SunGuide®:

Software Requirements Specification

SunGuide-SRS-6.2

Prepared for:

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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
6.1	October 1, 2014	Added Release 6.1 requirements
6.2	August 5, 2015	Added Release 6.2 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:

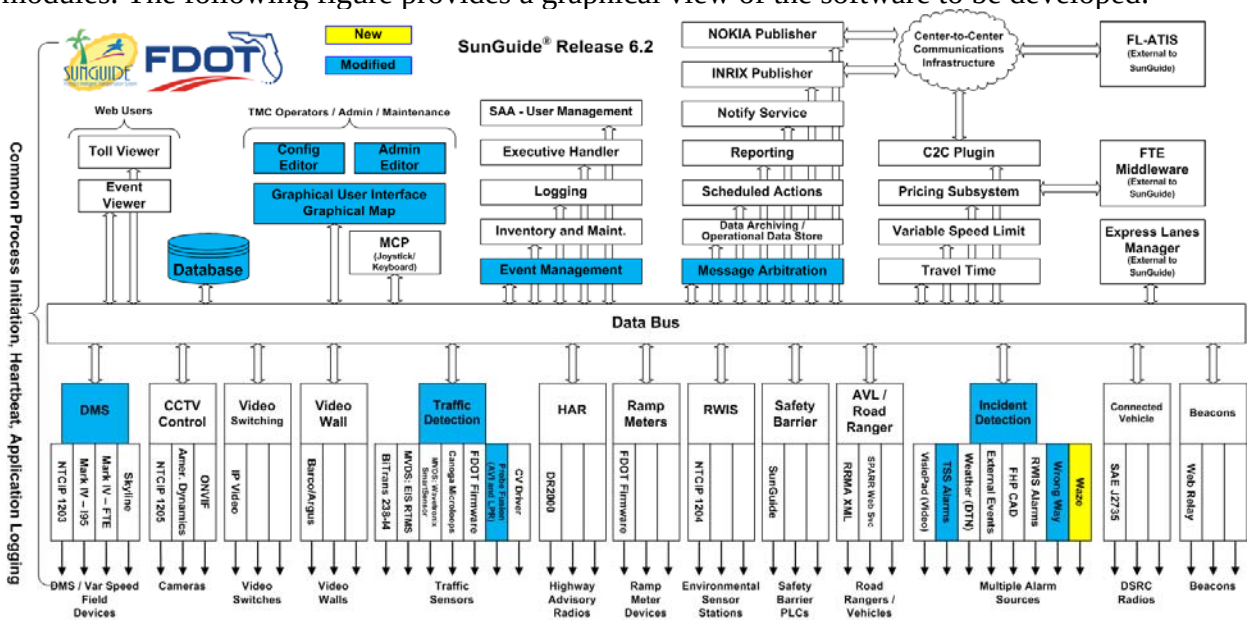

Figure 1-1 - High-Level Architectural Concept

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.
- Letter of Authorization 008: Letter to SwRI for BDQ69, June 29, 2012
- Letter of Authorization 009: Letter to SwRI for BDQ69, May 30, 2013
- Letter of Authorization 011: Letter to SwRI for BDQ69, January 3, 2014
- Letter of Authorization 012: Letter to SwRI for BDQ69, May 28, 2014
- Letter of Authorization 014, Letter to SwRI for BDQ69, January 22, 2015

1.4 Contacts

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- Roger Strain, SwRI Software Project Manager, rstrain@swri.org, 210-522-6295

Appendix A:

FEAT REQUIREMENTS

FEAT	Requirement Name	Requirement text	SunGuide ID	Subsystem	Version
FEAT1	General	General requirements not relating to particular subsystems or components.			1
FEAT1.1	Network security				1
FEAT1.1.1	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.	S026		2
FEAT1.1.10	Software module access	As the SunGuide GUI is browser-based, no .EXE files shall be placed upon user workstations.	WS006		1
FEAT1.1.12	Data controlled by individual privileges	The ability to enter data into the SunGuide system or alter configuration settings shall be controlled by individual privileges.	EX011	EV	3
FEAT1.1.2	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.	NW001		1
FEAT1.1.3	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.	NW002		1
FEAT1.1.4	Operating system workstation security	The SunGuide software shall use windows domain authentication for user login.	S012		1
FEAT1.1.5	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.	WS001	USER	1
FEAT1.1.6	Encrypted passwords	The workstation security function shall use encrypted passwords to identify which users or groups can access what levels of software functionality.	WS002	USER	1
FEAT1.1.7	User/group functionality	Each user added to a group shall inherit the functionality of the group.	WS003	USER	1

FEAT1.1.8	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.	WS004		1
FEAT1.1.9	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.)	WS005		1
FEAT1.2	Database and Databus				1
FEAT1.2.1	Modular abstraction layer	The databus shall be a modular abstraction layer to allow subsystems to retrieve data.	DB001	DD	1
FEAT1.2.10	Device communication database update	Data collected from device communications software shall update the database tables as soon as data is received.	UT003		1
FEAT1.2.11	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.	UT004		1
FEAT1.2.12	Device status	Table parameters shall provide for current status of such devices and allow for the creation of status lists based on device.	UT005		1
FEAT1.2.13	Database clustering	The SunGuide software shall be capable of running in a clustered database configuration.	S007		2
FEAT1.2.14	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.	DB003		1
FEAT1.2.18	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.	SS001B		2
FEAT1.2.19	Database parameters	The SunGuide software shall use configurable parameters for connecting to the database.	S007		1

FEAT1.2.2	Input and output separated	The databus shall have an Interface Control Document (ICD) for client data exchange and an ICD for subsystem data exchange.	DB001A	DD	1
FEAT1.2.20	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.	CR007		3
FEAT1.2.21	ODBC drivers and compliant database	Any required ODBC drivers shall be from the same product line as the ODBC-compliant database application.	OD002D		3
FEAT1.2.22	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	DB022	USER	6
FEAT1.2.23	Business Logic	The software shall implement business logic (not sequences) within the Windows processes (not from within the Database itself)	DB023	USER	6
FEAT1.2.23.1	Business Logic Exceptions	Exceptions will be made for sequences of primary key/IDs and for exceptionally performance intense operations upon approval by Central Office.	DB023A	USER	6
FEAT1.2.24	Supported Databases	The software shall support the use of SQL Server 2012 Standard Edition and Oracle Database Server version 11.1.0.7.0.	DB024	USER	6
FEAT1.2.25	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	DB025	USER	6
FEAT1.2.26	Database Configuration Data	Static configuration data (such as subsystem permissions and system users) shall be included as a versioned data set.	DB026	USER	6
FEAT1.2.27	Database Management	The software shall be equipped with tools to import or export data from any SunGuide database	DB027	USER	6
FEAT1.2.27.1	Configuable Options	The tool shall be configurable with the following optional parameters: 1) Database schemas to include in the import or export	DB027A	USER	6

FEAT1.2.28	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)	DB028	USER	6
FEAT1.2.29	Batch Inserts	Periodic data archiving shall use batch inserts to insert data into the database, where possible and appropriate.	DB029	USER	6
FEAT1.2.3	Non-compliant SQL databases	The SunGuide software shall not require third party subsystems to access an SQL database.	DB002		1
FEAT1.2.30	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.	DB030	USER	6
FEAT1.2.31	Regression Testing Oracle	A regression test of the software using Oracle will be performed after a change to the software is made	DB031	USER	6
FEAT1.2.32	Regression Testing SQL Server	A regression test of the software using SQL Server will be performed after a change to the software is made	DB032	USER	6

FEAT1.2.33	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	DB033	USER	6
FEAT1.2.33.1	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	DB033A	USER	6
FEAT1.2.4	Data formats	eXtensible Markup Language (XML) shall be used to transmit data to and from the central data repository (databus).	DB002A		1
FEAT1.2.5	Database reports	Reports shall be generated by accessing data in the database directly.	DB003A		1

FEAT1.2.6	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.	DB004		2
FEAT1.2.7	Databus architecture	Each subsystem shall ensure the central data repository (databus) contains the most recent data, including equipment status.	S003	DD	1
FEAT1.2.8	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.	UT001		1
FEAT1.2.9	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.	UT002		1
FEAT1.3	Test Plans				1
FEAT1.3.1	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.	QA001		1

FEAT1.3.2	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);	QA001P	1
FEAT1.3.3	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.	QA002P	1

FEAT1.3.4	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.	QA003P	1
FEAT1.3.5	Test result formats	All SunGuide test results, notes, and observations shall be maintained in both hard copy and softcopy.	QA002	1
FEAT1.3.6	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.	QA001R	1
FEAT1.3.7	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.	QA002R	1
FEAT1.3.8	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.	S025	1
FEAT1.4	Event Logging			1

FEAT1.4.1	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.	EX001R	1
FEAT1.4.10	Viewable errors list	All errors shall be included as part of a continuously viewable "errors list" in the form of an error log.	EX006L1	3
FEAT1.4.11	Errors list	The error log shall provide for the "errors list" to be updated continuously.	EX006L2	3
FEAT1.4.12	Review change logs	The SunGuide software shall provide a tool to review DMS and VSL change logs (i.e., SunGuide log files).	EX006L4	3
FEAT1.4.13	Action log files	Operator and supervisor actions shall be tracked in action log files.	EX007L	3
FEAT1.4.14	Review operator logs	The SunGuide software shall provide a tool to review operator logs.	EX007L1	3
FEAT1.4.15	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.	EX003A	3
FEAT1.4.2	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.	EX002R	1
FEAT1.4.3	Executive Handler error logging	The executive handler shall log error conditions as they are detected.	EX007	1
FEAT1.4.4	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.	EX001L	1
FEAT1.4.5	Separate log files	Separate log files shall be used for each application monitored.	EX002L	1
FEAT1.4.6	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).	EX003L	1

FEAT1.4.7	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.	EX003R	1
FEAT1.4.8	Logging messages	All DMS/VSL/HAR messages shall be logged.	TM005R6	3
FEAT1.4.9	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.	EX006L	3
FEAT1.5	TMC			1
FEAT1.5.1	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.	S005	2
FEAT1.5.2	Management of freeway traffic	The SunGuide software shall support the management of traffic along the State freeway system.	A024	1
FEAT1.5.3	Exchange requests between centers	The SunGuide software shall support the exchange of traffic management requests among centers running the SunGuide software.	A025	2
FEAT1.5.4	Software reliability	The SunGuide software shall not require any regularly scheduled down time.	A026	1
FEAT1.5.5	Monitor processes	The SunGuide software shall provide a mechanism for monitoring the health and status of SunGuide software.	S028	1
FEAT1.5.6	Unattended operation	The SunGuide software shall be capable of running unattended for a minimum of eight hours.	A027	1
FEAT1.5.7	Data exchange	The SunGuide software shall support the exchange of data using the center-to-center ICD.	A030	2
FEAT1.5.8	Work zone	The SunGuide software shall support traffic management in a work zone via communication to wireless or wired devices.	A031	2

FEAT1.5.9	TMC categories	The SunGuide software shall support running in multiple TMC configurations.		1
FEAT1.5.9.1	RTMC	The SunGuide software shall support running in a regional TMC.	A029	1
FEAT1.5.9.2	STMC	The SunGuide software shall support a secondary TMC sending command and control requests via center-to-center.	A029	2
FEAT1.5.9.3	VTMC	The SunGuide software shall support operating the center from a remote location.	A029	2
FEAT1.5.9.4	PTMC	The SunGuide software shall support deployment of the system on a laptop.	A029	2
FEAT1.6	Software & Documentation Management			1
FEAT1.6.1	TMC software monitoring	The SunGuide software shall log communication errors and ITS field device failures.	A013	1
FEAT1.6.10	Flexible and expandable	The SunGuide software shall provide ICDs for subsystem device drivers to be added.	S004	1
FEAT1.6.11	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.	S011	1
FEAT1.6.12	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.	S006	1
FEAT1.6.13	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.	A003	2

FEAT1.6.14	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.	A004	2
FEAT1.6.16	Software versions	The SunGuide software shall provide a mechanism to display the versions of the various SunGuide software applications.	A014	1
FEAT1.6.2	Architecture standards	The SunGuide system shall adhere to open architecture standards.	S027	1
FEAT1.6.3	Configuration management of devices	A configuration management template shall be provided to capture information needed to control ITS devices.	A014	1
FEAT1.6.4	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.	S029	1
FEAT1.6.5	Public domain/sector software	The SunGuide system shall consist of public domain/public sector software (object and source code) wherever possible.	S002	1

FEAT1.6.6	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.	S024	1
FEAT1.6.7	Software library modules	The SunGuide system shall provide for a centrally managed set of software modules that completely support all functionality of the RTMCs.	S001	1
FEAT1.6.8	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.	EX008	1
FEAT1.6.9	Future capabilities	The SunGuide software shall provide an ICD for the databus to allow additional subsystems to be added.	A028	1
FEAT1.7	System Misc.			1
FEAT1.7.1	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.	S013	1
FEAT1.7.10	Report creation	The SunGuide system shall support the creation of reports by authorized users.	S009	1
FEAT1.7.11	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.	WS007	1

FEAT1.7.12	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.	EX009	1
FEAT1.7.13	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.	S033	3
FEAT1.7.14	Interfaces for data input	SunGuide shall utilize both an automated interface and an Intranet-oriented operator interface to facilitate data input.	TM023	3

FEAT1.7.15	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.	S018	2
FEAT1.7.16	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.	TD012D	3
FEAT1.7.17	Data source inclusions	Data sources shall include, but are not limited to: incident/event data, traffic sensor data, and weather data.	DF100	3
FEAT1.7.18	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.	DF101	3
FEAT1.7.19	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.	CR005	3
FEAT1.7.20	Master clock synchronization	SunGuide shall synchronize all servers/workstations to a Master Clock signal obtained from a universal time standard obtained through the internet.	DF102	3
FEAT1.7.21	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.	CR006	3
FEAT1.7.22	User intervention	When both the primary and redundant systems are operational, the redundant server shall not require any user intervention.	CR008	3
FEAT1.7.23	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.	CR009	3

FEAT1.7.24	Publishing data	The SunGuide system shall not publish to internal or external systems data from failed internal or external data sources.	CR010	3
FEAT1.7.25	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.	CR012	3
FEAT1.7.26	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.	S036	3
FEAT1.7.27	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.	S037	3
FEAT1.7.28	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.	DB006	3
FEAT1.7.29	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.	UT007	3
FEAT1.7.3	Data reporting	The SunGuide software shall provide for the reporting of data; data to be included in the reports shall be provided by FDOT.	A017	1
FEAT1.7.30	Traditional screen resolutions	Traditional screen resolutions are defined as a minimum: XGA, 1024x768 pixels, SXGA.	OD007R1	3
FEAT1.7.4	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).	A018	1

FEAT1.7.5	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.	WS001A	1
FEAT1.7.6	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.	WS002A	1
FEAT1.7.8	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.	TB002	1
FEAT1.7.9	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	S030	1
FEAT1.8	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.	A011	2

FEAT1.9	Administrative tools			GUI	1
FEAT1.9.1	Administrative Editor			GUI	1
FEAT1.9.1.1	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.	CR013	GUI	3
FEAT1.9.1.10	Links shall be subdivided	Roadway links shall be able to be dynamically subdivided.	UT005D	GUI	3
FEAT1.9.1.11	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.	UT011	GUI	3
FEAT1.9.1.12	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.	UT006	GUI	3
FEAT1.9.1.13	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.	UT013	GUI	4
FEAT1.9.1.14	Configurable LPR health monitoring	LPR health monitoring shall be configurable via a systems administration page within the Admin GUI.	UT014	GUI	4
FEAT1.9.1.16	Rate schedule table support	The Admin Editor shall support the creation, viewing and editing of the Rate Schedule Table.	ML001A	GUI	3.1
FEAT1.9.1.17	Configuration abilities			GUI	5
FEAT1.9.1.17.1	Configure abbreviations	The Administrative Editor shall provide the ability to add, edit and delete abbreviations	TM005R10	GUI	5
FEAT1.9.1.17.2	Configure device templates	The Administrative Editor shall provide the ability to add, edit and delete device templates	TM005R11	GUI	5
FEAT1.9.1.2	511 Reporting segments	SunGuide shall provide the ability to add, delete, and modify 511 Reporting Segments	UT009	GUI	3

FEAT1.9.1.3	Configuration file abilities	Configuration files shall provide the ability to add, delete, or modify any road in the state of Florida.	UT010	GUI	3
FEAT1.9.1.4	Roadway links	SunGuide configuration files shall provide the ability to add, delete, and modify FIHS and Central Florida roadway links.	UT003D	GUI	3
FEAT1.9.1.5	Reconfiguration of data	Performing reconfiguration of roadway link location data shall alter the roadway links displayed by Florida SunGuide.	UT003D1	GUI	3
FEAT1.9.1.6	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.	UT003D2	GUI	3
FEAT1.9.1.7	Default list of roadway links	The roadway links specified by the FDOT shall be the default list of road links.	UT004D	GUI	3
FEAT1.9.1.8	Programming modifications not required	Adding, deleting, or modifying Data Collection roadway links shall not require any programming or database structure modifications.	UT004D1	GUI	3
FEAT1.9.1.9	Link location administrative restrictions	Editing or creating link locations shall be a SunGuide administrative function restricted to an operator with appropriate permissions	UT004D3	GUI	3
FEAT1.9.2	Configuration Editor			GUI	1
FEAT1.9.2.1	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.	S035	GUI	3
FEAT1.9.2.2	Configuration file changes	Additions, deletions, or modifications to the configuration file shall not require any database programming or database table structure modifications.	UT001D	GUI	3
FEAT1.9.2.3	Reconfiguration privileges	Editing or adding configuration files shall be restricted to a SunGuide administrator with reconfiguration privileges.	UT002D	GUI	3

FEAT1.9.3	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.	UT008	GUI	3
FEAT10	Transportation Sensor System (TSS)			TSS	1
FEAT10.1	Data collection	The SunGuide software shall provide software for traffic data collection and support incident detection.	A007	TSS	1
FEAT10.10	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.	TD002D	TSS	1
FEAT10.11	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.	TD003D	TSS	1
FEAT10.12	3M Traffic Sensors	The SunGuide system shall be capable of collecting traffic data from 3M Traffic Sensing Series TMC900E and TMC900 vehicle detection devices.	TD004D	TSS	2
FEAT10.13	WaveTronix SmartSensor	The SunGuide system shall be capable of collecting traffic data from the WaveTronix SmartSensor.	TD005D	TSS	1
FEAT10.14	EIS RTMS Sensor	The SunGuide system shall be capable of collecting traffic data from the Electronic Integrated Systems (EIS) RTMS sensor.	TD006D	TSS	1
FEAT10.15	Maintain raw data values	SunGuide shall maintain the raw data values read from traffic sensors in their original precision.	DF103	TSS	3
FEAT10.16	Probe sensors			TSS	4
FEAT10.16.1	General			TSS	4

FEAT10.16.1.1	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.	TM001S	TSS	4
FEAT10.16.1.2	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.	TM003P	TSS	4
FEAT10.16.1.3	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.	TM004P	TSS	4
FEAT10.16.1.4	Use interface compatible with readers	SunGuide shall use an interface compatible with the LPR and AVI reader stations.	TM004P1	TSS	4
FEAT10.16.1.5	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.	TM005S5	TSS	4
FEAT10.16.1.6	Average speeds based on probe vehicles	SunGuide shall calculate average speeds for segments based on the measured travel time of individual probe vehicles.	TM006P	TSS	4
FEAT10.16.1.7	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.	TM007S1	TSS	4
FEAT10.16.2	LPR data collection			TSS	4

FEAT10.16.2.1	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.	TM001X	TSS	4
FEAT10.16.2.2	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.	TM002X	TSS	4
FEAT10.16.2.3	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.	TM003X	TSS	4
FEAT10.16.2.4	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.	TM004X	TSS	4
FEAT10.16.2.5	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.	TM004X1	TSS	4
FEAT10.16.2.6	Alert operators upon failures	SunGuide shall notify SunGuide operators of reported failures by the LPR equipment.	TM007G	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	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.	TM005X	TSS	4.2
FEAT10.16.2.8.2	Default value for minimum length	SunGuide shall provide the default value 3 for minimum license plate length.	TM005X1	TSS	4.2
FEAT10.16.2.8.3	Default value for maximum length	SunGuide shall provide the default value 5 for maximum license plate length.	TM005X2	TSS	4.2
FEAT10.16.2.8.4	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.	TM005X3	TSS	4.2
FEAT10.16.2.8.5	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.	TM005X4	TSS	4.2
FEAT10.16.2.8.6	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.	TM006X	TSS	4.2
FEAT10.16.2.8.7	Storage or license plate reads	SunGuide shall not store license plate read data in the database	TM007X	TSS	4.3
FEAT10.16.3	AVI data collection			TSS	4
FEAT10.16.3.1	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.)	TM002S	TSS	4

FEAT10.16.3.10	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.	TM005S6	TSS	4
FEAT10.16.3.11	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.	TM005S7	TSS	4
FEAT10.16.3.12	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.	TM005S8	TSS	4
FEAT10.16.3.13	Report device errors	The AVI data collection system shall report errors in AVI Data Collection devices.	TM006S2	TSS	4
FEAT10.16.3.14	Archive AVI transponder IDs	The SunGuide system shall archive AVI transponder IDs.	TM007S2	TSS	4
FEAT10.16.3.15	Archive AVI tag read data	SunGuide shall archive AVI Tag read data.	TM009S	TSS	4
FEAT10.16.3.17	Raw AVI data archived as received	Raw AVI Tag read data shall be archived in the same format in which it was received.	TM009S2	TSS	4
FEAT10.16.3.2	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.	TM003S	TSS	4
FEAT10.16.3.3	Operational definition	Operational shall be defined as that the system is running and that no internal errors have occurred.	TM003S1	TSS	4

