall display the C2C Traffic Conditions dialog.	INRIX	5.0.4
SUB26.2.12	TD007O1012	Right Click Behavior	When an operator right clicks on a C2C link, the SunGuide Operator Map shall display a context menu containing "C2C Traffic Conditions".	INRIX	5.0.4
SUB26.2.13	TD007O1013	Display Traffic Conditions Dialog from Context Menu	When an operator selects the "C2C Traffic Conditions" item from a context menu, the SunGuide Operator Map shall display the C2C Traffic Conditions dialog, showing information from the link which was right clicked on.	INRIX	5.0.4
SUB26.2.14	TD007O1014	Status Dialog Information	The C2C Traffic Conditions dialog shall display the identifier and center of the C2C link it was launched from, along with the current link speed and delay time, if available.	INRIX	5.0.4
SUB26.2.15	TD007O201	Select Networks Dialog	If the operator selects C2C	Select Networks... from the context menu, the map shall display the C2C Network Selection dialog.	INRIX	5.0.4

SUB26.2.16	TD007O202	Display Current Networks	The C2C Network Selection dialog shall display a list of C2C networks which are currently providing data available to the operator and C2C networks for which the operator has previously made data display selections.	INRIX	5.0.4
SUB26.2.17	TD007O203	Save Operator Preferences	When opened, the C2C Network Selection dialog shall present the operator's last saved display preferences as the currently selected options.	INRIX	5.0.4
SUB26.2.18	TD007O204	Show Certain Networks	The C2C Network Selection dialog shall allow an operator to select whether data from a center should be displayed or hidden.	INRIX	5.0.4
SUB26.2.19	TD007O2015	Persist Operator Selection	The C2C Network Selection dialog shall allow an operator to save network data display preferences for use on subsequent sessions.	INRIX	5.0.4
SUB26.2.20	TD007O2016	Selection for Undetermined Networks	The C2C Network Selection dialog shall allow an operator to specify whether data from C2C networks which are not currently listed but which may later appear should be displayed or hidden until an explicit decision is made.	INRIX	5.0.4

SUB26.2.21	TD007O207	Display Center on Map	The Operator Map shall display C2C data only from centers which the operator has specified should have data displayed and, if the operator has selected that data from unspecifed centers should be displayed, from centers for which the operator has not specified a preference.	INRIX	5.0.4
SUB26.2.22	TD007O208	Live Update Center Selection on Map	If an operator changes the setting regarding whether data for a center should be displayed during a session, the Operator Map shall update its display to reflect those settings without requiring a restart.	INRIX	5.0.4
SUB26.3		Access			
SUB26.3.1	TD007A101	Exclude Restricted from CSV	The SunGuide Data Archive component shall not write data records to a TSS CSV file if those records include a flag indicating the data was gathered or derived from a restricted source and cannot be redistributed to third parties, or are based on a record which includes that flag.	INRIX	5.0.4
SUB26.3.2	TD007A201	Record Center Id in ODS	The SunGuide Data Archive component shall include a record in the ODS Travel Time Info table consisting of a comma delimited list of centers which have TSS links as part of the travel time link at the time the record was received.	INRIX	5.0.4

SUB26.3.3	TD007A301	Flag Restricted TvT	If a published travel time link report includes speed data from a restricted source not for redistribution to third parties, the Travel Times Subsystem shall flag the travel time link report as not for redistribution to third parties.	INRIX	5.0.4
SUB26.3.4	TD007A302	Flag Restricted in C2C	If a travel time link published by the SunGuide C2C Publisher is marked as not for redistribution to third parties, the SunGuide C2C Publisher shall flag that link as not for redistribution to third parties when publishing it via C2C.	INRIX	5.0.4
SUB27		SPARR		SPARR	5.0.5
SUB27.1		SPARR (Phone)		SPARR	5.0.5
SUB27.1.1	SPARR001	Authentication	The SPARR shall require a Road Ranger to authenticate to the system using credentials defined by the AVL/RR subsystem.	SPARR	5.0.5
SUB27.1.2	SPARR002	Intial Required Fields	The SPARR shall require a Road Ranger to select the vehicle, radio, and beat for use in a shift prior to beginning a session	SPARR	5.0.5
SUB27.1.3	SPARR003	End Session	If a Road Ranger is logged in and not dispatched to or arrived at any events, the SPARR shall allow the Road Ranger to end the session	SPARR	5.0.5

SUB27.1.4	SPARR004	Location Updates	The SPARR shall provide location updates to the Traffic Management Center at a configurable interval	SPARR	5.0.5
SUB27.1.5	SPARR005	Queue Updates	While the SPARR is not connected to the SPARR Driver, the SPARR shall maintain a queue of location updates that would have been sent and retransmit those updates when the connection to the SPARR Driver is reestablished	SPARR	5.0.5
SUB27.1.6	SPARR006	Event Notification	If a Road Ranger using the SPARR is dispatched to an event while the SPARR is connected to the SPARR Driver, the SPARR shall display a notification to the Road Ranger.	SPARR	5.0.5
SUB27.1.7	SPARR007	Arrival Notification	If the Road Ranger is not currently arrived at an event, the SPARR shall allow the Road Ranger to notify the Traffic Management Center when they have arrived at an event	SPARR	5.0.5
SUB27.1.8	SPARR008	Required Activity	If the Road Ranger has at least one activity recorded for an event at which they are arrived, the SPARR shall allow the Road Ranger to notify the Traffic Management Center when they have departed an event.	SPARR	5.0.5