FEAT10.16.3.4	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.	TM005P	TSS	4
FEAT10.16.3.5	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.	TM005S	TSS	4
FEAT10.16.3.6	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.	TM005S1	TSS	4
FEAT10.16.3.7	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.	TM005S2	TSS	4
FEAT10.16.3.8	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.	TM005S3	TSS	4
FEAT10.16.3.9	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.	TM005S4	TSS	4
FEAT10.16.4	Dynamic linking			TSS	4
FEAT10.16.4.1	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.	TM006T1	TSS	4
FEAT10.16.4.2	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.	TM006T3	TSS	4

FEAT10.16.4.3	Linking for associated probe TSS links	The SunGuide GUI shall allow an operator to suspend and resume dynamic linking for associated probe TSS links.	TM006T4	TSS	4
FEAT10.16.5	Probe fusion			TSS	4
FEAT10.16.5.1	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.)	TM008S	TSS	4
FEAT10.16.5.2	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.	TM009S3	TSS	4
FEAT10.16.5.3	Use Temporal Midpoint	The software shall have a configurable parameter to determine if a TSS link should use a temporal midpoint when calculating which tag read to use in the matching algorithm	TM026	TSS	6.2
FEAT10.16.5.3.1	Duplicate Tag Collection	The software shall have a configurable parameter to determine the amount of time a TSS link should wait from the initial tag read to gather the duplicate reads in order to determine the temporal midpoint	TM026A	TSS	6.2
FEAT10.16.5.3.2	EvaluateTemporal Midpoint	When a tag read is received and a TSS link is configured to use the temporal midpoint, the software shall store the duplicate tag reads for the configured amount of time and use the midpoint in time between the first tag read and the last tag read gathered in the configured time period	TM026B	TSS	6.2
FEAT10.16.5.4	Use Median	The software shall have a configurable parameter to determine if the TSS link should use the median value when calculating what value to report as the speed of the TSS link	TM027	TSS	6.2
FEAT10.16.5.5	Historical Tag Match Horizon	The software shall have a configurable parameter to determine how long historical tag matches should be stored and used if there is not enough tag matches to generate the necessary sample size in a given poll cycle	TM028	TSS	6.2

FEAT10.16.6	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	TM025	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	Generate TSS alarms	SunGuide shall generate TSS alarms	TD009T	TSS	4.3
FEAT10.18.10	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.	TD009T9	TSS	4.3
FEAT10.18.11	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%.	TD009T10	TSS	4.3
FEAT10.18.12	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.	TD009S	TSS	4.3
FEAT10.18.12.1	Stable detector	A detector is stable if it reports data for a configurable period of time.	TD009S1	TSS	4.3
FEAT10.18.12.2	Configuration of stabilization period	The stabilization period is configurable at the driver level within the system configuration file.	TD009S2	TSS	4.3
FEAT10.18.2	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	TD009T1	TSS	4.3
FEAT10.18.3	TSS alarm triggering	A TSS alarm shall not be triggered when TSS reports no traffic. (i.e. speed, volume and occupancy = 0.)	TD009T2	TSS	4.3

FEAT10.18.4	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.	TD009T3	TSS	4.3
FEAT10.18.5	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.	TD009T4	TSS	4.3
FEAT10.18.6	TSS Alarm Configuration	The Recovery Threshold shall be configurable per link in the Admin Editor.	TD009T5	TSS	4.3
FEAT10.18.7	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.	TD009T6	TSS	4.3
FEAT10.18.8	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.	TD009T7	TSS	4.3
FEAT10.18.9	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.	TD009T8	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	Polls a TSS detector	When SunGuide polls a TSS detector and the poll is unsuccessful, SunGuide shall report the device in "ERROR" status.	TD014E	TSS	4.3
FEAT10.19.2	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.	TD014A	TSS	4.3

FEAT10.19.3	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.	TD014F	TSS	4.3
FEAT10.19.4	Device placed "OUT OF SERVICE"	SunGuide shall allow an operator to place a device in "OUT OF SERVICE."	TD014O	TSS	4.3
FEAT10.19.4.1	Device "OUT OF SERVICE" not polled	SunGuide shall not poll a device with status "OUT OF SERVICE."	TD014O1	TSS	4.3
FEAT10.19.5	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.	TD015F	TSS	4.3
FEAT10.19.5.1	Slow poll rates are configurable	Slow poll rates shall be configurable at the driver level within the system configuration file.	TD015F1	TSS	4.3
FEAT10.19.5.2	Device successfully polled	When a device is successfully polled at the slow poll rate, the device will be placed in "ACTIVE" status.	TD015F2	TSS	4.3
FEAT10.19.6	Store traffic detection device state transitions	SunGuide shall store traffic detection device state transitions as "Online" (active) or "Offline" (error and failure).	TD015S	TSS	4.3
FEAT10.19.6.1	State transitions have date and time	Traffic detection device state transitions shall have date and time of the transition.	TD015S1	TSS	4.3
FEAT10.19.6.2	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.)	TD015S2	TSS	4.3
FEAT10.19.6.4	Write messages to Status Logger	SunGuide shall write messages to the Status Logger when traffic detector device operational state transitions.	TD015S4	TSS	4.3
FEAT10.2	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.	S016	TSS	1
FEAT10.20	Traffic Detector Failure Alerts	The software shall be able to send Traffic Detector Failure alerts.	TD016	GUI	5

FEAT10.21	System-wide Traffic Detector Alerts	The software shall be able to send System-wide Traffic Detector Failure alerts.	TD017	GUI	5
FEAT10.22	Invalid Detector Data Alerts	The software shall be able to send Invalid Detector Data alerts.		GUI	5
FEAT10.23	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.	TD019	GUI	5
FEAT10.25	EIS G4	The software shall allow the user to configure a detector to use the EIS G4 protocol	TD020	TSS	6
FEAT10.25.1	Data Collection	The software shall support communicating to the detector using the EIS G4 protocol including receiving speed, volume, occupancy, and classification data.	TD020A	TSS	6
FEAT10.26	Volume Weighted Average	TSS shall produce the average speed based on a volume weighted averaging method.	TD021	TSS	6
FEAT10.26.1	Lane Average	The rolling average for a lane shall weight the speed on each vehicle in the rolling average period equally.	TD021A	TSS	6
FEAT10.26.2	Link Average	For a given poll cycle, the TSS link speed average shall weight the speed of each vehicle in each lane equally.	TD021B	TSS	6
FEAT10.26.3	Link Rolling Average	The rolling average for a TSS link shall weight the speed on each vehicle in the rolling average period equally.	TD021C	TSS	6
FEAT10.26.4	No Volume Condition	For a given poll cycle, if the volume reported 0, the lane shall not report a speed for that period	TD021D	TSS	6
FEAT10.26.5	Types of Link Averages	TSS links shall provide an average link speed based on raw data and an average based on a rolling average.	TD021E	TSS	6
FEAT10.26.5.1	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	TD021E1	TSS	6

FEAT10.26.5.2	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.	TD021E2	TSS	6
FEAT10.26.5.3	No Data Condition	If no data is available for the link average, the link average shall not report a speed for that period	TD021E3	TSS	6
FEAT10.27	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.	TD022	TSS	6
FEAT10.27.1	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.	TD022A	TSS	6
FEAT10.28	Deleting TSS Links	When the system attempts to delete a TSS link, the software shall check for usage of that link against connected subsystems.	TM029	TSS	6.2
FEAT10.28.1	User Notification	If a TSS link is in use, the system shall alert the user with the reason the deletion attempt failed and cancel the request to delete the TSS link	TM029A	TSS	6.2
FEAT10.28.1.1	Current Usage	If the reason the TSS link failed to delete was that the TSS link was currently in use, the software shall inform the user of its current usages	TM029A1	TSS	6.2
FEAT10.28.2	Disconnected Subsystem Warning	If a subsystem that uses TSS links as part of its configuration is not connected, the GUI shall warn the user before completing the deletion request	TM029B	TSS	6.2
FEAT10.3	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.	TD001	TSS	1

FEAT10.4	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.	TD002	TSS	1
FEAT10.5	Bitrans WashDOT standard	To the maximum extent possible, the Bitrans WashDOT standard for transportation sensor systems shall be utilized for traffic detector communications.	TD003	TSS	1
FEAT10.6	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.	TD004	TSS	1
FEAT10.7	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.	TD005	TSS	1
FEAT10.8	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.	TD006	TSS	1
FEAT10.9	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.	TD001D	TSS	1

FEAT11	Evacuation Coordination (EC)			EC	2
FEAT11.1	Definition	The SunGuide system shall provide an evacuation coordination subsystem to provide for management of traffic during evacuations.	S023	EC	2
FEAT11.2	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.	EC001	EC	2
FEAT11.3	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.	EC002	EC	2
FEAT11.4	Evacuation Guidance (EG)			EC	2
FEAT11.4.1	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.	EC001G	EC	2
FEAT11.4.2	Multiple distributed locations	The evacuation guidance component shall be accessible to users who access the Internet through a browser application.	EC002G	EC	2
FEAT11.4.3	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.	EC003G	EC	2
FEAT11.4.4	List and graphical depiction of evacuation zones	The evacuation guidance component shall provide a means to obtain evacuation zone locations and status.	EC004G	EC	2
FEAT11.4.5	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.	EC005G	EC	2

FEAT11.4.7	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.	EC007G	EC	2
FEAT11.4.8	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.	EC008G	EC	2
FEAT11.4.9	Zones and categories	The EG shall provide a means of determining evacuation zone and category information.	EC009G	EC	2
FEAT11.5	Evacuation Travel Information (ETI)			EC	2
FEAT11.5.1	Evacuation travel information	The evacuation coordination subsystem shall provide an evacuation travel information function.	EC003	EC	2
FEAT11.5.2	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.	EC001E	EC	2

FEAT11.5.3	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.	EC002E	EC	2
FEAT11.5.4	Current and forecast weather conditions	The evacuation travel information function shall provide the current and forecast weather conditions for evacuation origins, destinations and routes.	EC003E	EC	2
FEAT11.5.5	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.	EC004E	EC	2
FEAT11.5.6	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.	EC005E	EC	2
FEAT11.5.7	Lodging availability	The evacuation travel information function shall provide information regarding lodging available along evacuation routes and at evacuation destinations.	EC006E	EC	2
FEAT11.6	Evacuation Traffic Management			EC	2

FEAT11.6.1	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.	EC004	EC	2
FEAT11.6.2	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.	EC001M	EC	2
FEAT11.6.5	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.	EC004M	EC	2
FEAT11.6.6	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.	EC005M	EC	2
FEAT11.6.7	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.	EC006M	EC	2
FEAT11.7	Evacuation Planning Support			EC	2
FEAT11.8	Resource Sharing			EC	2
FEAT12	Road Weather Information System (RWIS)			RWIS	
FEAT12.1	Detection of road weather conditions	The SunGuide software shall provide software for detection of road weather conditions that may impact operations.	A005	RWIS	2
FEAT12.10	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.	RW001U	RWIS	2

FEAT12.11	NTCIP v2	The RWIS interface shall support the NTCIP 1204 v02.18 - NTCIP Object Definitions for Environmental Sensor Stations (ESS) Interface Protocol.	RW006	RWIS	6.1
FEAT12.12	NTCIP v3	The RWIS interface shall support the NTCIP 1204 v03 - NTCIP Object Definitions for Environmental Sensor Stations (ESS) Interface Protocol, available from www.ntcip.org with filename: 1204v0308r2.pdf, released October, 2009.	RW007	RWIS	6.1
FEAT12.13	RWIS alarms	The software shall produce RWIS alarms based on RWIS data exceeding thresholds.	RW008	RWIS	6.1
FEAT12.13.1	Thresholds	The software shall allow the user to set alarm thresholds for each RWIS device configured in the system for each RWIS data type available in the software.	RW008A	RWIS	6.1
FEAT12.13.1.1	Supported Types	The software shall support the following RWIS data types; Atmospheric Pressure in inches of Mercury, Average Wind Sped in miles per hour, Current Wind Speed in miles per hour, Max Wind Gusts Speed for the last 10 minutes in miles per hour, Temperature in Fahrenheit, Dew Point in Fahrenheit, Water Depth in inches, Relative Humidity in percentage, Adjacent Snow Depth in inches, Roadway Snow Depth in inches, Roadway Packed Snow Depth in inches, Precipitation Rate inches per hour, Snow Accumulation Rate in inches per hour, Ice Deposit in inches, Visibility in miles, Exposure in percentage, Surface Temperature in Fahrenheit, Salinity in parts per thousand, Pavement Freezing Point in Fahrenheit, Conductivity in mhos, and Pavement Ice/Water Depth in inches.	RW008A1	RWIS	6.1

FEAT12.13.2	Recovery Thresholds	The software shall allow the user to set recovery thresholds for each device configured in the system for each RWIS data type available in the software.	RW008B	RWIS	6.1
FEAT12.13.3	Thresholds Disabled by Default	The software shall originally set thresholds to be disabled by default.	RW008C	RWIS	6.1
FEAT12.13.4	Alarm Direction	The software shall allow the user to define if the greater than numeric direction or lesser than numeric direction exceeds an alarm threshold.	RW008D	RWIS	6.1
FEAT12.13.5	Enforce Correct Threshold Recovery	The software shall require a recovery threshold value to be set that is in the opposite numeric direction of the corresponding alarm threshold's configured numeric direction.	RW008E	RWIS	6.1
FEAT12.13.6	Show Threshold Direction	The software shall present to the user the numeric direction of the thresholds in each place the thresholds are presented to the user.	RW008F	RWIS	6.1
FEAT12.13.7	Generate Alerts	The software shall generate an RWIS alarm for any data received that exceeds the alarm threshold.	RW008G	RWIS	6.1
FEAT12.13.8	Remove Recovered Alerts	The software shall automatically recover/remove an alarm when the data that had exceeded the alarm threshold exceeds the recovery threshold in the opposite numeric direction.	RW008H	RWIS	6.1
FEAT12.13.9	Automatic Events	An option shall be provided to determine if the software should automatically create events and activate response plans when a new RWIS alert is generated.	RW008J	RWIS	6.1
FEAT12.14	Beacon Distance Threshold	The software shall allow the user to configure the distance radius away from each RWIS device for determining which beacons will be included in a response plan suggestion.	RW009	RWIS	6.1
FEAT12.15	RWIS Simulator	The software shall include an RWIS simulator.	RW0010	RWIS	6.1
FEAT12.15.1	NTCIP v3	The simulator shall be capable of simulating the NTCIP1204v03 protocol.	RW0011	RWIS	6.1

FEAT12.15.2	Multiple Devices	The RWIS driver XML protocol simulator shall be capable of simulating multiple devices concurrently.	RW0012	RWIS	6.1
FEAT12.15.3	API	The simulator shall have an application programmable interface	RW0013	RWIS	6.1
FEAT12.15.4	GUI	The simulator shall have a graphical user interface.	RW0014	RWIS	6.1
FEAT12.2	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.	S017	RWIS	2
FEAT12.3	NTCIP protocol	The RWIS interface shall use the NTCIP protocol.	RW004	RWIS	2
FEAT12.4	Physical communication	The RWIS interface function shall implement SNMP over UDP/IP to communicate with NTCIP RWIS devices.	RW001D	RWIS	2
FEAT12.5	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).	RW002D	RWIS	2
FEAT12.6	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.	RW002U	RWIS	2
FEAT12.7	NTCIP protocol standard	The NTCIP standard for environmental sensor stations (ESS) shall be utilized for the RWIS interface communications.	RW001	RWIS	2

FEAT12.8	RWIS Interface	The RWIS interface function shall provide protocol software to communicate with RWIS field units using NTCIP.	RW002	RWIS	2
FEAT12.9	User interface display	The RWIS user interface shall be a software application within the SunGuide system that displays the required RWIS data fields.	RW005	RWIS	2
FEAT13	Center to Center (C2C)			C2C	1
FEAT13.1	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.	A020	C2C	2
FEAT13.10	Configured to support data sources	The SunGuide software shall be capable of being configured to accommodate supported data sources as they become available.	TM002V1	C2C	3
FEAT13.11	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.	CR002	C2C	3
FEAT13.12	Storing multiple source information	SunGuide shall be capable of storing information from multiple automated and manual sources, including weather.	CR003	C2C	3
FEAT13.13	Time stamping of data	The SunGuide data available via the center-to-center interface will be time stamped.	OD001T	C2C	3
FEAT13.14	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.	DF005C	C2C	4
FEAT13.15	Exchange of floodgate information	The SunGuide Center-to-Center interface shall support exchange of floodgate information entered by an operator via the GUI.	DF005C	C2C	4
FEAT13.17	Filter out TvT Links, CCTV and DMS from FL-ATIS			PS	4.3

FEAT13.17.1	CCTV configuration data	CCTV configuration data published to C2C shall have an attribute indicating whether the device should be visible to the public	CC001	C2C	4.2
FEAT13.17.2	DMS Configuration Data	DMS configuration data published to C2C shall have an attribute indicating whether the device should be visible to the public	CC002	C2C	4.2
FEAT13.17.3	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.	CC003	C2C	4.2
FEAT13.18	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.	CC004	C2C	5
FEAT13.19	Soft Messaging	Events should be published via C2C only if the event status is "Active" or "Unconfirmed"	CC005	C2C	5
FEAT13.2	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	A021	C2C	2
FEAT13.20	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	CC006	C2C	6
FEAT13.3	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.	S021	C2C	2

FEAT13.5	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.	DM010D	C2C	2.1
FEAT13.6	Validate device requests	Device requests received via the C2C interface shall be validated.	DM001M	C2C	2.1
FEAT13.7	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.	DM016M1	C2C	2.1
FEAT13.8	Support data exchanging	SunGuide shall support exchanging of data through C2C with the FHP.	TM020	C2C	3
FEAT13.9	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.	TM002V	C2C	3
FEAT14	Data Archiving (DA)			DA	2
FEAT14.1	Data warehousing	The SunGuide software shall provide software for storing and regionally sharing traffic data so it can be archived in a data warehouse.	A019	DA	2
FEAT14.2	Automated archiving	The system support archiving component shall provide automated archiving of data to a common file usable by external databases for reporting purposes.	SS001A	DA	2
FEAT14.3	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.	SS002A	DA	2
FEAT14.4	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.	SS003A	DA	2

FEAT14.5	Export form	The system support archiving function shall support archiving as an export to comma delimited form.	SS004A	DA	2
FEAT14.6	Time-stamped data archive information	The SunGuide data available in the Data Archive will be time stamped.	TM014D	DA	3
FEAT15	Ramp Metering System (RMS)			RMS	2
FEAT15.1	Ramp meter configuration		TM001M	RMS	2
FEAT15.1.1	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	TM001M1	RMS	2
FEAT15.1.2	Online status	The system shall allow ramp meter controllers operational status to be manually changed to inactive/active.	TM001M2	RMS	2
FEAT15.1.3	Associate detectors	The system shall allow mainline and on-ramp traffic detectors to be associated with a ramp meter controller.	TM001M3	RMS	2
FEAT15.1.4	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	TM001M4	RMS	2
FEAT15.1.5	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	TM001M5	RMS	2
FEAT15.1.6	Manual override	The system shall allow a user with appropriate permissions to override the automatic control of a ramp meter.	TM001M6	RMS	2
FEAT15.2	System		TM002M	RMS	2

FEAT15.2.1	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).	TM002M1	RMS	2
FEAT15.2.2	Controller groups	The system shall allow groups of ramp meter controllers to be defined. Groups of groups may also be defined.	TM002M2	RMS	2
FEAT15.2.3	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.	TM002M3	RMS	2
FEAT15.2.4	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.	TM002M4	RMS	2
FEAT15.2.5	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.	TM002M5	RMS	2
FEAT15.2.6	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.).	TM002M6	RMS	2
FEAT15.3	Ramp meter communication		TM003M	RMS	2
FEAT15.3.1	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.	TM003M1	RMS	2
FEAT15.3.2	Manual poll	The system shall allow ramp meters to be manually polled for their current status.	TM003M2	RMS	2

FEAT15.3.3	Synchronize clock	The system shall allow the clocks on a ramp meter controller to be synchronized with the current system date and time.	TM003M3	RMS	2
FEAT16	Message Arbitration System (MAS)			MAS	1
FEAT16.1	General			MAS	1
FEAT16.1.1	Message queue	The SunGuide system shall support a priority-based queue for messages.	DM004	MAS	1
FEAT16.1.2	Number of priority levels	The system shall support 256 message priority levels.	DM005M	MAS	1
FEAT16.1.3	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.)	TM014T2	MAS	3
FEAT16.1.4	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.	TM014T3	MAS	3
FEAT16.1.5	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).	TM014T4	MAS	3
FEAT16.2	Device control			MAS	1
FEAT16.2.1	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.	DM006M	MAS	1
FEAT16.2.2	Remove message	When a message is removed from the queue, the message with the next highest priority shall be activated.	DM007M	MAS	1

FEAT16.2.3	Same priority	If two messages of the same priority are on the queue the message received first will be displayed first.	DM007M2	MAS	1
FEAT16.2.4	Blank queue	If the queue for a device becomes empty, the device shall blank.	DM007M1	MAS	1
FEAT17	Safety Barrier (SB)			SB	1
FEAT17.1	SB protocol	The SunGuide Safety Barrier Interface Protocol shall be used to communicate with safety barrier devices.	EX005L	SB	1
FEAT17.2	SB Status			SB	1
FEAT17.2.1	Monitor SB status	SunGuide software shall monitor the status of each safety barrier device. Status information includes:· Lamp status,· switch status	TM017R	SB	2
FEAT17.2.2	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	TM017R2	SB	2
FEAT17.3	SB Detection			SB	1
FEAT17.3.1	Detect SB incidents	SunGuide software shall detect and react to incidents associated with vehicles impacting sensor equipped safety barriers along the roadway.	TM014	SB	2
FEAT17.3.2	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.	TM001S	SB	2
FEAT17.3.3	Log timestamp of switch activation	Events associated with safety barrier breakaway switch activations shall be logged with a date time stamp.	EX004L	SB	1
FEAT17.3.4	Log timestamp of switch restoration	Restoration of the breakaway switch (closure) shall be logged with a date time stamp.	EX004L1	SB	2
FEAT18	Travel Times (TvT)			TVT	2
FEAT18.1	General			TVT	2

FEAT18.1.1	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.	S031	TVT	2
FEAT18.1.10	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.	TM008P	TVT	4
FEAT18.1.11	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.	TM009T2	TVT	4
FEAT18.1.12	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.	TM012T	TVT	4
FEAT18.1.13	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.	TM012T1	TVT	4
FEAT18.1.14	Archive travel time and speed data	SunGuide shall have the ability to archive all travel time and speed data for later use.	TM013D	TVT	4
FEAT18.1.15	test	test		RR	4
FEAT18.1.2	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.	DF200R3	TVT	3
FEAT18.1.3	One or two DMS phases	Travel time messages can have one or two DMS phases.	DM019M	TVT	3
FEAT18.1.4	TVT links greater than zero	SunGuide shall ensure that travel time links shall be greater than zero.	TM004T	TVT	4

FEAT18.1.5	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.	TM004S	TVT	4
FEAT18.1.6	Speed values greater than zero	Travel time computations shall use speed values greater than zero (0).	TM004T2	TVT	4
FEAT18.1.7	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.	TM006T	TVT	4
FEAT18.1.8	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.	TM006T2	TVT	4
FEAT18.1.9	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.	TM007T	TSS	4
FEAT18.2	Configuration			TVT	2
FEAT18.2.1	Travel time message template	SunGuide shall include a "Travel Time Message template" that is editable by operators with SunGuide Administrator privileges.	TM002T	TVT	2
FEAT18.2.10	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.	TM010T5	TVT	4
FEAT18.2.11	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.	TM013T	TVT	4

FEAT18.2.12	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).	TM013T1	TVT	4
FEAT18.2.2	Travel time message priority	Travel time messages shall have a SunGuide Administrator configurable priority that can be modified by operators with appropriate SunGuide privileges.	TM003T	TVT	2
FEAT18.2.3	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.	TM017	TVT	2
FEAT18.2.4	Alter 511 segments	It shall be possible to alter the initial 511 reporting segments.	UT012	TVT	3
FEAT18.2.5	Ability to turn off travel time messages	The SunGuide operator shall have the ability to turn off the travel time messages to the DMS.	TM002G	TVT	4
FEAT18.2.6	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.	TM004T1	TVT	4
FEAT18.2.7	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.	TM008G	TVT	4
FEAT18.2.8	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.	TM008T1	TVT	4
FEAT18.2.9	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.	TM010T	TVT	4
FEAT18.3	Generation			TVT	2
FEAT18.3.1	Generate travel time messages	Travel time messages shall be automatically generated.	TM001T	TVT	2

FEAT18.3.10	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	TMT0310	TVT	6
FEAT18.3.11	No Units	The software shall have a configuration parameter that will allow travel times to be posted to DMS without including the units.	TMT040	TVT	6
FEAT18.3.2	Travel time generation method	Travel time computations shall be based on the Texas Department of Transportation TransGuide Travel Time computation method.	TM016	TVT	2
FEAT18.3.3	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.	TM005T	TVT	4
FEAT18.3.4	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.	TM005T1	TVT	4
FEAT18.3.5	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.	TM005T2	TVT	4
FEAT18.3.6	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).	TM007P	TVT	4
FEAT18.3.7	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.).	TM009T1	TVT	4
FEAT18.3.8	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.	TM010T4	TVT	4

FEAT18.3.9	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	TMT039	TVT	6
FEAT18.4	Vehicle travel times			TVT	4
FEAT18.4.1	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.	TM018	TVT	4
FEAT18.4.2	Travel times and delays with probe data	SunGuide shall provide vehicle travel times and delays using probe vehicle technologies.	TM024	TVT	4
FEAT18.4.3	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.	TM002P	TVT	4
FEAT18.4.4	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.	TM009T	TVT	4
FEAT18.5	Alternate routes			TVT	4
FEAT18.5.1	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.	TM003G	TVT	4
FEAT18.5.2	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.	TM008T	TVT	4
FEAT18.5.3	Display of alternate routes	Display of alternate route travel time messages shall be based on the calculated travel times and current traffic conditions.	TM008T2	TVT	4

FEAT18.5.4	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.	TM011T	TVT	4
FEAT18.5.5	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>	TM011T1	TVT	4
FEAT19	Event Management / Performance Measures (EM/PM)			EMPM	2
FEAT19.1	GUI			EMPM	2
FEAT19.1.1	User interface for new event records	The Event Manager tabular screen shall be opened automatically upon operator login based on operator preferences.	EM001G	EM	3
FEAT19.1.10	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).	EM007G2	EM	3

FEAT19.1.11	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.	EM011G	EM	3
FEAT19.1.12	Maximum of 512 ASCII characters	The free text field shall accommodate a maximum of 512 ASCII characters.	EM011G1	EM	3
FEAT19.1.13	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.	EM017G1	GUI	3
FEAT19.1.14	Visible popup alerts	The popup alert shall be visible to all operators logged on to the SunGuide system.	EM017G2	GUI	3
FEAT19.1.15	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.	EM017G3	GUI	3
FEAT19.1.16	Unblocking blocked cameras	The SunGuide GUI shall allow any operator with appropriate permissions to unblock a blocked camera.	EM017G4	GUI	3
FEAT19.1.17	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.	TM006W	EM	3
FEAT19.1.2	Opening GUI automatically	The EM/PM GUI shall open automatically whenever the operator completes a log in to SunGuide.	EM001G1	EMPM	2
FEAT19.1.3	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.	EM001G2	GUI	3

FEAT19.1.4	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.	EM003G2	EM	3
FEAT19.1.5	Support editing for PM data fields	The SunGuide PM subsystem shall support data editing.	EM003R	RS	3
FEAT19.1.6	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.	EM003R1	EM	3
FEAT19.1.7	Agency timeline data	It shall be possible to edit agency timeline data in real-time using the data entry form.	EM003R2	EM	3
FEAT19.1.8	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.	EM007G	EM	3
FEAT19.1.9	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.	EM007G1	EM	3
FEAT19.2	Reports			EMPM	2
FEAT19.2.1	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.	EM001R	RS	3
FEAT19.2.10	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.	TM006W4	EM	3

FEAT19.2.2	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.	EM001R1	RS	3
FEAT19.2.3	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.	EM001R2	RS	3
FEAT19.2.4	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.	EM002R	RS	3
FEAT19.2.5	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.	EM001D2	EM	3
FEAT19.2.6	Generating statistics and reports	The performance measures component shall generate statistics and reports based on data entered via SunGuide data entry screens.	EM001P	RS	3
FEAT19.2.7	Support quarterly report generation	SunGuide shall support the compilation and report generation weekly, monthly, quarterly and annually.	TM004D	RS	3
FEAT19.2.8	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.	TM005D	RS	3
FEAT19.2.9	Calculate, display, and export TMC performance measures	SunGuide shall calculate and be able to display and export TMC performance measures.	TM007D	RS	3
FEAT19.3	Manage events			EMPM	2
FEAT19.3.1	Specify event verification	The EM/PM GUI component shall allow an operator to specify that the event has been verified.	EM002G	EMPM	2
FEAT19.3.10	Timestamps for lane blockage entries	All lane blockage entries shall be recorded with timestamps by the database element.	EM006G1	EM	3

FEAT19.3.11	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.	EM008G	EM	3
FEAT19.3.12	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.	EM010G	EM	3
FEAT19.3.13	Specifying event location graphically	The EM/PM GUI component shall allow the operator to specify the location of an event, using a graphical interface.	EM012G	EMPM	2
FEAT19.3.14	Micro-degrees event coordinates	Events shall be geo-located using latitude and longitude coordinates in micro-degrees.	EM012G1	EM	3
FEAT19.3.15	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.	EM013G	EM	3
FEAT19.3.16	Point location along roadway	The SunGuide GUI component shall allow the operator to define a point location along a roadway.	EM014G	EM	3
FEAT19.3.17	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.	EM015G	EM	3
FEAT19.3.18	Weather conditions	The SunGuide GUI component shall allow the operator to specify weather conditions for the event.	EM016G	EM	3
FEAT19.3.19	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.	EM009G	EM	3
FEAT19.3.2	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.	EM002G1	EM	3
FEAT19.3.20	Recording free-text comments	The EM subsystem shall be able to record free-text comments entered by the operator.	EM003	EM	3

FEAT19.3.21	Storing free text comments in database	The operator entered free text comments shall be stored in the database associated with the related event.	EM002D	EM	3
FEAT19.3.22	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.	EM017G	GUI	3
FEAT19.3.23	Manually unblocking cameras	There shall be no timeout feature to unblock the cameras; the camera must be unblocked manually by an operator.	EM017G5	GUI	3
FEAT19.3.24	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.	EM005T	EM	3
FEAT19.3.25	Indicate if TMC notified agency	The operator shall be able to indicate whether it was the TMC that notified a specific agency.	EM005T1	EM	3
FEAT19.3.26	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.	EM005T2	EM	3
FEAT19.3.27	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.	EM007T1	EMPM	2
FEAT19.3.28	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.	EM005	RS	3
FEAT19.3.29	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.	EM006	EM	3
FEAT19.3.3	Specify event status	The EM subsystem shall allow an operator to specify the status of the event.	EM003G	EM	3

FEAT19.3.30	Email alerts for event subscribers	The EM subsystem shall allow operators to send email alerts to subscribers with summary information about an event.	EM007	EM	3
FEAT19.3.31	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.	EM001E	EM	3
FEAT19.3.32	Entering free-text changes to emails	The SunGuide E-mail component shall allow the operator to enter free-text changes to the email.	EM002E	EM	3
FEAT19.3.33	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.	EM003E	EM	3
FEAT19.3.34	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.	EM008	EM	3
FEAT19.3.35	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.	EM002P	EM	3
FEAT19.3.36	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).	TM005B	EMPM	2
FEAT19.3.37	Identification of incident created by EM/PM	SunGuide shall identify the incident as having been created or changed by the EM/PM Subsystems.	TM005B1	EMPM	2
FEAT19.3.38	TSS dectected incidents shown in EM/PM	Possible incidents detected through SunGuide TSS shall show up in the EM/PM GUI.	TM005B3	EMPM	2
FEAT19.3.39	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.	TM005B5	EMPM	2

FEAT19.3.4	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.	EM003G1	EM	3
FEAT19.3.5	Specify event closure	The EM Subsystem GUI element shall allow an operator to specify when an event has been closed.	EM003G3	EM	3
FEAT19.3.6	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.	EM004G	EM	3
FEAT19.3.7	Records flagged as invalid	Records flagged as invalid shall not be deleted by the database element.	EM004G1	EM	3
FEAT19.3.8	Specify events as 'false alarm'	The SunGuide GUI component shall allow an operator to specify that the event was a 'false alarm'.	EM005G	EM	3
FEAT19.3.9	Lane blockage data	The SunGuide GUI component shall allow an operator to enter lane blockage data for any event.	EM006G	EM	3
FEAT19.4	Data synchronization			EMPM	2
FEAT19.4.1	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.	EM013G1	EM	3
FEAT19.4.2	Synchronizing event records	The EM/PM event records shall be synchronized with IM event records.	EM003D	EMPM	2
FEAT19.4.3	EM/PM data populates IM data	The EM/PM data entry screens shall populate IM data entry screens.	EM006T	EMPM	2
FEAT19.4.4	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.	EM009	EMPM	2
FEAT19.5	System			EMPM	2
FEAT19.5.1	SunGuide Oracle database access	The SunGuide Oracle database shall support Event Manager functions.	EM002	EM	3
FEAT19.5.2	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.	EM001D	EM	3

FEAT19.5.3	Calculating latitude/longitude coordinates	EM/PM subsystem shall calculate latitude/longitude coordinates in the background and provide them to the IM subsystem.	EM006T1	EMPM	2
FEAT19.6	Road ranger vehicles			EMPM	2
FEAT19.6.1	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.	EM004	RR	3
FEAT19.6.10	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)	TM002D1	EM	3
FEAT19.6.11	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	TM002D2	EM	3
FEAT19.6.12	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	TM002D3	EM	3

FEAT19.6.13	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	TM002D4	EM	3
FEAT19.6.14	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	TM002D5	RR	3
FEAT19.6.15	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.	TM003D	RS	3
FEAT19.6.16	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.	TM006D	RS	3

FEAT19.6.17	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.	TM012D	RR	3
FEAT19.6.18	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.	TM012D1	RR	3
FEAT19.6.19	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.	TM019	RR	3
FEAT19.6.2	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.	EM001T	RR	3
FEAT19.6.20	Performance measures data collection	The SunGuide software shall support the performance measures data collection of Road Rangers Service Patrols.	S032	RS	3
FEAT19.6.21	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.	TM006W6	EM	3
FEAT19.6.3	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.	EM002T	RR	3
FEAT19.6.4	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.	EM003T	RR	3

FEAT19.6.5	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.	EM004T	RR	3
FEAT19.6.6	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.	EM004T1	EM	3
FEAT19.6.7	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.	EM004T2	EM	3
FEAT19.6.8	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.	TM001D	RR	3

FEAT19.6.9	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)	TM002D	EM	3
FEAT19.7	Performance measures			EMPM	2
FEAT19.7.1	Calculate and save incident response time	SunGuide shall calculate and save the Response Time for each incident confirmed by the SunGuide operator.	TM009D	EM	3
FEAT19.7.10	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).	TM006W1	EM	3
FEAT19.7.11	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.	TM006W2	EM	3

FEAT19.7.12	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).	TM006W3	EM	3
FEAT19.7.13	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".	TM006W5	EM	3
FEAT19.7.2	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.	TM009D1	EM	3
FEAT19.7.3	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.	TM009D2	EM	3
FEAT19.7.4	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 Timeincident ID = tLE/RR Arrives - tinitialnotification.	TM009D3	EM	3
FEAT19.7.5	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.	TM009D4	EM	3
FEAT19.7.6	Incident clearance time	SunGuide shall calculate and save the Incident Clearance time for each incident confirmed by the SunGuide operator .	TM010D	EM	3

FEAT19.7.7	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.	TM010D1	EM	3
FEAT19.7.8	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 = tlanescleared - tLE/RR Arrives	TM010D2	EM	3
FEAT19.7.9	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.	TM010D3	EM	3
FEAT19.8	General			EMPM	2
FEAT19.8.1	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.	EM001	RS	3
FEAT2	Web Server (WS)			WS	1
FEAT2.1	Web server function	The SunGuide system shall provide a web server for private and public dissemination of TMC information.	S020	WS	2
FEAT2.10	Banner			WS	1
FEAT2.10.1	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.).	PA007	WS	3
FEAT2.10.2	Operator can modify banner	The SunGuide operator shall be capable of making, adding to, deleting, or otherwise modifying the statewide Web site banner.	PA008U	WS	3
FEAT2.2	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.	PA001	WS	1

FEAT2.3	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.	PA002	WS	3
FEAT2.4	Map elements: congestion, incidents, cameras, DMSs	The web server shall provide a map showing traffic information and the location of certain FDOT ITS devices.	PA004	WS	2
FEAT2.5	General			WS	1
FEAT2.5.1	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.	PA014	WS	3
FEAT2.5.10	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.	PA008	WS	3
FEAT2.5.11	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).	PA014U	WS	3
FEAT2.5.12	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.	PA012U	WS	3
FEAT2.5.13	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.	PA012	WS	3
FEAT2.5.14	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.	PA005U1	WS	3

FEAT2.5.15	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.	PA020U	WS	3
FEAT2.5.2	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.	PA006U	WS	3
FEAT2.5.3	Hyperlinks use relative paths	Hyperlinks on the website which direct users to other locations within the website shall use relative paths.	PA006U1	WS	3
FEAT2.5.4	Support adding URLs	SunGuide shall support the SunGuide administrator adding URLs (and associated text) to the home page of the web site.	PA005U2	WS	3
FEAT2.5.5	Measurable traffic delays	The iFlorida Web site shall include measurable traffic delays in the Central Florida region.	PA016U5	WS	3
FEAT2.5.6	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.	PA016U6	WS	3
FEAT2.5.7	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.	PA016U8	WS	3
FEAT2.5.8	Dissemination of FIHS data	The SunGuide FIHS data shall be disseminated via a FIHS Internet-based traveler information Web site.	PA005	WS	3
FEAT2.5.9	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).	PA006	WS	3
FEAT2.6	Roadway data			WS	1
FEAT2.6.1	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.).	PA003U1	WS	3

FEAT2.6.2	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.	PA003U2	WS	3
FEAT2.6.3	Roadway event naming	Roadway event naming shall use the roadway names configured in the SunGuide Administrative editor.	PA003U3	WS	3
FEAT2.6.6	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.	PA016U4	WS	3
FEAT2.6.7	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.	PA016U7	WS	3
FEAT2.6.8	Display C2C travel time data	The web site shall display travel time data received from the Center-to-Center interface.	PA016U9	WS	3
FEAT2.7	Icons			WS	1
FEAT2.7.1	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.	PA013U	EV	3
FEAT2.7.2	Adhere to color-coding/icons	The Web site shall adhere to color-coding schemes and/or icons specified by the FDOT.	PA016U	WS	3
FEAT2.7.3	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.	PA016U2	WS	3
FEAT2.7.4	Urgent event icons	The iFlorida Web site shall include urgent event icon shapes and conspicuous color/shading to be specified by the FDOT.	PA016U3	WS	3

FEAT2.7.5	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.	PA007U1	WS	3
FEAT2.8	Maps			WS	1
FEAT2.8.1	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	PA005U	WS	3
FEAT2.8.2	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.	PA007U	WS	3
FEAT2.8.3	Clickable regions	The map on the web server shall have a minimum of 6 clickable regions configurable by the system administrator.	PA009U	WS	3
FEAT2.8.4	Regions linked to traffic conditions	The website shall present a map of Florida with clickable regions linked to traffic conditions in those regions.	PA009U1	WS	3
FEAT2.8.5	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.	PA009U2	WS	3
FEAT2.8.6	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.	PA009U3	WS	3
FEAT2.8.7	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.	PA013	WS	3
FEAT2.9	511 service			WS	1

FEAT2.9.1	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.	PA009	WS	3
FEAT2.9.2	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.	PA011U	WS	3
FEAT20	Scheduled Action System (SAS)			SAS	2.2.2
FEAT20.10	Scheduled Response Plans	The software shall allow response plans from an open event to be activated on a schedule.		IDS	6.1
FEAT20.4	Travel Time Message Scheduling	The software shall allow the scheduling of the enabling and disabling of travel time messages.	SAS004	SAS	6
FEAT20.4.1	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.	SAS004A	SAS	6
FEAT20.5	Schedules	The software shall allow the user to schedule a series of predefined actions within the system.	SAS005	SAS	6

FEAT20.5.1	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.	SAS005A	SAS	6
FEAT20.6	Sequences	The software shall allow for sequences, or a set of actions, to be configured within the schedule configuration	SAS006	SAS	6
FEAT20.6.1	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.	SAS006A	SAS	6
FEAT20.6.2	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	SAS006B	SAS	6

FEAT20.6.3	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	SAS006C	SAS	6
FEAT20.6.4	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.	SAS006D	SAS	6
FEAT20.7	Schedule Naming	The software shall allow the user to specify a name for the schedule	SAS007	SAS	6
FEAT20.7.1	Unique Name	The name shall be required to be unique	SAS007A	SAS	6
FEAT20.7.2	Storing Schedule Name	The name shall be able to be modified and not be used as a primary key	SAS007B	SAS	6
FEAT20.7.3	Default Name	The name shall initially default to "New Schedule"	SAS007C	SAS	6
FEAT20.7.3.1	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	SAS007C1	SAS	6
FEAT20.8	Schedule Copying	The software shall allow the user to copy a schedule from an existing schedule	SAS008	SAS	6
FEAT20.8.1	Copied Schedule Default Naming	The name shall default to the exiting schedule's name appended with a space and the text "Copy"	SAS008A	SAS	6
FEAT20.8.1.1	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	SAS008A1	SAS	6
FEAT20.9	Enable/Disable Schedule	The software shall allow the schedule to be enabled or disabled by the user	SAS009	SAS	6
FEAT21	Ramp Meter Firmware (RMF)			RMF	
FEAT21.1	General			RMF	
FEAT21.1.1	Provide ramp metering firmware	The SunGuide system shall provide a ramp metering firmware for controlling traffic flow onto a roadway from an on-ramp.	TM021	RMF	RMF 1

FEAT21.1.2	Model 170 equipment	The Ramp Meter controller firmware shall control equipment consisting of standard transportation management hardware equivalent to the Model 170 controller.	TM001H	RMF	RMF 1
FEAT21.1.3	68HC11 processor	The Ramp Meter controller firmware shall be developed for the 68HC11 processor.	TM002H	RMF	RMF 1
FEAT21.1.4	Controller firmware support	The Ramp Meter controller firmware shall support Model 170 controller keypad, LED display, indicators, communications input and output functionality.	TM003H	RMF	RMF 1
FEAT21.1.5	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".	TM001C	RMF	RMF 1
FEAT21.1.6	Common access keypad	The Ramp Meter controller shall allow use of a common access keypad for manual access to firmware parameters and controller operation.	TM001O	RMF	RMF 1
FEAT21.1.7	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.	TM004O	RMF	RMF 1
FEAT21.1.8	Surveillance functions	The Ramp Meter controller shall provide Surveillance functions.	TM001L	RMF	RMF 1
FEAT21.1.9	Meter traffic flow	The Ramp Meter controller shall meter traffic flow.	TM002L	RMF	RMF 1
FEAT21.2	Configuration			RMF	
FEAT21.2.1	Input source	The source for input to the Ramp Meter controller shall be configurable.	TM002C	RMF	RMF 1
FEAT21.2.2	Pre-defined configurable parameters	The Ramp Meter controller shall accept pre-defined configurable firmware parameters.	TM002O	RMF	RMF 1
FEAT21.2.3	Clock and calendar function	The Ramp Meter controller shall provide a manually configurable Clock and calendar function.	TM005O	RMF	RMF 1
FEAT21.2.4	Configurable number of lanes	The Ramp Meter controller shall meter a configurable number of lanes up to three lanes.	TM002L1	RMF	RMF 1