SUB27.1.9	SPARR009	Calling to TMC	The SPARR shall support phone calls to the Traffic Management Center using the cellular network	SPARR	5.0.5
SUB27.1.10	SPARR010	Create Event	If the Road Ranger is not currently arrived at an event, the SPARR shall allow the Road Ranger to create a SunGuide event with event type and location by a Road Ranger	SPARR	5.0.5
SUB27.1.11	SPARR011	Add Activity	The SPARR shall allow a Road Ranger to add activities (services rendered) to an event	SPARR	5.0.5
SUB27.1.12	SPARR012	Involved Vehicles	The SPARR shall allow a Road Ranger to add involved vehicles to an event	SPARR	5.0.5
SUB27.1.13	SPARR013	Dispatch Status	The SPARR shall allow a Road Ranger to modify their dispatch status	SPARR	5.0.5
SUB27.1.14	SPARR014	Only Assisting Status while at Event	If a Road Ranger is arrived at an event, the SPARR shall only allow the Road Ranger to set their dispatch status to one which is flagged as an Assisting status	SPARR	5.0.5
SUB27.1.15	SPARR015	Can Be Dispatch Status Changes	If a Road Ranger is not arrived at any event, but is dispatched to an event, the SPARR shall only allow the Road Ranger to set their dispatch status to one which is flagged as Can Be Dispatched and is not flagged as Assisting	SPARR	5.0.5

SUB27.1.16	SPARR016	General Status Changes	If a Road Ranger is not arrived at or dispatched to any event, the SPARR shall only allow the Road Ranger to set their dispatch status to one which is not flagged as Assisting.	SPARR	5.0.5
SUB27.1.17	SPARR017	Unallowed Status Changes	The SPARR shall not allow the Road Ranger to manually change to any dispatch status flagged as Default Start Shift or Default End Shift.	SPARR	5.0.5
SUB27.1.18	SPARR018	Driver Communication	The SPARR shall communicate with SunGuide through the SPARR Driver	SPARR	5.0.5
SUB27.1.19	SPARR019	Send Current Time	When the SPARR sends a message to the SPARR Driver, the SPARR shall include the current time of the device	SPARR	5.0.5
SUB27.1.20	SPARR020	Reconnect Behavior	While the SPARR is not connected to the SPARR Driver, the SPARR shall periodically attempt to reconnect to the SPARR Driver	SPARR	5.0.5
SUB27.1.21	SPARR021	Queue Commands and Re-transmit	While the SPARR is not connected to the SPARR Driver, the SPARR shall maintain a queue of commands issued by the user and retransmit those commands when the connection to the SPARR Driver is reestablished	SPARR	5.0.5
SUB27.2		SPARR Driver		SPARR	5.0.5

SUB27.2.1	SPARR022	Subsystem Connection	The SPARR Driver shall only require a single connection to the SunGuide AVL Subsystem	SPARR	5.0.5
SUB27.2.2	SPARR023	Connection with Phones	The SPARR Driver shall support connections with multiple smart phones running the SPARR	SPARR	5.0.5
SUB27.2.3	SPARR024	Data Pass Through	The SPARR Driver shall pass data between the SPARR to the SunGuide AVL Subsystem	SPARR	5.0.5
SUB27.2.4	SPARR025	Time Sync	When reporting to SunGuide timestamp data provided by the SPARR, the SPARR Driver shall adjust the reported timestamp to correct for any difference between the Application Server's time and the current time reported by the device	SPARR	5.0.5
SUB27.2.5	SPARR026	Default Start Shift	When a SPARR user successfully reports the start of a shift and the vehicle either has no current dispatch status or is in a dispatch status flagged as Default End Shift, the SPARR driver shall set the vehicle's dispatch status to a dispatch status flagged as Default Start Shift	SPARR	5.0.5
SUB27.2.6	SPARR027	Default End Shift	When a SPARR user successfully reports the end of a shift, the SPARR driver shall set the vehicle's dispatch status to a dispatch status flagged as Default End Shift	SPARR	5.0.5

SUB27.2.7	SPARR028	Default Assisting	When a SPARR user successfully reports that they have arrived at an event, the SPARR driver shall set the vehicle's dispatch status to a dispatch status flagged as Default Assisting	SPARR	5.0.5
SUB27.2.8	SPARR029	Default Patrolling	When a SPARR user successfully reports that they have departed from an event, the SPARR driver shall set the vehicle's dispatch status to a dispatch status flagged as Default Patrolling	SPARR	5.0.5
SUB27.2.9	SPARR030	Close an Event	SunGuide shall allow a SPARR client to close an open event	SPARR	5.1.1
SUB27.2.9.1	SPARR030A	Closure criteria	The SPARR interface shall reject a request to close an event that is already closed, has responder vehicles currently arrived, or has any non-open lanes.	SPARR	5.1.1
SUB27.2.10	SPARR031	Bulk Update	The driver will support a web service method for sending multiple position updates as a single request.	SPARR	6