FEAT21.3	Firmware parameters			RMF	
FEAT21.3.1	Data collection and RM algorithms	Firmware parameters shall be utilized for data collection and ramp metering algorithms.	TM002O1	RMF	RMF 1
FEAT21.3.2	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.	TM003O	RMF	RMF 1
FEAT21.4	Controller mode			RMF	
FEAT21.4.1	Data collection surveillance services	The Ramp Meter controller shall provide data collection surveillance services in a local mode.	TM001L1	RMF	RMF 1
FEAT21.4.2	Local or central command modes	The Ramp Meter controller shall operate in a local or central command mode.	TM002L2	RMF	RMF 1
FEAT21.4.3	Local mode operation	The Ramp Meter controller local mode shall operate based on local traffic conditions and firmware parameters consistent with the WsDOT implementation.	TM002L3	RMF	RMF 1
FEAT21.4.4	Central command mode	The Ramp Meter controller central command mode shall operate based on algorithms defined by the central system.	TM002L4	RMF	RMF 1
FEAT21.4.5	Local mode implementation	The Ramp Meter controller metering algorithms shall be defined for local mode consistent with the WsDOT firmware implementation.	TM003L	RMF	RMF 1
FEAT21.4.6	Metering rates	While in central mode, the Ramp Meter controller shall implement the metering rates sent from the SunGuide software.	TM004L	RMF	RMF 1
FEAT21.4.7	Central command mode operation	The Ramp Meter controller shall allow for manual starting, stopping and modifying the metering from central command.	TM005L	RMF	RMF 1
FEAT21.4.8	Ramp meter controller	The Ramp Meter controller shall meter in local mode when active and disconnected from central command.	TM006L	RMF	RMF 1
FEAT22	Event Viewer (EV)			EV	3
FEAT22.1	General			EV	3

FEAT22.1.1	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).	SV001	EV	3
FEAT22.1.2	Event Viewer web site access	Secure access to the SunGuide Event Viewer Web site shall be through the SunGuide Web site.	SV001B	EV	3
FEAT22.1.3	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.	SV002B	EV	3
FEAT22.1.4	Session termination	The SunGuide Event Viewer Web site session shall only be terminated through the use of a logout button.	SV004	EV	3
FEAT22.1.5	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.	SV005	EV	3
FEAT22.1.6	Refresh intervals	The SunGuide Event Viewer Web site shall refresh automatically at a system configurable interval, with the default set to 60 seconds.	SV006	EV	3
FEAT22.1.7	Inactive period	This recently inactive period shall be configurable, with 30 minutes set as the system default.	SV001E2	EV	3
FEAT22.1.8	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.	SV007E	EV	3
FEAT22.1.9	Operator accounts	An administrative application shall be provided to set-up operator accounts for the SunGuide Event Viewer Web page application.	SV008	EV	3
FEAT22.2	Security			EV	3
FEAT22.2.1	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.	SV002	EV	3
FEAT22.2.2	Authenticate based on IP address	The SunGuide Event Viewer Web site shall be capable of authenticating operators based on their originating IP address.	SV001S	EV	3

FEAT22.2.3	Operator accounts	Passwords associated with the operator accounts shall be stored in an encrypted format.	SV002S	EV	3
FEAT22.2.4	Operator access	The SunGuide Event Viewer Web site shall prompt the operator for a username and password to gain access to the application.	SV003	EV	3
FEAT22.3	Event list			EV	3
FEAT22.3.1	Web site opening page	The opening page after secure login of the SunGuide Event Viewer Web Site shall be an event list page.	SV007	EV	3
FEAT22.3.2	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.	SV001E1	EV	3
FEAT22.3.3	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.	SV001E	EV	3
FEAT22.3.4	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.	SV002E	EV	3
FEAT22.3.5	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.)	SV003E	EV	3
FEAT22.3.6	Event list page	Each section of the events list page shall use a different background color to easily differentiate the lists.	SV004E	EV	3
FEAT22.3.7	Event list record	For each event list record, the operator shall have the ability to select the record and view the "Event Details" page.	SV005E	EV	3

FEAT22.4	Event details			EV	3
FEAT22.4.1	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.	SV005E1	EV	3
FEAT22.4.2	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.	SV005E2	EV	3
FEAT22.4.3	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.	SV005E3	EV	3
FEAT22.4.4	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.	SV005E4	EV	3
FEAT22.4.5	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.	SV005E5	EV	3
FEAT22.4.6	Navigation link	A navigation link to the "event list" page shall be provided on the "event details" page.	SV006E	EV	3
FEAT22.5	Secondary Events			EV	3
FEAT22.5.1	Primary event association	Secondary events shall be associated with a primary event.	SV008E	EV	3

FEAT22.5.2	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.	SV008E1	EV	3
FEAT23	Incident Detection System (IDS)			IDS	3
FEAT23.1	CitiLog data			IDS	3
FEAT23.1.1	Display traffic data	SunGuide shall be able to log and display traffic data collected by CitiLog Video Detection Equipment devices.	TD008	IDS	3
FEAT23.2	Alert notification			IDS	3
FEAT23.2.1	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.	TD013D	IDS	3
FEAT23.2.2	Alarm/incident log	SunGuide shall log the time an alarm is generated by TSS or the operator elects to create a new incident.	TM007D7	IDS	3
FEAT23.2.3	Safety Barrier Alerts	SunGuide shall allow an operator to generate an event from a Safety Barrier alert.	SB001	IDS	5.1.1
FEAT23.2.3.1	Alert Triggered	SunGuide shall supply alert notification for Safety Barrier Alerts indicating the Safety Barrier triggered.	SB001A	IDS	5.1.1
FEAT23.2.3.2	Alert information	The alert shall provide a control to access status information for the safety barrier reporting the alert.	SB001B	IDS	5.1.1
FEAT23.2.3.3	Alert resolution	The alert shall provide a method for the user to resolve the Safety Barrier Alert.	SB001C	IDS	5.1.1
FEAT23.2.3.4	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.	SB001D	IDS	5.1.1

FEAT23.2.4	RWIS Alerts	The software shall produce an operator alert with the RWIS alarm information when the RWIS data produces an alarm.	IDS001	IDS	6.1
FEAT23.2.4.1	Associate Alerts	The software shall automatically dismiss an alert by associating the alert to an active event if the event was created on behalf of an earlier alert from the same RWIS device for the same data type.	IDS001A	IDS	6.1
FEAT23.2.4.2	Response Plan Activation	The software shall allow the user to configure the software to use a pre-defined response plan or an automatically suggested response plan for each data type on the RWIS device to be automatically activated when that event is automatically created due to an alert.	IDS001B	IDS	6.1
FEAT23.2.4.2.1	Message Does Not Fit	The software shall remove DMS signs from the response plan before automatically activating the response plan if the message is too large for the sign.	IDS001B1	IDS	6.1
FEAT23.2.4.2.2	Beacons In Response Plans	The software shall include a set of beacons in an automatically activated response plan suggestion for an event triggered by an RWIS alarm where the event type matches the beacon operational purpose.	IDS001B2	IDS	6.1
FEAT23.2.4.3	Optionally Use Beacons	The software shall allow the user to configure the software to include beacons in an automatically activated response plan with a system-wide setting.	IDS001C	IDS	6.1
FEAT23.2.4.4	Event Association	If an operator resolves an event by associating the alert to an existing event, the new alarm will be resolved in the database with the existing event associated to the alert.	IDS001D	IDS	6.1
FEAT23.2.5	C2C TSS Alerts		IDS002	IDS	6.2
FEAT23.2.5.1	Global Alert Threshold	The software shall allow the user to select a global alert threshold for all C2C links	IDS002A	IDS	6.2

FEAT23.2.5.1.1	Percentage Based Threshold	The threshold will be the percentage below the speed limit in which the link would be considered in an alert state.	IDS002A1	IDS	6.2
FEAT23.2.5.2	Global Recovery Threshold	The software shall allow the user to select a global recovery threshold for all C2C links	IDS002B	IDS	6.2
FEAT23.2.5.2.1	Percentage Based Threshold	The threshold will be the percentage below the speed limit in which the link would be considered in a recovered state	IDS002B1	IDS	6.2
FEAT23.2.5.3	C2C Network Selection	The software shall allow the user to select the C2C Networks on which C2C TSS alerts should be generated	IDS002C	IDS	6.2
FEAT23.2.5.4	Produce Alert	The user shall receive an alert when the speed value drops below the alert threshold	IDS002D	IDS	6.2
FEAT23.2.5.4.1	Additional Alert Generation	Additional alerts for the link will not be generated until the link has moved above the configured recovery threshold and then below the configured alert threshold	IDS002D1	IDS	6.2
FEAT23.2.5.4.2	Alert Fields	The C2C TSS Alert shall display the C2C Network Name and Link Name to the user	IDS002D2	IDS	6.2
FEAT23.3	Wrong Way Driving (WWD)			IDS	6.1
FEAT23.3.1	Click!512	The software shall interface with the Wavetronix Click!512 module	WWD-001	IDS	6.1
FEAT23.3.1.1	Click!512 Protocol	The software shall interpret a wrong way driving detection event from the Click!512 module using the protocol defined by TBD.	WWD-001A	IDS	6.1
FEAT23.3.1.1.1	WWD Timestamp	The software shall interpret the time at which the wrong way driver was detected according to the timestamp reported by the device	WWD-001A1	IDS	6.1
FEAT23.3.1.1.2	Heartbeat	The software shall interpret a heartbeat message from the Click!512 module	WWD-001A2	IDS	6.1

FEAT23.3.10	Event Chronology Log	When logging a WWD Alert to the event chronology, the following shall be logged, where available: · WWD Detection Device and location · Time of Notification · All camera names and ID · All Presets used along with their preset description	WWD-012	IDS	6.2
FEAT23.3.11	Manual WWD Event Creation	The Operator Map shall present a context menu that will allow the user to manually create a WWD event	WWD-013	IDS	6.2
FEAT23.3.11.1	Confirm Location	When the user chooses to manually create a WWD event, the user shall be prompted to confirm the location the EM will use to create the event	WWD-013A	IDS	6.2
FEAT23.3.11.2	Upstream or Radius	When the user chooses to manually create a WWD event, the user shall be prompted to select if the automatically suggested response plan should only use upstream DMS or user a radius search to find all DMSs within a configurable distance defaulting to 10 miles	WWD-013B	IDS	6.2
FEAT23.3.11.3	Response Plan Generation	Once a user confirms the location of the event and the search method for DMS signs, the software shall generate and activate a response plan consisting of DMS signs only	WWD-013C	IDS	6.2
FEAT23.3.12	Re-prompt for Auto-Suggestions	When a user gets an automatic suggestion for a response plan, the software shall re-prompt the user to confirm the location and select the search algorithm to find the DMS signs	WWD-014	IDS	6.2
FEAT23.3.2	Device Configuration	The software shall allow a user to add, modify, and delete wrong way detection devices in the system	WWD-002	IDS	6.1
FEAT23.3.2.1	Camera/Preset	The software shall allow the user to configure up to five cameras each with a specific preset for each WWD device	WWD-002A	IDS	6.2

FEAT23.3.3	Email Addresses	The software shall allow a user to configure a list of email addresses for notification of wrong way driving detection alarms	WWD-003	IDS	6.1
FEAT23.3.3.1	Email Configuration User	When creating or modifying an EM contact, the software shall allow the user to select if the contact should receive WWD alert emails.	WWD-003A	IDS	6.2
FEAT23.3.3.2	Email Configuration Group	When creating or modifying an email group, the software shall allow the user to select if the group should receive WWD alert emails	WWD-003B	IDS	6.2
FEAT23.3.3.3	View Recipients	The software shall allow a user to view all users and groups currently configured to receive WWD alert emails	WWD-003C	IDS	6.2
FEAT23.3.3.3.1	View Users in Group	The software shall allow a user to view the users that are contained within a group	WWD-003C1	IDS	6.2
FEAT23.3.4	Status Change Logging	The software shall log operational status changes of the device in the database.	WWD-004	IDS	6.1
FEAT23.3.4.1	Status Change Report	The software shall provide a device report that outputs the operational status log of the wrong way driving detection devices	WWD-004A	IDS	6.1
FEAT23.3.5	Detect Status Changes	The software shall detect the operational status of the wrong way driving detection device	WWD-006	IDS	6.1
FEAT23.3.5.1	Comm Loss	The software shall detect when communication is lost from the wrong way driving detection device	WWD-006A	IDS	6.1
FEAT23.3.5.2	No Heartbeat	The software shall detect when a heartbeat is not received from the wrong way driving detection device within a configured time period	WWD-006B	IDS	6.1
FEAT23.3.6	Device Response Option	The software shall respond to wrong way driving detection events from the wrong way detection devices	WWD-007	IDS	6.1
FEAT23.3.6.1	Email On Alert	When a detection is recieved from a wrong way driving detection device, the software shall immediately email the configured list of email notification recipients.	WWD-007A	IDS	6.1

FEAT23.3.6.1.1	Email Contents	The email shall contain the location and direction of travel configured for the roadway segment or TSS link instrumented by the wrong way driving detection device, and the timestamp reported by the device of the wrong way driving detection alarm	WWD-007A1	IDS	6.1
FEAT23.3.6.2	Response Plans	The software shall allow a user to configure a predefined or an automatically suggested response plan to be automatically activated when the event is automatically created due to a WWD alert	WWD-009	IDS	6.2
FEAT23.3.6.2.1	Configurable DMS Distance	The software shall allow a user to configure the default distance from a WWD detection to include DMS in a response plan suggestion	WWD-009A	IDS	6.2
FEAT23.3.6.2.2	Icon Indication	The software shall provide a visual indication that a WWD detection device is in an alarm state when a WWD detection occurs until the resulting alert is handled by an operator	WWD-009B	IDS	6.2
FEAT23.3.7	Store Alerts In Database	For a WWD alert, the software shall log the following information to the database, where available: · WWD detection device · Time of notification · WWD Device location information · All cameras and presets used in the alert · Identification number of the alert produced to operators · Identification number to the event created.	WWD-007C	IDS	6.2
FEAT23.3.7.1	WWD Alerts Report	The software shall provide reports listing wrong way driving alerts that include the wrong way driving detection device, direction, timestamp reported by the device, and associated event ID	WWD-007C1	IDS	6.1
FEAT23.3.8	User Permission	The software shall have a permission to allow a user to receive WWD alerts	WWD-010	IDS	6.2

FEAT23.3.9	Alert Handling	When an alert is presented to the user, the alert dialog shall contain the list of active WWD alerts	WWD-011	IDS	6.2
FEAT23.3.9.1	Handle Alert	For each alert in the WWD alert dialog, the dialog shall present options to handle the alert	WWD-011A	IDS	6.2
FEAT23.3.9.10	Camera Lock	When an alert is resolved by a user other than by dismissing as a false alarm, the user shall obtain a lock on the cameras presented in the alert dialog for a configurable amount of time	WWD-011K	IDS	6.2
FEAT23.3.9.10.1	Configuable Camera Lock Time	The software shall allow the user to configure the amount of time a lock should be held on a camera after handling a WWD alert	WWD-011K1	IDS	6.2
FEAT23.3.9.2	Video Feeds	For each alert in the WWD alert dialog, the dialog shall display the configured video feeds in the same manner as the Video on Desktop Dialog	WWD-011B	IDS	6.2
FEAT23.3.9.3	Camera Presets	When a WWD alarm is received, the software shall invoke the configured preset for each configured camera for the WWD detection device	WWD-011C	IDS	6.2
FEAT23.3.9.4	Dialog Remains Open	When an alert is handled by the operator other than as a false alarm, the alert will be removed from the dialog but the dialog will remain open with the configured video feeds	WWD-011D	IDS	6.2
FEAT23.3.9.5	Find on Map	The alert dialog and alert list shall contain a Find on Map button that will center and highlight the WWD device that generated the alert	WWD-011E	IDS	6.2
FEAT23.3.9.6	Launch Associated Event	The alert dialog and alert list shall contain a button that will launch the associated event details dialog if the alert is associated to an event	WWD-011F	IDS	6.2
FEAT23.3.9.7	DMS Priority	The software shall set the priority to 1 for DMS messages in response plan suggestions if and only if the event type is WWD	WWD-011G	IDS	6.2
FEAT23.3.9.8	Alert Handling Options	The alert dialog shall present the following options to handle the alert if no event has been automatically created	WWD-011H	IDS	6.2

FEAT23.3.9.8.1	Create New Event	Create a new Event - the software will create an event, add the alert's information to the event chronology, and log the alert resolution in the SunGuide database	WWD-011H1	IDS	6.2
FEAT23.3.9.8.1.1	Event Type	The software shall set the event type to Wrong Way Driver	WWD-011H1A	IDS	6.2
FEAT23.3.9.8.2	Dismiss as False Alarm	Dismiss as False Alarm - the software shall remove the alert and log the alert resolution in the SunGuide database	WWD-011H2	IDS	6.2
FEAT23.3.9.8.3	Associate to Existing Event	Associate to existing event - the software shall allow the user to select the associated event, add the alert information to the selected event, and log the alert resolution in the SunGuide database	WWD-011H3	IDS	6.2
FEAT23.3.9.9	Automatically Created Event Alert Handling Options	The alert dialog shall present the following options to handle the alert if an event has already been automatically created	WWD-011J	IDS	6.2
FEAT23.3.9.9.1	Dismiss as False Alarm	Dismiss as False Alarm - the software shall remove the alert, obtain ownership of the event on behalf of the user, terminate the response plan, close the event, and log the alert resolution in the SunGuide database	WWD-011J1	IDS	6.2
FEAT23.3.9.9.2	Associate to Existing Event	Associate to existing event - the software shall remove the alert, obtain ownership of the event on behalf of the user, terminate the response plan, close the event, and log the alert resolution in the SunGuide database	WWD-011J2	IDS	6.2
FEAT23.3.9.9.3	Acknowledge and Take Ownership	Acknowledge and take Ownership - the software shall remove the alert, obtain ownership of the event on behalf of the user, log the alert resolution in the SunGuide database, and open the event details dialog for the created event	WWD-011J3	IDS	6.2
FEAT23.4	Redundant TSS Alerts	The system shall automatically detect redundant TSS alerts.	IDS003	IDS	6.2

FEAT23.4.1	Redundant Condition	An alert is to be considered redundant if there is an active event generated by an alert with the same county, roadway, and direction; and the new alert is upstream of the active event. This includes: i)If the alert is generated by a lane for which another lane on that link has already been associated to an active event. ii)If the alert is generated by a link for which another alert from a link in its adjacent downstream chain has already been associated to the active event.	IDS003A	IDS	6.2
FEAT23.4.2	Redundancy Between TSS Alarm Types	A TSS alert of one alarm type will be considered redundant to an alarm of a different alarm type	IDS003B	IDS	6.2
FEAT23.4.3	Automatic Association	The system shall automatically associate the redundant alert with the event of the alarm it is redundant to	IDS003C	IDS	6.2
FEAT23.4.4	Dismiss Redundant Alert	The system shall automatically dismiss redundant alerts	IDS003D	IDS	6.2
FEAT23.5	Waze Alerts		WZE001	IDS	6.2
FEAT23.5.1	Poll Cycle	The software shall poll the Waze Download Component on a configurable poll cycle with a default of 1 minute	WZE001A	IDS	6.2
FEAT23.5.2	Waze Icon	The software shall display event type icons with a Waze indicator and an alarm indicator on the map until the resulting alert is handled or the Waze incident is no longer active in the data feed	WZE001B	IDS	6.2
FEAT23.5.3	Alert Creation	The software shall create an alert for each new event reported by the Waze Download component, if configured to do so	WZE001C	IDS	6.2
FEAT23.5.4	Updated Alerts	The software shall create an alert for each new event update reported by the Waze Download Component, if configured to do so	WZE001D	IDS	6.2

FEAT23.5.5	Closed Events	The software shall create an alert for each new event closure reported by the Waze Download Component, if configured to do so	WZE001E	IDS	6.2
FEAT23.5.6	Database Logging	The software shall log the following information associated with the alerts in the SunGuide database, where available: · WazeAlertID · DatePublished · Latitude · Longitude · Roadway · County · Direction · WazeAlertType · SunGuideEventType · userComment · imageURL	WZE001F	IDS	6.2
FEAT23.5.7	Preferred Alert Updates	The software shall provide the user the ability to configure what type of alerts (new, update, closure) the system should receive and distribute to users	WZE001G	IDS	6.2
FEAT23.5.8	Alert Handling Options	When an alert is received by a user, the user will be presented with the three options	WZE001H	IDS	6.2
FEAT23.5.8.1	New Event	Create a New Event - the software will create an event, add the alert's information to the event chronology, and log the alert resolution in the SunGuide database	WZE001H1	IDS	6.2
FEAT23.5.8.1.1	Agency and Contact	The software shall set the Agency to "Waze" and the event contact shall be set to "Waze Waze"	WZE001H1A	IDS	6.2
FEAT23.5.8.1.2	Event Type Mapping	The event type shall be set using a file that maps the Waze Incident type to the SunGuide Event Type	WZE001H1B	IDS	6.2

FEAT23.5.8.1.3	Location of Event	The software shall set the event location to the EM location closest to the coordinates provided by the alert of the Waze Incident using the same county, direction, and roadway as filters, where possible	WZE001H1C	IDS	6.2
FEAT23.5.8.1.4	Closest Event Distance	The software shall information the user of the distance, in miles, to the nearest EM location in the text of the "Create New Event" option	WZE001H1D	IDS	6.2
FEAT23.5.8.1.5	Event Status	The software shall set the event status to Unconfirmed	WZE001H1E	IDS	6.2
FEAT23.5.8.1.6	Event Chronology	The software shall add the Waze incident information to the event chronology	WZE001H1F	IDS	6.2
FEAT23.5.8.2	False Alarm	Dismiss as False Alarm - the software shall remove the alert and log the alert resolution in the SunGuide database	WZE001H2	IDS	6.2
FEAT23.5.8.3	Associate Alert	Associate to existing event - the software shall allow the user to select the associated event, add the alert information to the event chronology, and log the alert resolution in the SunGuide database	WZE001H3	IDS	6.2
FEAT23.5.8.3.1	Waze Incident Number	When associating a Waze Incident alert to an event, the event should have its Waze Incident # field associated to the Waze Incident	WZE001H3A	IDS	6.2
FEAT24	Automatic Vehicle Location (AVL)			AVL	3
FEAT24.1	General			AVL	3
FEAT24.1.1	Source location configuration	The source location of the AVL data source shall be configurable using the SunGuide Administration function.	AV006L	AVL	3
FEAT24.1.3	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.	AV004	AVL	3
FEAT24.1.4	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).	AV009T	AVL	3

FEAT24.1.5	Logging location data	All vehicle location status data received from the AVL subsystem shall be logged to the database for reporting purposes.	AV009T2	AVL	3
FEAT24.1.6	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.	AV004T2	AVL	3
FEAT24.1.7	Adding/removing vehicles	Admin Editor functions shall be provided to allow administrators to add and remove vehicles from the AVL tracking system.	AV008	AVL	3
FEAT24.1.8	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.	S034	AVL	3
FEAT24.10	Bulk Update for RRXML Driver	The RRXML driver will support a method for sending multiple position updates as a single request.	AV014B	AVL	6
FEAT24.11	Logging Alerts	The software shall log stop alerts and geofence alerts including operator responses to the database	AV014C	AVL	6
FEAT24.2	Vehicle list			AVL	3
FEAT24.2.1	Tabular listing	A Vehicle List window shall be provided that displays a tabular listing of all the AVL-enabled vehicles.	EM018G	AVL	3
FEAT24.2.2	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).	EM018G2	AVL	3
FEAT24.3	Vehicle information			AVL	3
FEAT24.3.1	Position coordinates	The AVL subsystem shall acquire vehicle information containing position coordinates in XML format originated external to SunGuide.	AV001	AVL	3
FEAT24.3.10	Defined values	SunGuide shall allow at least four values to be defined for "Availability Status".	AV010V2	AVL	3

FEAT24.3.11	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.	AV011V2	AVL	3
FEAT24.3.12	Vehicle stop time	If vehicle is stopped, displayed status data shall include the amount of time that the truck has been stopped.	AV002T4	AVL	3
FEAT24.3.13	Vehicle moving time	If vehicle is moving, displayed status data shall include the amount of time that the truck has been moving.	AV002T5	AVL	3
FEAT24.3.14	Logging related data	The following related data shall be logged, if available: Beat, Driver, reference location, proximity to reference location, status, responding incident ID.	AV009T3	AVL	3
FEAT24.3.15	Storing location and history	The AVL subsystem shall store vehicle location and speed history in the SunGuide Oracle database.	AV008T	AVL	3
FEAT24.3.16	New status updates	The AVL subsystem shall update the vehicle status each time a new status is reported for the vehicle.	AV009	AVL	3
FEAT24.3.17	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.	AV007T	AVL	3
FEAT24.3.18	Historical position tracks	Historical vehicle positions (tracks) shall be indicated by "+" symbols or similar leading away from the current vehicle position.	AV002T6	AVL	4
FEAT24.3.19	Hide track display	There shall be an option to hide track display that applies to the track of the vehicle.	AV002T7	AVL	4

FEAT24.3.2	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.	AV004L	AVL	3
FEAT24.3.3	Vehicle position display	The AVL subsystem shall display vehicle position for vehicles logged on using icons on the SunGuide Map.	AV002	AVL	3
FEAT24.3.4	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.	AV009V	AVL	3
FEAT24.3.5	Vehicle status display	AVL subsystem shall display vehicle status that is provided by the AVL data feed.	AV003	AVL	3
FEAT24.3.6	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).	AV006V1	AVL	3
FEAT24.3.7	Vehicle status	Vehicle status shall be provided to the extent provided by the received vehicle data file.	AV007V	AVL	3
FEAT24.3.8	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.	AV007V1	AVL	3
FEAT24.3.9	Minimum status values	SunGuide shall support at a minimum the following four vehicle status values: patrolling, dispatched, assisting, and out-of-service.	AV010V1	AVL	3
FEAT24.4	Data acquisition component			AVL	3

FEAT24.4.1	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.	AV001L	AVL	3
FEAT24.4.2	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.	AV002L	AVL	3
FEAT24.4.3	Data format	If necessary, the acquisition component shall format the received data in accordance with the AVL Data Interface Specification.	AV003L	AVL	3
FEAT24.4.4	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.	AV004L1	AVL	3
FEAT24.5	Interfaces			AVL	3
FEAT24.5.1	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.	AV001L1	AVL	3
FEAT24.5.2	PC tablet devices	The AVL system shall be compatible with the PC tablet devices used by the District 4 road ranger tablet application.	AV001L2	AVL	3
FEAT24.6	Position reports			AVL	3
FEAT24.6.1	Corrected reports	Position reports that are corrected by SunGuide shall be flagged in the data log and indicated to the operator.	AV004L2	AVL	3
FEAT24.6.2	Updates	The icon status and position shall be updated upon receipt of new data.	AV005L	AVL	3
FEAT24.6.3	Vehicle icon	The icon assigned by the administrator shall be used to represent vehicles for which position reports are received.	AV003V	AVL	3

FEAT24.6.5	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.	AV007V2	AVL	3
FEAT24.6.6	Bulk Updates	AVL shall log vehicle positions messages sent in bulk directly to the database without generating updates to the Operator Map.	AV014A	AVL	6
FEAT24.7	Geospatial data			AVL	3
FEAT24.7.1	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.	AV007L2	AVL	3
FEAT24.8	Historical track			AVL	3
FEAT24.8.1	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.	AV002T	AVL	4.2
FEAT24.8.2	Trail feature enabling	It shall be possible to enable and disable the trail feature on a per-vehicle basis.	AV002T1	AVL	3
FEAT24.8.3	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.	AV002T2	AVL	3
FEAT24.8.4	Vehicle speed	If a vehicle speed is "stopped" or "0", no more than one track icon shall be displayed.	AV002T3	AVL	3
FEAT24.8.5	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.	AV003T1	AVL	3
FEAT24.8.6	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.	AV003T2	AVL	3

FEAT24.8.7	Deleting historical tracks	The operator shall have the ability to delete from the display all of the historical tracks for a particular vehicle.	AV003T3	AVL	3
FEAT24.9	Geo-fences			AVL	3
FEAT24.9.1	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.	AV011	AVL	3
FEAT24.9.2	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.	AV001V	AVL	3
FEAT24.9.3	Leaving area notification	If a vehicle leaves the Geo-fenced area without justification, the system shall provide a visual notification to the operator	AV001V1	AVL	4.2
FEAT24.9.4	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.	AV012V1	AVL	3
FEAT24.9.5	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.	AV013V	AVL	3
FEAT25	511			511	3
FEAT25.1	General			511	3
FEAT25.1.1	Reporting routes	SunGuide shall have the ability to manage a minimum of 100 Central Florida 511 reporting routes and 150 FIHS 511 reporting routes.	DF200F	511	3
FEAT25.1.10	Human voice messages	The system shall disseminate a recorded human voice that will report current traffic conditions using complete sentences.	ID201V1	511	3
FEAT25.1.2	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.	DF204R6	511	3

FEAT25.1.3	Editing summations	The SunGuide shall allow editing a Reporting Segment's logical segment summations.	DF208R	511	3
FEAT25.1.5	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.	ID207G	511	3
FEAT25.1.6	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.	ID228	511	3
FEAT25.1.7	Map of routes	The Operator Interface shall provide a map of the Central Florida area that visually depicts the 511 reporting routes.	ID210G	511	3
FEAT25.1.8	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.	ID203	511	3
FEAT25.1.9	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.	ID201V	511	3
FEAT25.2	Scenarios			511	3
FEAT25.2.1	Data evaluation	SunGuide shall be able to evaluate data collected from both directions of travel as part of a single Scenario.	DF207	511	3
FEAT25.2.2	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.	ID205G	511	3

FEAT25.2.3	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.	ID212G	511	3
FEAT25.2.4	Scenario minimums	The SunGuide shall allow a minimum of 30 pre-recorded Scenarios for Central Florida 511 Reporting Segments.	ID201	511	3
FEAT25.2.5	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.	ID200V	511	3
FEAT25.2.6	Display event details	The 511 Operator Interface will display the event details that make the selected 511 Scenario appropriate.	ID206G1	511	3
FEAT25.2.7	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.	ID200V1	511	3
FEAT25.3	.WAV files			511	3
FEAT25.3.1	Operator interface	The SunGuide Operator Interface shall be capable of recording and previewing .WAV files.	WS014	511	3
FEAT25.3.10	Floodgate messages	The Operator Interface shall provide the ability to add, remove, and preview Floodgate Messages (.WAV files).	ID203G	511	3
FEAT25.3.11	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.	ID203G1	511	3
FEAT25.3.12	.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.	ID203G4	511	3

FEAT25.3.13	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.	ID203G5	511	3
FEAT25.3.14	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.	ID204G	511	3
FEAT25.3.15	Managing pre-recorded scenarios	The SunGuide shall have the ability to manage at least 1000 pre-recorded Scenario .WAV files.	ID204G1	511	3
FEAT25.3.16	Ability to listen	The Operator Interface shall provide the ability to listen to the pre-recorded .WAV file associated with the selected 511 Scenario.	ID204G2	511	3
FEAT25.3.2	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.	ID205G1	511	3
FEAT25.3.3	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.	ID205G2	511	3
FEAT25.3.4	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.	ID201G	511	3

FEAT25.3.5	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.	ID202V	511	3
FEAT25.3.7	.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.	ID222	511	3
FEAT25.3.8	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.	ID209G	511	3
FEAT25.3.9	.WAV file selection	SunGuide shall provide selected .WAV files to the Statewide 511 service within one minute of their being recorded.	ID201V2	511	3
FEAT25.4	Messages			511	3
FEAT25.4.1	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.	DF206	511	3
FEAT25.4.10	Specially recorded messages	SunGuide shall replace the default message with a specially recorded message when it is available.	ID203V	511	3
FEAT25.4.11	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.	ID204G3	511	3

FEAT25.4.12	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.	ID204G4	511	3
FEAT25.4.13	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.	ID206G	511	3
FEAT25.4.2	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.	ID202G	511	3
FEAT25.4.3	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.	ID214G	511	3
FEAT25.4.4	Operator messages	No message shall be associated with such a 511 Reporting Segment until the operator creates a message.	ID211G1	511	3
FEAT25.4.5	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.	ID211G	511	3
FEAT25.4.6	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.	ID215	511	3

FEAT25.4.7	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.	ID200G	511	3
FEAT25.4.9	Maximum length	The maximum length for an event report or WAV file shall be 60 seconds.	ID203G2	511	3
FEAT25.5	Reports			511	3
FEAT25.5.1	Event reports	Travel time information shall be provided to the 511-telephone services as event reports, when unusual conditions exist.	DF200R4	511	3
FEAT25.5.10	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.	ID208G	511	3
FEAT25.5.11	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.	ID208G1	511	3
FEAT25.5.12	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.	DF227	511	3
FEAT25.5.13	Travel time inclusion	Link Reports shall include travel times for both directions of traffic.	DF205R	511	3
FEAT25.5.14	Road segments	Link Reports shall have a mid point in the road segment for reporting travel times.	DF205R1	511	3
FEAT25.5.15	Select roads	Link Reports for select roads designated by FDOT shall not have mid-points.	DF205R2	511	3
FEAT25.5.16	Link summaries	Link summaries shall report current travel times for in one direction for links within central Florida that do not have midpoints.	DF206R	511	3

FEAT25.5.17	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.	DF206R1	511	3
FEAT25.5.18	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.	DF206R2	511	3
FEAT25.5.19	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).	DF207R	511	3
FEAT25.5.2	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.	DF201R	511	3
FEAT25.5.20	Select road reporting	The Drive-Time Comparison reports will report travel times on select roads in Central Florida.	DF207R1	511	3
FEAT25.5.22	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."	DF207R3	511	3
FEAT25.5.24	Pre-recorded report information	The pre-recorded reports shall only contain generalized conditions and/or traffic flows and travel times.	ID202G1	511	3

FEAT25.5.3	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.	DF201R1	511	3
FEAT25.5.4	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.	DF202R5	511	3
FEAT25.5.5	Utilization	Incident Link Reports shall be utilized in the Link Reports and Link Summaries, but not Drive-Time Summaries.	DF204R	511	3
FEAT25.5.6	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.	DF204R2	511	3
FEAT25.5.7	Optional inclusion	Incident Link Reports shall be optionally included in the Central Florida 511 messages.	DF204R3	511	3
FEAT25.5.8	Creation	Upon operator approval, Incident Link Reports shall be created and sent to the 511 telephone system.	DF204R4	511	3
FEAT25.5.9	.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.	DF204R5	511	3
FEAT25.6	Drive-time comparisons			511	3
FEAT25.6.1	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.	DF226	511	3
FEAT25.6.2	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.	DF200R	511	3

FEAT25.6.3	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).	DF200R1	511	3
FEAT25.6.4	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.	ID213G	511	3
FEAT25.6.5	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.	DF208R1	511	3
FEAT25.6.6	Summary report minimums	The SunGuide shall have the capability to provide reports on up to a minimum of 42 (forty-two) drive-time comparisons.	ID224	511	3
FEAT25.6.7	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.	DF200R2	511	3
FEAT25.6.8	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.	DF201R5	511	3
FEAT25.7	Travel times			511	3
FEAT25.7.1	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.	DF201R2	511	3

FEAT25.7.10	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.	DF205R6	511	3
FEAT25.7.11	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.	DF202R2	511	3
FEAT25.7.2	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.	DF201R4	511	3
FEAT25.7.3	Report posting	Travel time reports shall be formulated and posted automatically to the live 511 system, without operator intervention.	DF202R	511	3
FEAT25.7.4	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.	DF202R1	511	3

FEAT25.7.5	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.	DF202R3	511	3
FEAT25.7.6	Automatic updates	Travel time reports shall always update themselves automatically as conditions change.	DF202R4	511	3
FEAT25.7.7	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.	DF205R3	511	3
FEAT25.7.8	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.	DF205R4	511	3
FEAT25.7.9	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.	DF205R5	511	3

FEAT26	Event Management (EM)			EM	3
FEAT26.1	General			EM	3
FEAT26.1.1	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.	TM009W	EM	3
FEAT26.1.2	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).	EM006G2	EM	3
FEAT26.1.3	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.	EM010G1	EM	3
FEAT26.1.4	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.	EM007T	EM	3
FEAT26.1.5	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.	WS004A	EM	3
FEAT26.1.6	EM Location Publish Flag	Every EM locations shall have a configurable setting indicating whether or not the location should be published.	EM028	EM	5
FEAT26.1.6.1	Not Publishable Notification in Event	When an event is placed at a location that cannot be published, the operator shall be notified	EM028A	GUI	5

FEAT26.1.6.2	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	EM028B	GUI	5
FEAT26.10	Discontinuous Lane Blockage		EM046	EM	6.2
FEAT26.10.1	First Blockage	When an event has experienced travel lane blockage on the roadway, the software shall log the timestamp of the first instance of the travel lane blockage	EM046A	EM	6.2
FEAT26.10.2	First Clearance	After an event has experienced travel lane blockage on the roadway, the software shall log the first timestamp of when the travel lane blockage is cleared	EM046B	EM	6.2
FEAT26.10.3	Total Blockage Time	When an event has travel lane blockage, the software shall keep track of the total amount of time the travel lanes were blocked	EM046C	EM	6.2
FEAT26.10.4	Event Severity Calculation	When an event has travel lane blockage, the software shall calculate the event severity based on the total amount of time between the first time the travel lanes were blocked and the first time the travel lane blockage was cleared	EM046D	EM	6.2
FEAT26.10.5	Initial Event Severity	The software shall set the event severity for newly created events to level one	EM046E	EM	6.2
FEAT26.10.6	Event Severity Calculation	For events whose event type is not categorized as "Severity Other", the software shall set the event severity based on the duration of the initial lane blockage for the event	EM046F	EM	6.2
FEAT26.10.6.1	Severity 1	If the initial lane blockage for the event is less than or equal to 30 minutes, and the event has never had all lanes blocked simultaneously, the software shall set the event's severity to 1	EM046F1	EM	6.2

FEAT26.10.6.2	Severity 2	If the initial lane blockage for the event is greater than 30 minutes, but less than or equal to 120 minutes, and the event has never had all lanes blocked simultaneously, the software shall set the event's severity to 2	EM046F2	EM	6.2
FEAT26.10.6.3	Severity 3	If the initial lane blockage for the event is greater than 120 minutes, and the event has never had all lanes blocked simultaneously, the software shall set the event's severity to 3	EM046F3	EM	6.2
FEAT26.10.6.4	All Lanes Blocked	If all lanes are simultaneously blocked for an event at any time, the software shall set the event's severity to 3	EM046F4	EM	6.2
FEAT26.2	Manage events			EM	3
FEAT26.2.1	Retain information	SunGuide shall retain event information that had an associated vehicle license tag.	EM001D1	EM	3
FEAT26.2.1.1	Involved Vehicle Information	When adding an involved vehicle to an event, the user shall be able to select the Color, Make, Model, Year, License Plate Tag, and State of the vehicle.	EM001D1A	EM	6.2
FEAT26.2.10	Wrong Way Driving Event Type	The software shall support a Wrong Way Driving Detection event type	WWD-008	EM	6.1

FEAT26.2.2	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	EM004T3	EM	3
FEAT26.2.3	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.	EM005T3	EM	3
FEAT26.2.4	Vehicle dispatch	An operator shall be able to right-click on a vehicle to dispatch it to a new or existing event.	AV007L	EM	3
FEAT26.2.5	New events	In the case of new events, the operator will be prompted to enter the required information for the new event.	AV007L1	EM	3
FEAT26.2.6	Construction Event Type	EM shall have an event type of "Construction"	EM030A	EM	6

FEAT26.2.7	Amber Alert Event Type	EM shall have an event type of "Amber Alert"	EM030B	EM	6
FEAT26.2.8	Leo Alert Event Type	EM shall have an event type of "Leo Alert"	EM030C	EM	6
FEAT26.2.9	Silver Alert Event Type	EM shall have an event type of "Silver Alert"	EM030D	EM	6
FEAT26.3	Incident data			EM	3
FEAT26.3.1	Received/entered data	Incident data shall be received from mobile units and entered into the database.	EM005D	EM	3
FEAT26.3.10	Automatic Response Plan Terminate Chronology Entry	The software shall include an event chronology entry of automatic response plan terminations.	SE007	EM	6.1
FEAT26.3.11	Whitespace in License Plate Tags	When storing or querying license plate tags in the database, the software shall remove whitespace and non-alphanumeric characters	SE015	EM	6.2
FEAT26.3.2	Data inclusion	Incident data shall include items such as types of vehicles involved, assistances rendered, Method notified, etc.	EM005D1	EM	3
FEAT26.3.3	Notification/confirmati on logs	SunGuide shall log the time when the first event participant is notified and subtract it from the time the event was first confirmed.	TM007D12	EM	3
FEAT26.3.4	Time stamps	SunGuide shall time stamp whenever a participant is notified as indicated by the operator in the Event Participants Dialog menu selection.	TM007D13	EM	3
FEAT26.3.5	Event log	SunGuide shall log the time an event was either confirmed or it was indicated to be a false alarm.	TM007D8	EM	3
FEAT26.3.6	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.	TM007D9	EM	3
FEAT26.3.7	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.	TB001A	EM	3

FEAT26.3.8	Location has optional city, county, and metro area	SunGuide Event Location shall include the optional entry of city, county and metro area.	DF006F3	EM	4
FEAT26.3.9	Automatic Response Plan Activation Chronology Entry	The software shall include an event chronology entry of automatic response plan activations.	SE006	EM	6.1
FEAT26.4	Lane configuration			EM	3
FEAT26.4.1	Adding lanes	The SunGuide GUI shall allow the operator to add a lane anywhere in the existing lane configuration.	EM007G3	EM	3
FEAT26.4.2	Editable sequence	The sequence in which the lane types appear shall be editable by the operator.	EM007G4	EM	3
FEAT26.5	Response plans			EM	3
FEAT26.5.1	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.	TM007D10	EM	3
FEAT26.5.10	Year Tag in Template	When creating a response plan template, the software will allow the user to select the 'Year' to add to a template.	SE016	EM	6.2
FEAT26.5.2	Confirmation/activation logs	SunGuide shall log the time from when an event was confirmed to when a Response Plan was activated.	TM007D11	EM	3
FEAT26.5.3	Configure Response Plans	SunGuide shall provide the ability to edit, define, and remove predefined response plans	TM005R12	EM	5
FEAT26.5.4	BMS			EM	6.1
FEAT26.5.4.1	Beacons in Response Plans	The software shall include a set of beacons in an automatically activated response plan suggestion for an event triggered by an RWIS alarm where the event type matches the beacon operational purpose.	RWISEM002	EM	6.1
FEAT26.5.4.2	Selectable Beacons	The software shall select the set of beacons to be included in the response plan suggestion that are located within the configurable radius distance from the RWIS device which produced the alarm	RWISEM003	EM	6.1

FEAT26.5.4.3	Beacons Activations	The software shall invoke a beacon activation request for a beacon when a response plan containing that beacon is activated.	RWISEM004	EM	6.1
FEAT26.5.4.4	Beacons Terminations	The software shall remove the activation request of the set of beacons in a response plan when the response plan is terminated.	RWISEM005	EM	6.1
FEAT26.5.5	Visibility Message Template	The software shall use the "Visibility" message template for events with the event type "Visibility."	RWISEM001	EM	6.1
FEAT26.5.6	Wrong Way Driving Message Template	The Wrong Way Driving Detection event type shall have a DMS message template specific to the event type for generating response plan suggestion messages.	WWD-008A	EM	6.1
FEAT26.5.7	Terminate Response Plan from Event Details	The software shall allow the user to terminate the response plan from the event details dialog.	SE001	EM	6.1
FEAT26.5.8	Response Plan Activation Status on Response Plan Dialog	The software shall indicate if the current response plan is active from the response plan dialog.	SE002	EM	6.1
FEAT26.5.9	Active Response Plan Prompt on Close	When a user attempts to close an event with an active response plan, the software shall present the user with the following options: 1) Terminate the response plan and close the event 2) Cancel and do not close the event.	SE003	EM	6.1
FEAT26.6	Responder audit			EM	3
FEAT26.6.1	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.	EM011	EM	3
FEAT26.6.2	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.	EM001U	EM	3

FEAT26.6.3	Modify agency notification	The operator shall be able to add, delete, or edit agency notification, on-scene, and departure times.	EM020G1	EM	3
FEAT26.6.4	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.).	EM020G3	EM	3
FEAT26.6.5	Provide notification time	The operator shall be required to provide the notification time and either the arrival and departure times or the cancellation time.	EM020G4	EM	3
FEAT26.6.6	Modify activity records	The operator shall be able to add, edit, and delete activity records associated with vehicle response records.	EM020G5	EM	3
FEAT26.6.7	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".	EM020G8	EM	3
FEAT26.6.8	Classify as quantifiable or not	Activities shall be classified in the software as quantifiable or not.	EM012	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	Configure congestion head	SunGuide shall allow an operator to configure the congestion head of an event.	EM022G	EM	4.3
FEAT26.7.1.2	Default Congestion Head	SunGuide shall default the congestion head to be the event location (county, road, direction, reference point, relationship to exit, offset).	EM022G1	EM	4.3
FEAT26.7.1.3	Changes to congestion head	When an operator makes changes to the event location, SunGuide shall change the congestion head to match those changes.	EM022G2	EM	4.3
FEAT26.7.1.4	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.	EM022G3	EM	4.3

FEAT26.7.1.6	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	EM022G4	EM	4.3
FEAT26.7.2	Congestion Tail	Rules for congestion tail of an event		EM	4.3
FEAT26.7.2.1	Configure congestion tail	SunGuide shall allow an operator to configure the congestion tail of an event.	EM023G	EM	4.3
FEAT26.7.2.2	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.	EM023G1	EM	4.3
FEAT26.7.2.3	Default value for congestion tail	SunGuide shall apply a default value for congestion tail when the operator initially checks the congestion box.	EM023G3	EM	4.3
FEAT26.7.2.4	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.)	EM023G4	EM	4.3
FEAT26.7.2.5	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.	EM024G	EM	4.3
FEAT26.7.2.6	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.	EM025G	EM	4.3
FEAT26.7.2.7	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.	EM023G2	EM	4.3
FEAT26.7.3	Display of referince points and relationships			EM	4.3

FEAT26.7.3.1	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.	EM027G	EM	4.3
FEAT26.7.3.2	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.	EM026G	EM	4.3
FEAT26.8	Sort Order on Roadways	The software shall allow a user to configure a sort order for the roadway.	EM044	EM	6.2
FEAT26.8.1	Default Sort Order	The default sort order for any configured roadway shall be the lowest integer that is not already assigned to another roadway.	EM044A	EM	6.2
FEAT26.8.2	View in Ascending Order	When presenting a list of configured roadways for user selection, the software shall sort them by the sort order parameter in ascending order	EM044B	EM	6.2
FEAT26.9	Comments Through Audit	The software shall allow a user to add comments to an event through an event audit	EM045	EM	6.2
FEAT26.9.1	Last Update Time	A comment added via an audit procedure shall not modify the "last update time" of an event	EM045A	EM	6.2
FEAT26.9.2	Audit Records	All comments entered via audit will be marked as audit records	EM045B	EM	6.2
FEAT27	Response Plan Generator (RPG)			RPG	3
FEAT27.1	General			RPG	3
FEAT27.2	Response plan messages			RPG	3
FEAT27.2.1	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.	TM005R2	RPG	3

FEAT27.2.2	Message recommendation	Each DMS message recommendation in the response plan shall clearly indicate the DMS sign(s) to which the message applies.	TM005R7	RPG	3
FEAT27.2.3	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	TM005R8	RPG	5.1
FEAT27.2.4	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	TM005R9	RPG	5.1
FEAT27.2.5	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"	TM005R10	RPG	5.1
FEAT27.2.6	Abbreviating Messages	The software shall support the abbreviation of phrases when automatically generating messages for a response plan	EM026	EM	6
FEAT27.2.6.1	Multi Word Abbreviations	The software shall allow the user to configure a multiple word abbreviations	EM026A	EM	6
FEAT27.2.6.2	Abbreviation Priority Precedence	If two abbreviations have the same priority, abbreviations with multiple words shall take precedence over abbreviations consisting of a single word	EM026B	EM	6
FEAT27.2.7	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	EM031A	EM	6
FEAT27.3	Alert messaging			RPG	3
FEAT27.3.1	E-mail alert	SunGuide response plan feature shall include e-mail alert messaging capabilities.	TM005R3	RPG	3

FEAT27.3.2	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.	TM005R4	RPG	3
FEAT27.4	Message templates			RPG	3
FEAT27.4.1	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.	TB001A1	RPG	3
FEAT27.4.10	Tag Replacement in Template	If available, the software shall replace the congestion location tags defined in the template with information provided in the event.	EM051	EM	6.2
FEAT27.4.2	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	TB001A2	RPG	5.1
FEAT27.4.3	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"	EM032A	EM	6
FEAT27.4.4	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"	EM032B	EM	6
FEAT27.4.5	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"	EM032C	EM	6

FEAT27.4.6	Template Categories	The software shall allow the user to configure a message template for the following categories a)On road template b)On road ramp template c)Off road template d)Off road ramp template e)On road - Road closed template f)Off road -Road closed template	EM047	EM	6.2
FEAT27.4.7	Event Type Based Templates	For each of the non-alert event types supported by SunGuide (Abandoned Vehicle, Crash, Bridge Work, Congestion, Debris on Roadway, Disabled Vehicle, Emergency Vehicles, Off Ramp Backup, Police Activity, Road Work - Emergency, Road Work - Scheduled, Special Event, Visibility, Weather, Other, Evacuation, Flooding, PSA, and Pedestrian), the software shall allow a user to configure a response plan template for each of the supported message template categories on a per event type basis.	EM048	EM	6.2
FEAT27.4.8	Match Event Conditions	When generating a response plan for an event, the software shall use the matching message template for the given combination of event type and incident location (on/off road/ramp/Road Closed).	EM049	EM	6.2
FEAT27.4.9	Congestion Head/Tail in Template	The software shall allow the user to include "congestion head" and "congestion tail" location tags (Route Name, Route Dir, Cross Street Proximity, Lane, Location Exit Number, and Distance) in response plan templates.	EM050	EM	6.2
FEAT28	Reporting System (RS)			RS	3
FEAT28.1	General			RS	3
FEAT28.1.1	Filters	Reports shall be able to be filtered on any of the event properties.	EM007R	RS	3

FEAT28.1.2	Saving reports	SunGuide shall be able to save a report as a Microsoft Word document or an Excel spreadsheet or an PDF file.	EM009R	RS	3
FEAT28.10	Incident management			RS	3
FEAT28.10.1	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 dispatched and when that Road Ranger arrives at the incident scene. o Road Ranger Activities - a categorization of the different types and corresponding quantities of Road Ranger	TM007D6	RS	3
FEAT28.11	Position reports			EV	3

FEAT28.11.1	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.	AV005	RS	3
FEAT28.11.2	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.	AV004T	RS	3
FEAT28.11.3	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.	AV004T1	RS	3
FEAT28.11.4	Displaying reports	Position reports shall be displayed on the SunGuide workstation when requested by the operator.	AV005T	RS	3
FEAT28.11.5	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.	AV005T1	RS	3
FEAT28.11.6	Report options	The operator shall have the option to save, delete or export a report.	AV005T2	RS	3
FEAT28.11.7	Retrieving data	The reporting function shall retrieve AVL data based on a date/time range and a particular vehicle.	AV006T	RS	3
FEAT28.11.8	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).	AV006T1	RS	3
FEAT28.12	Chronology report			RS	3
FEAT28.12.1	Display operator changes	All operator changes shall be displayed in the chronology report with an indication that specific information has been changed.	EM002U	RS	3

FEAT28.12.2	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.	EM003U	RS	3
FEAT28.13	ODS reports			ODS	3
FEAT28.13.1	Report content and format	The content and format of these reports shall be coordinated with FDOT.	OD001R	RS	3
FEAT28.13.2	Report drop down lists	Users shall be able to select one of the standard reports to view/extract via drop down lists.	OD002R	RS	3
FEAT28.13.3	Content format for display	Viewing of all archived data page content shall be formatted to fit a traditional display.	OD007R	RS	3
FEAT28.2	Performance measures			RS	3
FEAT28.2.1	Generate statistics/reports	The performance measures component shall generate statistics and reports based on HOV and HOT lane types.	EM001P1	RS	3
FEAT28.2.10	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.	TM018D1	RS	3
FEAT28.2.11	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.	TM018D2	RS	3
FEAT28.2.12	Sort incidents by severity level	SunGuide shall be able to sort the incidents by level of incident severity.	TM018D3	RS	3
FEAT28.2.13	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.	TM019D	RS	3

FEAT28.2.14	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.	TM019D1	RS	3
FEAT28.2.2	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.	TM007D3	RS	3
FEAT28.2.3	Accessibility of calculations	SunGuide calculated TMC performance measures shall be accessible through the Center-to-Center interface.	TM008D	RS	3
FEAT28.2.4	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.	TM010D4	RS	3
FEAT28.2.5	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.	TM007D15	RS	3

FEAT28.2.6	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.	TM007D16	RS	3
FEAT28.2.7	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.	TM017D	RS	3
FEAT28.2.8	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).	TM017D1	RS	3
FEAT28.2.9	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.	TM018D	RS	3
FEAT28.3	Road ranger status report			RS	3
FEAT28.3.1	Capabilities	A Road Ranger Vehicle status report shall be capable of being produced using SunGuide data.	EM004R	RS	3
FEAT28.3.2	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.	EM004R1	RS	3
FEAT28.3.3	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.	EM004R2	RS	3
FEAT28.3.4	Data filters	The Road Ranger Vehicle status data shall be able to be filtered by event type and/or disposition.	EM004R3	RS	3
FEAT28.3.5	Activity summary report	SunGuide shall provide data to support the generation of an activity summary report.	EM005R	RS	3

FEAT28.3.6	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.	EM005R1	RS	3
FEAT28.3.7	Activity summary data	The activity summary data shall contain the information necessary to summarize all activities for the given data range specified.	EM005R2	RS	3
FEAT28.3.8	Summary filters	The activity summary data shall be able to be filtered by event type and/or disposition.	EM005R3	RS	3
FEAT28.3.9	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.	EM002T2	RS	3
FEAT28.4	Truck location report			RS	3
FEAT28.5	Camera usage report			RS	3
FEAT28.5.1	Usage report for camera locks	SunGuide shall be able to create a Camera Usage report to show when cameras were locked and by whom.	EM008R	RS	3
FEAT28.6	Device status report			RS	3
FEAT28.6.1	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	TM007D1	RS	3
FEAT28.7	Traffic flow monthly report			RS	3

FEAT28.7.1	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.	TM007D5	RS	3
FEAT28.8	Software reliability			RS	3
FEAT28.8.1	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	TM007D2	RS	3
FEAT28.9	Traveler information			RS	3
FEAT29	Road Ranger (RR)			RR	3
FEAT29.1	General			RR	3
FEAT29.1.1	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.	TM001D1	RR	3
FEAT29.1.2	Assigning beats to trucks	SunGuide shall provide the ability for an operator to assign a beat on an in-service truck.	EM002T1	RR	3
FEAT29.2	Road Ranger status			RR	3
FEAT29.2.1	Mobile unit data	Event data from mobile units shall be received and automatically stored in the database.	EM004D	RR	3
FEAT29.2.2	Data items	Event data shall be items such as Enroute, At Scene, Cleared Scene, On Break, Assisting Others, etc.	EM004D1	RR	3

FEAT29.2.3	Road Ranger vehicle status	TMC Operators shall be able to change road ranger vehicle status.	EM008T	RR	3
FEAT29.2.4	Stopped vehicles	If a driver is stopped for a configurable length of time without accounting for the stop the system shall notify the operator.	AV010	RR	3
FEAT29.3	Drivers			RR	3
FEAT29.3.1	Driver interface	SunGuide shall provide a driver to interface with different service vehicle collection data streams in accordance with published SunGuide Interface Control Documents.	TM001V	RR	3
FEAT29.4	AVL/RR Interface			RR	4
FEAT29.4.1	Determine comm-related data duplication	System shall be able to determine likely duplicated data during audit which was caused by communications loss, then recovery.	AV018	RR	4
FEAT29.4.10	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	AV005T4	RR	4.2
FEAT29.4.11	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	AV005T5	RR	4.2
FEAT29.4.12	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.	AV005T6	RR	4
FEAT29.4.12.1	Location report column headings	Roadway and location long name shall both be displayed in the Location column header of the "Vehicle GPS Location Report."	AV005T7	RR	4.2
FEAT29.4.13	Change unit status	TMC Operators shall be able to change unit status in the event of mobile electronics or communications malfunction.	AV019	RR	4

FEAT29.4.2	Initiate incidents	Mobile operator shall be able to initiate incident.	AV020	RR	4
FEAT29.4.3	Close incidents initiated by unit	Mobile operator shall be able to close incident which was initiated by that unit.	AV020M	RR	4
FEAT29.4.4	Depart incidents and leave unresolved	Mobile operator shall be able to depart incident and leave it unresolved in SunGuide (i.e., abandoned vehicles).	AV020M1	RR	4
FEAT29.4.5	Data collected for involved vehicle	Data for an involved vehicle shall include: color, make, model, license state, and license tag.	AV009T4	RR	4
FEAT29.4.6	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).	AV006V2	RR	4
FEAT29.4.7	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.	AV007L5	RR	4
FEAT29.4.8	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.	AV017	RR	4
FEAT29.4.9	Display list of trucks and status	A list of currently logged on trucks and their current dispatch status shall be displayed.	AV005T3	RR	4
FEAT3	Executive Handler (EH)			EH	1
FEAT3.1	Executive handler function	The SunGuide system shall have an executive function that handles all monitoring and reporting of the status of internal processes.	S008	EH	1

FEAT3.10	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.	EX001D	EH	1
FEAT3.11	Monitor key data	Monitoring shall include pertinent system information such as the current system state, system performance, uptime, and error logs.	EX001M	EH	1
FEAT3.12	Database storage of information	All information collected shall be capable of being stored in the database.	EX002M	EH	2
FEAT3.13	Status log query multiple databases	Status log viewer shall support queries across multiple databases	EX004L	EH	1
FEAT3.14	Status log delete aged databases	The system shall delete databaseswhen they age beyond a configurable number of days.	EX005L	EH	1
FEAT3.15	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.	EX003F	EH	1
FEAT3.16	Use windows credentials	The executive handler application shall utilize windows credentials to verify rights to execute.	EX010	EH	1
FEAT3.17	Internal status data	The SunGuide shall gather internal status data concerning its operation and make this information available to the user.	EX001G	EH	3
FEAT3.2	Minimum functionality	As a minimum the executive handler shall provide:· Process initiation/termination;· Process status and monitoring;· Error logging.	EX001	EH	1
FEAT3.3	Start, stop, and restart processes	The executive handler shall be capable of automatic and manual initiation, manual termination and automatic re-initiation of system processes.	EX002	EH	1
FEAT3.5	Group dependencies	The executive handler shall notify personnel if an application fails or is restarted if the personnel have registered for notifications.	EX004	EH	1

FEAT3.6	Process start order	In the case of a failure, the executive handler shall start processes in the same order that they originally started.	EX001F	EH	1
FEAT3.7	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.	EX002F	EH	1
FEAT3.8	Initialize individual components	The executive handler shall have the ability to initialize individual process.	EX005	EH	1
FEAT3.9	Monitor, report and display status	The executive handler shall be capable of monitoring, reporting, and displaying the status of all SunGuide processes.	EX006	EH	1
FEAT30	Variable Speed Limit (VSL)			VSL	3
FEAT30.1	General			VSL	3
FEAT30.1.1	Manage VSL signs	SunGuide shall be able to manage Variable Speed limit (VSL) signs.	DM006	VSL	3
FEAT30.1.2	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.	DM003V	VSL	3
FEAT30.1.3	Interfacing with DMS	SunGuide VSL functionality shall interface and communicate with existing DMS control software.	DM004V	VSL	3
FEAT30.1.4	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.	DM005V	VSL	3
FEAT30.1.5	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.	DM007V	VSL	3
FEAT30.1.6	Turn VSL beacons on and off	SunGuide shall allow an operator to turn VSL beacons on and off.	VSLXXX	VSL	4
FEAT30.2	Recommendations			VSL	3

FEAT30.2.1	Recommendation logs	All VSL recommendations shall be logged.	TM005R8	VSL	3
FEAT30.2.2	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.	DM001V	VSL	3
FEAT30.2.3	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.	DM001V1	VSL	3
FEAT30.2.4	Speed limit changes	SunGuide shall log all recommended changes in speed limit.	DM001V2	VSL	3
FEAT30.2.5	Determining speed limit values	Recommended speed limit values shall be determined using real-time information available in SunGuide.	DM001V3	VSL	3
FEAT30.2.6	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.	DM002V	VSL	3
FEAT30.2.7	Storing recommended values	Recommended speed limit values to be stored in the SunGuide VSL application shall be specified by the FDOT.	DM005V1	VSL	3
FEAT30.2.8	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.	DM005V2	VSL	3
FEAT31	Operational Data Store (ODS)			ODS	3
FEAT31.1	General			ODS	3
FEAT31.1.1	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.	OD001	ODS	3

FEAT31.1.10	Use of master clock	SunGuide Software shall use a Network Time Protocol Time Server as the system master clock to ensure uniform timestamps.	OD007	ODS	3
FEAT31.1.11	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.	OD008	ODS	3
FEAT31.1.12	Preformatted reports	Users shall be able to view/extract archived data using fifteen (15) preformatted reports.	OD011	ODS	3
FEAT31.1.13	Travel times for instrumented roadways	The ODS shall include travel times for the instrumented roadways.	OD015	ODS	3
FEAT31.1.14	Include links and 511 segments	The ODS shall include data collection links and selected 511 reporting segments.	OD013	ODS	3
FEAT31.1.15	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.	DW001	ODS	3
FEAT31.1.16	Interface Control Document specification	How to implement the Direct Database Feed shall be specified in an Interface Control Document.	DW003D	ODS	3
FEAT31.1.17	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.	DW005D	ODS	3
FEAT31.1.18	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.	DW003	ODS	3
FEAT31.1.19	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.	DW005	ODS	3

FEAT31.1.2	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.	OD001D	ODS	3
FEAT31.1.20	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.	DW004	ODS	3
FEAT31.1.21	SunGuide RWIS events included in ODS	The ODS shall include events from the SunGuide RWIS subsystem.	OD014	ODS	3
FEAT31.1.3	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.	OD001E	ODS	3
FEAT31.1.4	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.	OD007D	ODS	3
FEAT31.1.5	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.	OD003D	ODS	3
FEAT31.1.6	Accept data from data bus	The reporting function shall be capable of accepting data from the SunGuide Data Bus.	OD003	ODS	3
FEAT31.1.7	Provide feed to external users	SunGuide shall provide a Direct Information Feed using center-to-center to external users.	OD005	ODS	3
FEAT31.1.8	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.	OD006	ODS	3
FEAT31.1.9	Data stored with timestamp	The data processed by the ODS will be stored with a timestamp.	OD008R	ODS	3
FEAT31.2	Data storage			ODS	3

FEAT31.2.1	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.	OD001S	ODS	4.2
FEAT31.2.2	Configurable amount of time	SunGuide shall store data for a configurable amount of time.	OD004	ODS	3
FEAT31.2.3	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.	DW002D	ODS	3
FEAT31.2.4	Archived data for ODS	SunGuide shall archive link data, travel times, raw weather, raw traffic data, beacon, and operator-entered event data.	DW004D	ODS	3
FEAT31.2.5	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.	OD012	ODS	3
FEAT31.3	Published data			ODS	3
FEAT31.3.1	Loading records latency	SunGuide shall introduce no more than two minutes latency when loading records from the source data system.	OD002	ODS	3
FEAT31.3.2	Publication of updates	Updates of the Direct Information Feed shall be published for licensed users at least once every five minutes.	OD002T	ODS	3
FEAT31.3.3	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.	DW006D	ODS	3
FEAT31.4	Viewing archived data			ODS	3
FEAT31.4.1	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).	OD003R	ODS	3
FEAT31.4.2	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).	OD004R	ODS	3

FEAT31.4.3	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).	OD005R	ODS	3
FEAT31.4.4	Keep normal performance	Viewing/extraction of archived data shall not prevent the normal performance of ODS functions.	OD006R	ODS	3
FEAT31.4.5	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.	WS012	ODS	3
FEAT31.4.6	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.	WS013	ODS	3
FEAT31.5	Message logs			ODS	3
FEAT31.5.1	Included logs and sign recommendations	The ODS shall include DMS Message Logs (SunGuide and OOCEA), 511 message logs and VSL sign recommendations.	OD010	ODS	3
FEAT31.5.2	Indicate data unavailable	These messages shall indicate whether all data slated for delivery is unavailable, or only a portion of the data is unavailable.	OD001M	ODS	3
FEAT31.5.3	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.	DW001D	ODS	3
FEAT31.5.4	Consistent format for error messages	SunGuide shall use a consistent format for error messages across all applications.	DW004D1	ODS	3
FEAT31.5.5	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.	DW001E	ODS	3
FEAT31.5.6	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.	OD009	ODS	3

FEAT32	Data Fusion System (DFS)			DFS	4
FEAT32.1	General			DFS	4
FEAT32.1.1	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.	DF001	DFS	4.2
FEAT32.1.2	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.	DF007	DFS	4
FEAT32.1.3	DFS to not degrade data accuracy	The Data Fusion subsystem shall not degrade the accuracy of the received data.	DF008	DFS	4
FEAT32.1.4	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.	DF015	DFS	4
FEAT32.1.6	Synchronized to universal time standard	The Data Fusion Subsystem shall be synchronized to a universal time standard obtained through the internet.	DF025	DFS	4
FEAT32.1.8	Select FDOT modified SAE codes	SunGuide Data Fusion shall automatically select FDOT modified SAE J-2540 codes that describe an event.	DF022F	DFS	4
FEAT32.1.8.10	SAE Code 2984 Message	The system shall present the message 'On-ramp left shoulder blocked' for events which are identified as SAE Code 2984.	DF022F10	DFS	4.3
FEAT32.1.8.11	SAE Code 2985 Identify	The system shall identify an event which blocks the right shoulder of an on ramp as SAE Code 2985.	DF022F11	DFS	4.3
FEAT32.1.8.12	SAE Code 2985 Message	The system shall present the message 'On-ramp right shoulder blocked' for events which are identified as SAE Code 2985.	DF022F12	DFS	4.3
FEAT32.1.8.13	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.	DF022F13	DFS	4.3
FEAT32.1.8.14	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.	DF022F15	DFS	4.3

FEAT32.1.8.15	SAE Code 2987 Message	The system shall present the message 'Off-ramp -left lanes blocked' for events which are identified as SAE Code 2987.	DF022F16	DFS	4.3
FEAT32.1.8.16	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.	DF022F17	DFS	4.3
FEAT32.1.8.17	SAE Code 2988 Message	The system shall present the message 'Off-ramp center lanes blocked' for events which are identified as SAE Code 2988.	DF022F18	DFS	4.3
FEAT32.1.8.18	SAE Code 2989 Identify	The system shall identify an event which blocks the right lanes of an off ramp as SAE Code 2989.	DF022F19	DFS	4.3
FEAT32.1.8.19	SAE Code 2989 Message	The system shall present the message 'Off-ramp right lanes blocked' for events which are identified as SAE Code 2989.	DF022F20	DFS	4.3
FEAT32.1.8.2	SAE Code 2980 Message	The system shall present the message 'On-ramp lanes blocked' for events which are identified as SAE Code 2980.	DF022F2	DFS	4.3
FEAT32.1.8.20	SAE Code 2990 Identify	The system shall identify an event which blocks the left shoulder of an off ramp as SAE Code 2990.	DF022F21	DFS	4.3
FEAT32.1.8.21	SAE Code 2990 Message	The system shall present the message 'Off-ramp left shoulder blocked' for events which are identified as SAE Code 2990.	DF022F22	DFS	4.3
FEAT32.1.8.22	SAE Code 2991 Identify	The system shall identify an event which blocks the right shoulder of an off ramp as SAE Code 2991.	DF022F23	DFS	4.3
FEAT32.1.8.23	SAE Code 2991 Message	The system shall present the message 'Off-ramp right shoulder blocked' for events which are identified as SAE Code 2991.	DF022F24	DFS	4.3
FEAT32.1.8.24	SAE Code 2992 Identify	The system shall identify an event which blocks more than one noncontiguous express lane as SAE Code 2992.	DF022F25	DFS	4.3
FEAT32.1.8.25	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.	DF022F26	DFS	4.3

FEAT32.1.8.26	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.	DF022F27	DFS	4.3
FEAT32.1.8.27	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.	DF022F28	DFS	4.3
FEAT32.1.8.28	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.	DF022F29	DFS	4.3
FEAT32.1.8.29	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.	DF022F30	DFS	4.3
FEAT32.1.8.3	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.	DF022F3	DFS	4.3
FEAT32.1.8.30	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.	DF022F31	DFS	4.3
FEAT32.1.8.31	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.	DF022F32	DFS	4.3
FEAT32.1.8.32	SAE Code 2986 Message	The system shall present the message 'Off-ramp lanes blocked' for events which are identified as SAE Code 2986.	DF022F14	DFS	4.3
FEAT32.1.8.4	SAE Code 2981 Message	The system shall present the message 'On-ramp left lanes blocked' for events which are identified as SAE Code 2981.	DF022F4	DFS	4.3
FEAT32.1.8.5	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.	DF022F5	DFS	4.3

FEAT32.1.8.6	SAE Code 2983 Message	The system shall present the message 'On-ramp right lanes blocked' for events which are identified as SAE Code 2983.	DF022F6	DFS	4.3
FEAT32.1.8.7	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.	DF022F7	DFS	4.3
FEAT32.1.8.8	SAE Code 2982 Message	The system shall present the message 'On-ramp center lanes blocked' for events which are identified as SAE Code 2982.	DF022F8	DFS	4.3
FEAT32.1.8.9	SAE Code 2984 Identify	The system shall identify an event which blocks the left shoulder of an on ramp as SAE Code 2984.	DF022F9	DFS	4.3
FEAT32.2	Database			DFS	4
FEAT32.2.1	Maintain log of all events	The Database Component shall maintain a log of all events.	DF001D	DFS	4
FEAT32.2.2	Archive only operator designated data	The Database Component shall save only the data designated by the SunGuide Administrator as archive data.	DF002D	DFS	4
FEAT32.2.3	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.	DF003D	DFS	4
FEAT32.2.6	Relational database	The database component shall be a relational database.	DF007D	DFS	4
FEAT32.3	Data Output			DFS	4
FEAT32.3.10	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.	DF019F	DFS	4
FEAT32.3.11	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.	DF001C	DFS	4

FEAT32.3.12	Fused events associated with latitude and longitude	Each fused traveler information event shall be associated with a latitude and longitude.	DF002C	DFS	4
FEAT32.3.13	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.	DF003C	DFS	4
FEAT32.3.14	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.	DF004C	DFS	4
FEAT32.3.15	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.	DF018F	DFS	4
FEAT32.3.2	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.	DF004	DFS	4
FEAT32.3.3	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.	DF013	DFS	4
FEAT32.3.5	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.	DF006F	DFS	4
FEAT32.3.6	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.	DF006F1	DFS	4

FEAT32.3.7	DFS data documented in C2C ICD	The data provided by the DFS shall be documented in a Center-to-Center Interface Control Document (ICD).	DF007F	DFS	4
FEAT32.3.8	Provide travel times and delays to the IDS	The Data Fusion component shall provide travel times and travel delays to the IDS.	DF011F	DFS	4
FEAT32.3.9	Incorporate received weather conditions	The Data Fusion Subsystem shall incorporate weather conditions received through an automatic feed provided by DTN.	DF017F	DFS	4
FEAT32.4	Engine			DFS	4
FEAT32.4.11	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.	DF011F2	DFS	4
FEAT32.4.13	External sources documented in an ICD	The Data Fusion component shall receive data from external sources documented in an ICD.	DF013F	DFS	4
FEAT32.4.14	Alert operator for conflict between sources	SunGuide shall provide a list of nearby active events to the operator when external events are received.	DF016F	DFS	4
FEAT32.4.15	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.	DF016F1	DFS	4
FEAT32.4.16	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.	DF016F2	DFS	4
FEAT32.4.2	Calculate travel time and speeds	The Data Fusion Subsystem shall calculate travel time and speeds along instrumented roadways for FDOT defined links.	DF026	DFS	4
FEAT32.4.4	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.	DF001F	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	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.	DF003F	DFS	4
FEAT32.4.7	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.	DF004F	DFS	4
FEAT32.4.8	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.	DF005F	DFS	4
FEAT32.4.9	Blank values for unavailable fields	If the information for a field is not available, a null value or blank shall be provided.	DF006F2	DFS	4
FEAT32.5	Performance			DFS	4
FEAT32.5.1	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.	DF002	DFS	4
FEAT32.5.4	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.	DF017	DFS	4
FEAT32.5.8	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.	DF005D	DFS	4
FEAT32.6	Data Sources			DFS	4

FEAT32.6.1	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.	DF006	DFS	4
FEAT32.6.2	Latest info on current transporation status	The Data Fusion subsystem shall provide the latest information on the current status of FDOT-designated transportation services.	DF011	DFS	4.2
FEAT32.6.3	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.	DF016	DFS	4
FEAT32.6.4	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.	DF020	DFS	4.2
FEAT32.6.5	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.	DF024	DFS	4
FEAT32.6.7	Obtain travel time and speeds from SunGuide	For sites that are SunGuide equipped, the DFS shall obtain travel time and speeds from SunGuide.	DF011F4	DFS	4
FEAT32.6.8	Access the DTN	SunGuide shall access the DTN automated feed using a "web method" that connects to a DTN server via the public Internet.	DF023F	DFS	4
FEAT32.7	Reporting			DFS	4
FEAT32.7.1	Locally archive selected data	The Data Fusion Subsystem shall locally archive selected data and messages.	DF012	DFS	4
FEAT32.7.2	Generate reports with selected parameters	The Data Fusion subsystem shall be able to generate reports according to parameters selected by the system administrator.	DF014	DFS	4
FEAT32.7.3	Generate reports based on data saved	The Data Fusion subsystem shall be able to generate reports based on data saved.	DF029	DFS	4
FEAT32.7.4	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.	DF009F	DFS	4

FEAT32.7.5	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).	DF012F	DFS	4
FEAT32.7.5.1	Content and format specified by FDOT	The content and format of the reports shall be specified by FDOT.	DF012F1	DFS	4
FEAT32.7.6	Generate custom reports with SQL interface	Users shall be able to generate custom reports using an SQL interface embedded within the archived data page.	DF014F	DFS	4
FEAT32.7.7	Reports generated in PDF, Word, and Excel format	All reports shall be generated in PDF, Word and Excel format.	DF015F	DFS	4
FEAT32.8	Alternate Roads			DFS	4
FEAT32.8.1	Alternate road description	When an alternative road is presented for operator selection a description shall be displayed if available.	DF002E2	DFS	4
FEAT32.8.2	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.	DF001E	DFS	4
FEAT32.8.3	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.	DF002E	DFS	4
FEAT32.8.4	Send weather events to IDS via C2C	The Data Fusion component shall send weather events to the IDS using the C2C.	DF020F1	DFS	4
FEAT33	Pricing System (PS)			PS	3.1
FEAT33.1	General			PS	3.1
FEAT33.1.1	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.	ML012P	PS	4.3

FEAT33.1.1.2	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.	ML013P	PS	4.3
FEAT33.1.2	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.	ML007D	PS	4.3
FEAT33.1.2.1	Bypass message arbitration for toll rate DMS signs	Toll Rate DMS and Lane Status DMS shall not use message arbitration.	ML007D1	PS	4.3
FEAT33.1.3	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.	ML008A	PS	3.1
FEAT33.1.4	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.	ML011S	PS	4.3
FEAT33.1.6	Data Storage			PS	4.3

FEAT33.1.6.1	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	ML017S	PS	4.3
FEAT33.1.6.2	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)	ML018S	PS	4.3
FEAT33.1.6.3	Data stored for alert acknowledgements	Data stored for alert acknowledgements shall include: oSunGuide Alert ID oUser ID oTime Acknowledged (time received/stored by SunGuide)	ML019S	PS	4.3
FEAT33.1.6.4	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	ML020S	PS	4.3
FEAT33.1.6.5	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)	ML021S	PS	4.3

FEAT33.1.6.6	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.	ML032U2	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	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.	ML028A	PS	4.3
FEAT33.1.7.2	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.	ML029A	PS	4.3
FEAT33.1.7.3	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.	ML035A	PS	4.3
FEAT33.1.8	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.	ML012M	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
FEAT33.10	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	Unique SunGuide IDs	The Express Lanes module shall use unique sequentially assigned SunGuide IDs with each toll rate message.	Ml016I	PS	4.2
FEAT33.10.10	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.	ML017R	PS	4.2
FEAT33.10.10.1	Defintion of ending time	The ending time shall be subsequent starting time minus one second.	ML017R1	PS	4.2
FEAT33.10.10.2	Additional choices for Toll Viewer	This view shall be an additional choice added to the Toll Viewer labeled appropriately.	ML017R2	PS	4.2
FEAT33.10.10.3	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.	ML017R3	PS	4.2

FEAT33.10.10.4	"Reason" for the toll	The view shall include a "reason" for the toll.	ML017R4	PS	4.2
FEAT33.10.11	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.	ML010S	PS	4.2
FEAT33.10.11.1	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.)	ML010S1	PS	4.2
FEAT33.10.11.2	Log file content	Each file produced shall contain 24 hours of data, beginning at 00:00:00 and ending with 23:59:59.	ML010S2	PS	4.2
FEAT33.10.11.3	Output data	At the time the process runs it shall output data for all previously missed data runs.	ML010S3	PS	4.2
FEAT33.10.11.4	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.	ML010S4	PS	4.2
FEAT33.10.11.5	Generation of files	The process shall generate one file per segment per data period.	ML010S5	PS	4.2
FEAT33.10.11.6	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."	ML010S6	PS	4.2
FEAT33.10.11.7	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.	ML010S7	PS	4.2
FEAT33.10.2	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.	ML017I	PS	4.2
FEAT33.10.3	Storage of pending rate requests	Pending rate requests shall be stored in non-volatile memory, i.e. table(s) in the current SunGuide database.	ML017I1	PS	4.2
FEAT33.10.4	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.	ML017I2	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	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.	ML018I	PS	4.2
FEAT33.10.6.2	Record rate message	When SunGuide encounters an error communicating a rate message to the middleware, SunGuide shall record in the database the rate message.	ML018I1	PS	4.2
FEAT33.10.6.3	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).	ML018I2	PS	4.2
FEAT33.10.6.4	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.	ML018I3	PS	4.2
FEAT33.10.6.5	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.	ML018I4	PS	4.2
FEAT33.10.7	Record SunPass Rate ID	SunGuide shall record the returned SunPass Rate ID with SunGuide rate requests when a rate request succeeds.	ML016R	PS	4.2
FEAT33.10.8	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.	ML016R1	PS	4.2

FEAT33.10.9	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.	ML026A	PS	4.2
FEAT33.10.9.1	Format summary	This module shall format a summary of the comparison to be sent by email.	ML026A1	PS	4.2
FEAT33.10.9.2	Run Frequency	The comparison shall run at a configurable frequency.	ML026A2	PS	4.3
FEAT33.10.9.3	Process Data	The comparison shall process data from a configurable period.	ML026A3	PS	4.2
FEAT33.10.9.4	Configurable Email List	The email shall be sent to a configurable email list.	ML026A4	PS	4.2
FEAT33.10.9.5	Email Content	The email shall contain a list of discrepancies found.	Ml026A5	PS	4.2
FEAT33.10.9.6	Summary content	If no discrepancies found the summary shall so state.	ML026A6	PS	4.2
FEAT33.10.9.7	Comparison content in email	The email shall state when the comparison occurred and what period the comparison processed.	ML026A7	PS	4.2
FEAT33.10.9.8	Summary sections	The summary shall be divided into sections, each section shall provide the summary for an individual toll segment.	ML026A8	PS	4.2
FEAT33.11	Set Mode/Rate Request			PS	4.3
FEAT33.11.1	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.	ML001M	PS	4.3
FEAT33.11.10	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.	ML009D9	PS	4.3

FEAT33.11.11	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.	Ml009D10	PS	4.3
FEAT33.11.2	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.	ML001M6	PS	4.3
FEAT33.11.3	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.	ML001M7	PS	4.3
FEAT33.11.4	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.	ML001M8	PS	4.3
FEAT33.11.5	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.	ML001M9	PS	4.3

FEAT33.11.6	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.	ML001M10	PS	4.3
FEAT33.11.7	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).	ML001M11	PS	4.3
FEAT33.11.8	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.	ML002M	PS	4.3
FEAT33.11.8.1	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.	ML002M1	PS	4.3
FEAT33.11.8.2	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.	ML002M3	PS	4.3

FEAT33.11.9	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”.	ML025E	PS	4.3
FEAT33.12	Alerts			PS	4.3
FEAT33.12.1	Suppress Rate Change Alerts			PS	4.3
FEAT33.12.1.1	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.	ML031A2	PS	4.3
FEAT33.12.1.2	Store pending rate change alert	The software shall store whether a pending rate change alert was automatically or manually acknowledged.	ML031A3	PS	4.3
FEAT33.12.2	Express Lanes alerts			PS	4.3
FEAT33.12.2.1	Send alerts to subscribed clients	The software shall send Express Lanes alerts to subscribed Express Lanes clients.	ML040U	PS	4.3
FEAT33.12.2.2	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.	ML035U	PS	4.3
FEAT33.12.2.3	Acknowledge alerts	The software shall allow authorized express lanes clients to acknowledge express lanes alerts.	ML032U	PS	4.3
FEAT33.12.2.4	Software stores alerts	Express Lanes Alert acknowledgements shall be stored by the software.	ML032U1	PS	4.3
FEAT33.12.2.5	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.	ML033U	PS	4.3

FEAT33.12.2.6	User acknowledgment of alert	Upon user acknowledgment of 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.	ML036U	PS	4.3
FEAT33.12.3	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.	ML042U	PS	4.3
FEAT33.12.4	Middleware Rate Adjustment alert			PS	4.3
FEAT33.12.4.1	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.	ML027E	PS	4.3
FEAT33.12.4.2	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.	ML028E	PS	4.3
FEAT33.12.4.3	Archive resolution	The software shall archive the creation and resolution of Middleware Rate Adjustment alerts.	ML016S	PS	4.3

FEAT33.12.5	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	ML027U	PS	4.3
FEAT33.13	Current State Requests			PS	4.3
FEAT33.13.1	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..	ML011M	PS	4.3
FEAT33.13.1.1	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.	ML011M2	PS	4.3
FEAT33.13.1.2	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.	ML011M1	PS	4.3
FEAT33.13.1.3	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.	ML011M3	PS	4.3
FEAT33.14	Dynamic Mode			PS	4.3

FEAT33.14.1	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.	ML029E	PS	4.3
FEAT33.14.1.1	Use toll rate	The software shall use the toll rate sent by the valid client request upon entering or maintaining Dynamic mode.	ML029E1	PS	4.3
FEAT33.2	Configuration			PS	3.1
FEAT33.2.1	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.	ML003A	PS	4.3
FEAT33.2.1.2	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).	ML015P	PS	4.3
FEAT33.2.1.3	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.	ML003A1	PS	4.3
FEAT33.2.10	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.	ML003D	PS	3.1
FEAT33.2.11	Configuring Requests for Express Lanes			PS	4.3
FEAT33.2.11.1	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.	ML003M	PS	4.3

FEAT33.2.11.2	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.	ML003M1	PS	4.3
FEAT33.2.11.3	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).	ML003M2	PS	4.3
FEAT33.2.11.4	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.	ML006M	PS	4.3
FEAT33.2.12	Lane Status DMS selection	An authorized user shall be able to select in Adminstrative Editor the Lane Status DMS associated with a segment.	ML038A	PS	4.3

FEAT33.2.13	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.	ML039A	PS	4.3
FEAT33.2.14	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.	ML031A	PS	4.3
FEAT33.2.15	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.	ML040A	PS	4.3
FEAT33.2.2	Daily rate schedule configuration	Authorized users shall be able to create and maintain a 24-hour Daily Rate Schedule using the Administrative Editor.	ML009A	PS	3.1
FEAT33.2.2.1	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).	ML004P2	PS	3.1
FEAT33.2.2.2	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.	ML010A	PS	3.1
FEAT33.2.2.3	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).	ML011A	PS	3.1
FEAT33.2.3	Segment rate schedule configuration	The user shall be able to create and edit a Segment Rate Schedule for a week.	ML004P3	PS	3.1
FEAT33.2.3.1	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.	ML002A	PS	3.1

FEAT33.2.3.2	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	ML004P4	PS	3.1
FEAT33.2.3.3	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).	ML012A	PS	3.1
FEAT33.2.4	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.	ML013A	PS	3.1
FEAT33.2.4.1	Treatment of past dates	The software shall not allow a user to edit assignments for past dates.	ML014A	PS	3.1
FEAT33.2.4.2	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.	ML015A	PS	3.1
FEAT33.2.5	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.	ML016A	PS	3.1
FEAT33.2.6	Express lanes DMS configuration	Authorized users shall be able to configure DMS for the Express Lanes facility using the Administrative Editor or Configuration files.	ML017A	PS	3.1
FEAT33.2.6.1	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).	ML007A	PS	3.1

FEAT33.2.6.2	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.	ML002D	PS	4.3
FEAT33.2.6.3	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.	ML018A	PS	3.1
FEAT33.2.6.4	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.	ML019A	PS	3.1
FEAT33.2.6.5	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).	ML020A	PS	4.3
FEAT33.2.6.6	Default message validation	The software shall prevent the user from entering default messages longer than 6 characters for a Toll Rate DMS.	ML021A	PS	3.1
FEAT33.2.6.7	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.	ML022A	PS	3.1
FEAT33.2.6.7.1	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.	ML022A1	PS	3.1
FEAT33.2.6.8	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.	ML027A	PS	4.3
FEAT33.2.7	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.	ML023A	PS	3.1
FEAT33.2.7.1	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.	ML005A	PS	4.3

FEAT33.2.7.2	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.	ML005A1	PS	3.1
FEAT33.2.7.3	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.	ML006A	PS	3.1
FEAT33.2.7.4	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.	ML023A1	PS	3.1
FEAT33.2.7.5	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.	ML023A2	PS	3.1
FEAT33.2.8	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.	ML024A	PS	3.1
FEAT33.2.8.1	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.	ML007I	PS	3.1
FEAT33.2.8.4	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.	ML024A2	PS	3.1
FEAT33.2.9	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.	ML025A	PS	3.1
FEAT33.2.9.1	Segment start point	The user shall be able to define the start location of the segment based on latitude/longitude.	ML025A1	PS	3.1
FEAT33.2.9.2	Segment end point	The user shall be able to define the end location of the segment based on latitude/longitude.	ML025A2	PS	3.1

FEAT33.3	Rate selection	SunGuide shall be responsible for managing rate schedules and coordinating Toll Rate DMS rate display and rate selection.	ML001	PS	3.1
FEAT33.3.1	Rate selection and dissemination	The software shall select a toll rate and disseminate to DMS.	ML016P	PS	3.1
FEAT33.3.1.1	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.	ML001I	PS	3.1
FEAT33.3.1.1.1	Segment selection	For each segment operating in Time-of-Day mode, the software shall use rate entries that are for that particular segment.	ML021P	PS	4.3
FEAT33.3.1.1.2	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.	ML017P	PS	4.3
FEAT33.3.1.1.3	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.	ML018P	PS	4.3
FEAT33.3.1.1.4	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.	ML019P	PS	4.3
FEAT33.3.1.1.5	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.	ML020P	PS	4.3

FEAT33.3.1.2	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.	ML009D	PS	3.1
FEAT33.3.1.2.1	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.	ML009D1	PS	4.3
FEAT33.3.1.2.1.1	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.	ML009D2	PS	4.3
FEAT33.3.1.2.2	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.	ML009D4	PS	4.3
FEAT33.3.1.2.3	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.	ML009D5	PS	4.3
FEAT33.3.1.2.4	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.	ML009D6	PS	4.3

FEAT33.3.1.2.5	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.	ML007P	PS	4.3
FEAT33.3.2	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.	ML005P	PS	3.1
FEAT33.3.3	Max/min time parameters	The default Maximum and Minimum Transit Times parameters shall not vary by time-of-day.	ML011P3	PS	4.3
FEAT33.4	Incident management			PS	3.1
FEAT33.4.1	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.	ML013E	PS	3.1
FEAT33.4.1.1	Event response	The software shall respond to events in the Express Lanes and general purpose lanes.	ML014E	PS	3.1
FEAT33.4.1.1.1	Toll rate/gantry sign functions	Toll Rate and Toll Gantry DMS shall perform special functions as decribed in the following subrequirements.	ML015E	PS	3.1
FEAT33.4.1.1.1.1	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).	ML015E1	PS	3.1
FEAT33.4.1.1.1.2	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.	ML015E2	PS	3.1
FEAT33.4.1.1.1.3	Event messages not sent	Toll Rate and Toll Gantry DMS shall not be sent Event Messages.	ML015E3	PS	3.1

FEAT33.4.1.1.4	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.	ML002E1	PS	3.1
FEAT33.4.1.2	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.	ML018E	PS	4.3
FEAT33.4.1.2.1	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.	ML018E1	PS	3.1
FEAT33.4.1.2.2	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.	ML018E2	PS	3.1
FEAT33.4.1.3	Resuming TOD operation	When an Operator returns a segment to Open/Time of Day Rate mode, the software shall perform the following actions: (subrequirements)	ML019E	PS	4.3
FEAT33.4.1.3.1	Rate selection	The software shall select and implement the rate that is in effect for the time the previous mode is ended.	ML019E1	PS	4.3
FEAT33.4.1.3.2	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.	ML019E2	PS	4.3
FEAT33.4.1.4	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.	ML004E	PS	3.1

FEAT33.4.1.4.1	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.	ML004E2	PS	4.3
FEAT33.4.1.4.2	Open/closed mode toll rate	The software shall set the toll rate to $0.00 for the duration of the override.	ML004E1	PS	3.1
FEAT33.4.1.4.3	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.	ML004E4	PS	3.1
FEAT33.4.1.4.4	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.	ML020E	PS	4.3
FEAT33.4.1.4.5	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.	ML021E	PS	4.3
FEAT33.4.1.5.1	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.	ML022E1	PS	4.3
FEAT33.4.1.5.2	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.	ML022E2	PS	4.3
FEAT33.4.1.5.3	Toll rate/gantry DMS operation	The software shall not update the Toll Rate DMS and Toll Gantry DMS for when entering Open/Manual Rate.	ML022E3	PS	3.1

FEAT33.4.1.5.5	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.	ML024E	PS	4.3
FEAT33.4.1.5.6	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.	ML022E5	PS	4.3
FEAT33.4.1.5.7	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.	ML038U	PS	4.3
FEAT33.4.1.6	Open/manual rate mode specific actions	The software shall meet the following requirements while entering, maintaining or exiting the Open/Manual Rate mode.	ML023E	PS	4.3
FEAT33.4.1.6.1	Open/congested rate mode toll rate	The software shall use the toll rate selected by the operator.	ML023E1	PS	3.1
FEAT33.4.1.6.3	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.	ML023E3	PS	3.1

FEAT33.4.1.6.4	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.	ML023E4	PS	4.3
FEAT33.4.1.7	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.	ML030E	PS	4.3
FEAT33.5	Tabbed GUI			PS	3.1
FEAT33.5.1	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.	ML001U	PS	3.1
FEAT33.5.1.1	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.	ML006U	PS	4.3
FEAT33.5.1.2	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.	ML007U	PS	3.1
FEAT33.5.1.3	Express lanes event data	Data on active event associated with an express lanes override to include event id and short event description.	ML015U	PS	3.1
FEAT33.5.1.4	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.	ML021U	PS	3.1
FEAT33.5.1.5	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.	ML022U	PS	3.1

FEAT33.5.1.6	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.	ML023U	PS	3.1
FEAT33.5.2	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.	ML003U	PS	4.3
FEAT33.5.2.1	Mode permissions	The Mode controls shall either be not visible or should be inactive to users not authorized to use them.	ML003U1	PS	4.3
FEAT33.5.2.2	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.	ML024U	PS	4.3
FEAT33.5.2.2.1	Select effective time	The Express Lanes Mode Selection shall allow the user to edit the Effective Time for Closed and Zero Rate modes.	ML007E	PS	4.3
FEAT33.5.2.2.2	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.	ML024U1	PS	4.3
FEAT33.5.2.2.3	Override default time	As the default for the Override Time Prompt, the software shall use the system time when the prompt was created.	ML004E6	PS	3.1
FEAT33.5.2.2.4	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.	ML005U	PS	4.3

FEAT33.5.2.2.5	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.	ML004U	PS	4.3
FEAT33.5.2.2.5.1	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.	ML004U1	PS	4.3
FEAT33.5.3	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.	ML010U	PS	3.1
FEAT33.5.3.1	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.	ML010U1	PS	4.3
FEAT33.5.3.2	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.	ML010U2	PS	3.1
FEAT33.5.3.3	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.	ML011U	PS	4.3

FEAT33.5.3.4	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.	ML012U	PS	4.3
FEAT33.5.3.5	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.	ML031A1	PS	4.3
FEAT33.5.3.6	Alert for middleware rate transmission	The software shall generate an alert message if middleware rate transmission fails.	ML010U3	PS	4.3
FEAT33.5.3.7	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.	ML010U4	PS	4.3
FEAT33.5.3.8	Details of failure in message	The middleware rate transmission failure alert messages shall provide details of middleware failure if provided by the middleware.	ML010U5	PS	4.3
FEAT33.5.3.9	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.	ML034U	PS	4.3
FEAT33.5.4	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.	ML013U1	PS	3.1

FEAT33.5.4.1	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.	ML025U	PS	4.3
FEAT33.5.4.2	Current rates displayed	The Tabbed GUI shall provide a means to set the toll rate message displayed on the DMS.	ML026U	PS	3.1
FEAT33.5.5	Other tabbed GUI elements	The software shall have the following (subrequirements) other elements to support TMC Operator management of the Express Lanes.	ML009U	PS	3.1
FEAT33.5.5.1	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.	ML009U1	GUI	3.1
FEAT33.5.5.2	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.	ML009U2	PS	3.1
FEAT33.5.6	Middleware Rate Adjustment	The Tabbed GUI shall provide tools in the Express Lanes Tab allowing the user to manage a Middleware Rate Adjustment.	ML037U	PS	4.3
FEAT33.5.6.1	Middleware Rate Override permissions	The Middleware Rate Adjustment controls shall either be hidden or inactive for users not authorized to use them.	ML037U1	PS	4.3
FEAT33.5.6.2	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.	ML037U2	PS	4.3
FEAT33.5.7	Express Lanes Tabbed GUI			PS	4.3
FEAT33.5.7.1	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.	ML002I	PS	4.3

FEAT33.5.7.2	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.	ML044U	PS	4.3
FEAT33.5.7.3	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.	Ml046U	PS	4.3
FEAT33.6	Toll system interface	The software shall communicate toll rate changes to Turnpike systems via Turnpike's Middleware.	ML002	PS	3.1
FEAT33.6.1	Turnpike WSDL conformance	The software shall send and receive messages that conform to the WSDL specification provided by the Turnpike.	ML004I	PS	3.1
FEAT33.6.2	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.	ML006I	PS	3.1
FEAT33.6.3	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.	ML010I	PS	3.1
FEAT33.6.3.1	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.	ML002I	PS	3.1
FEAT33.6.4	Toll rate effective time determination	The software shall determine the effective time of a toll rate prior to sending to the Middleware.	ML010P	PS	3.1
FEAT33.6.4.1	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.	ML011P5	PS	4.3

FEAT33.6.4.4	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.	ML012I	PS	3.1
FEAT33.6.4.5	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.	ML013I	PS	4.3
FEAT33.6.4.6	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.	ML014I	PS	4.3
FEAT33.6.4.7	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.	ML003E	PS	4.3
FEAT33.6.5	Middleware heartbeat	The software shall verify that communications with the Middleware is still active at the Middleware Heartbeat Rate.	ML015I	PS	3.1
FEAT33.7	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.	ML004S	PS	3.1
FEAT33.7.1	Crystal reports accessibility	The data shall be stored in the SunGuide database and accessible with Crystal Reports.	ML005S	PS	3.1
FEAT33.7.2	Activity tracking	The software shall track activities related to the Express Lanes.	ML006S	PS	3.1
FEAT33.7.2.1	Rate table change tracking	The software shall store current and expired rate tables.	ML001S	PS	3.1

FEAT33.7.2.2	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.	ML003S	PS	3.1
FEAT33.7.2.3	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.	ML007S	PS	3.1
FEAT33.7.2.4	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.	ML002S	PS	3.1
FEAT33.7.2.5	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.	ML008S	PS	4.3
FEAT33.7.2.6	Middleware heartbeat tracking	The software shall keep a record of failed Middleware Heartbeats to include time attempted.	ML009S	PS	3.1
FEAT33.8	Maximum Rate Support			PS	4.3
FEAT33.8.1	Setting maximum toll rate	An authorized user will be able to set the Segment Maximum Toll Rate for each segment in Administrative Editor.	ML032A	PS	4.3
FEAT33.8.2	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.	ML033A	PS	4.3

FEAT33.8.3	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.	ML045U	PS	4.3
FEAT33.8.4	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.	ML034A	PS	4.3
FEAT33.9	Restart Handling			PS	4.3
FEAT33.9.1	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.	Ml039U	PS	4.3

FEAT33.9.1.1	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.	ML039U1	PS	4.3
FEAT33.9.1.2	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.	ML039U2	PS	4.3
FEAT33.9.1.3	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.	ML039U3	PS	4.3

FEAT33.9.1.4	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.	ML039U4	PS	4.3
FEAT33.9.1.5	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.	ML039U5	PS	4.3
FEAT33.9.1.6	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.	ML039U6	PS	4.3

FEAT33.9.1.7	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.	ML039U7	PS	4.3
FEAT33.9.1.8	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.	ML039U8	PS	4.3
FEAT33.9.1.9	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.	ML039U9	PS	4.3

FEAT33.9.10	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.	ML019I	PS	4.3
FEAT33.9.2	User selected Modes	Upon restart, the user shall only be able to select modes that can be manually selected through the Express Lanes Tab.	ML039U10	PS	4.3
FEAT33.9.3	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.	ML039U11	PS	4.3
FEAT33.9.4	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.	ML039U12	PS	4.3
FEAT33.9.5	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.	ML039U13	PS	4.3

FEAT33.9.6	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.	ML021I	PS	4.3
FEAT33.9.7	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.	ML020I	PS	4.3
FEAT33.9.8	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.	ML015S	PS	4.3
FEAT33.9.9	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.	ML019I	PS	4.3
FEAT34	Toll Viewer (TV)	A web based browser application shall be available for users to view data related to the Express Lanes.	ML001R2	TV	3.1
FEAT34.1	Detail levels	The browser shall provide two levels of informational detail: Summary and Detailed	ML002R	TV	3.1
FEAT34.2	Browser support	The Toll Viewer shall support Internet Explorer 7.	ML003R	TV	3.1
FEAT34.3	Summary view	The Summary View shall provide information for a Customer Service Representative (CSR) to confirm the customer experience during facility usage.	ML002R1	TV	3.1
FEAT34.3.1	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.	ML004R	TV	3.1
FEAT34.3.2	Date selection	The user shall be able to select a transaction date and time and time range to view data for.	ML001R3	TV	3.1

FEAT34.3.3	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.	ML001R5	TV	4.3
FEAT34.3.4	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.	ML005R	TV	3.1
FEAT34.3.5	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.	ML015R	TV	3.1
FEAT34.3.5.1	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.	ML015R1	TV	3.1
FEAT34.3.5.2	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.	ML015R2	TV	3.1
FEAT34.3.5.3	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.	ML015R3	TV	3.1

FEAT34.3.5.4	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.	ML015R4	TV	3.1
FEAT34.3.5.5	Overrides	For the selected segment, the software (the Toll Viewer) shall display information for overrides during the selected time period.	ML006R	TV	3.1
FEAT34.3.5.6	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.	ML007R	TV	3.1
FEAT34.3.6	Ordering of viewed data	The data in the Toll Viewer shall be presented in chronological order by gantry.	ML008R	TV	3.1
FEAT34.3.7	DMS name displayed	The software (the Toll Viewer) shall use the DMS Name for CSRs for each DMS displayed in the Basic View.	ML009R	TV	3.1
FEAT34.4	Detailed view	The Detailed View of the Toll Viewer shall provide information to perform detailed, historical operations reviews	ML010R	TV	3.1
FEAT34.4.1	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.	ML010R1	TV	3.1
FEAT34.4.10	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.	ML001R12	PS	4.3

FEAT34.4.11	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'.	ML001R13	PS	4.3
FEAT34.4.2	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.	ML011R	TV	3.1
FEAT34.4.3	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.	ML012R	TV	3.1
FEAT34.4.4	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.	ML001R6	TV	4.3
FEAT34.4.5	Toll viewer access	The Toll Viewer application shall be able to be installed on a server located in the SunGuide DMZ.	ML013R	TV	3.1
FEAT34.4.6	Toll viewer web service	SunGuide shall provide a web service to access SunGuide and provide data to the Toll Viewer application.	ML014R	TV	3.1
FEAT34.4.7	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	ML001R0	PS	4.3

FEAT34.4.8	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.	ML001R14	PS	4.3
FEAT34.4.9	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.	ML001R11	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	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.	CA001	FHPCAD	4
FEAT35.2.2	Filter FHP incidents by county	The system shall support filtering of FHP traffic incidents by county.	CA002	FHPCAD	4
FEAT35.2.3	Filter FHP incidents by roadway	The system shall support filtering of FHP traffic incidents by a configurable list of FDOT-covered roadways.	CA003	FHPCAD	4
FEAT35.2.4	FHP CAD communication failure notifications	A SunGuide operator shall be notified of FHP CAD interface communication failures.	CA004	FHPCAD	4
FEAT35.2.5	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.	CA005	FHPCAD	4
FEAT35.2.6	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.	CA006	FHPCAD	4
FEAT35.3	Interface			FHPCAD	4

FEAT35.3.1	Incidents accessed from single location	Traffic incidents shall be accessed from a single configurable location, consisting of separate files from each FHP CAD RCC.	CA007	FHPCAD	4
FEAT35.3.2	Incidents to use existing XML format	Traffic incidents shall be accessed from the FHP CAD server using the existing XML format.	CA008	FHPCAD	4
FEAT35.3.3	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.	CA009	FHPCAD	4
FEAT35.3.4	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.	CA003F	FHPCAD	4.2
FEAT35.4	SunGuide			FHPCAD	4
FEAT35.4.1	Incidents update/replace existing alerts	Updated FHP CAD incidents shall update/replace existing unacknowledged alerts.	CA005A	FHPCAD	4
FEAT35.4.10	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.	CA006A	FHPCAD	4
FEAT35.4.11	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.	CA005A3	FHPCAD	4.2

FEAT35.4.12	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.	CA005A4	FHPCAD	4.2
FEAT35.4.13	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.	CA005A5	FHPCAD	4.2
FEAT35.4.14	Alert Box Display Choices	The Alert Box shall allow users to selectively display or hide any combination of individual classes of alerts	CA005B	FHPCAD	4.2
FEAT35.4.15	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)	CA005B1	FHPCAD	4.2
FEAT35.4.16	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.	CA005C	FHPCAD	4.2
FEAT35.4.16.1	Archive alert	This alert shall be archived in SunGuide.	CA005C1	FHPCAD	4.2
FEAT35.4.16.2	Alert chronology	This alert shall be part of the event chrono indicating the FHP CAD closed the event	CA005C2	FHPCAD	4.2

FEAT35.4.16.3	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	CA005C3	FHPCAD	4.2
FEAT35.4.16.4	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	CA005C4	FHPCAD	4.2
FEAT35.4.16.5	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	CA005C5	FHPCAD	4.2
FEAT35.4.2	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	CA005A1	FHPCAD	4
FEAT35.4.22	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.	CA005E	FHPCAD	4.2

FEAT35.4.23	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	CA005S1	FHPCAD	4.2
FEAT35.4.24	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	CA005S2	FHPCAD	4.2
FEAT35.4.25	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	CA005S3	FHPCAD	4.2
FEAT35.4.26	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.	CA005S4	FHPCAD	4.2
FEAT35.4.27	Archiving alerts from FHP CAD system	SunGuide shall archive alerts from the FHP CAD system	CA0006D	FHPCAD	4.2
FEAT35.4.27.1	Archive timestamp	SunGuide shall archibe generated timestamps associated with those alerts.	CA006D1	FHPCAD	4.2
FEAT35.4.27.2	Archive first received alert	SunGuide shall archive the first received alert with its timestamp.	CA006D2	FHPCAD	4.2
FEAT35.4.27.3	Archive alert changes	SunGuide shall archive changes to the alerts with their timestamps.	CA006D3	FHPCAD	4.2
FEAT35.4.27.4	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.	CA006D4	FHPCAD	4.2

FEAT35.4.3	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)	CA005A2	FHPCAD	4
FEAT35.4.4	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.	CA003N	FHPCAD	4
FEAT35.4.5	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.	CA003N1	FHPCAD	4
FEAT35.4.6	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.	CA002D	FHPCAD	4
FEAT35.4.7	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.	CA002D1	FHPCAD	4
FEAT35.4.8	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.	CA002D2	FHPCAD	4
FEAT35.4.9	Display FHP CAD events on map	SunGuide events created from FHP CAD incidents shall be displayed on the SunGuide operator map.	CA003G	FHPCAD	4
FEAT35.5	Operator Interaction			FHPCAD	4.3
FEAT35.5.1	Logged-in users	THe GUI Preference Manager shall maintain a list of currently logged-in users.	US001	FHPCAD	4.2

FEAT35.5.10	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.	US003P	FHPCAD	4.2
FEAT35.5.11	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.	US003R	FHPCAD	4.2
FEAT35.5.12	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.	US003S	FHPCAD	4.2
FEAT35.5.13	Request Action on another user	The GUI Preference Manager shall provide a method for a user to request an action of another user.	US004	FHPCAD	4.2
FEAT35.5.14	Record user requests	The GUI Preference Manager shall record all user to user requests and any selected responses to those requests in the database.	US004D	FHPCAD	4.2
FEAT35.5.15	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.	US004R	FHPCAD	4.2
FEAT35.5.16	Possible response of request with text description	A possible response shall include a text description of the action selecting that response will invoke.	US004R1	FHPCAD	4.2
FEAT35.5.17	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.	US004R2	FHPCAD	4.2
FEAT35.5.18	Request from one user to another with text description	A user request to another user shall include a text description of the requested action.	US004T	FHPCAD	4.2
FEAT35.5.19	User's action awaiting response	The GUI shall indicate to a user when an action is awaiting another user's response.	US005	FHPCAD	4.2
FEAT35.5.2	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.	US001P	FHPCAD	4.2

FEAT35.5.20	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.	US005P	FHPCAD	4.2
FEAT35.5.21	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.	US005R	FHPCAD	4.2
FEAT35.5.22	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.	US006	FHPCAD	4.2
FEAT35.5.23	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.	US006U	FHPCAD	4.2
FEAT35.5.24	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.	US006C	FHPCAD	4.2
FEAT35.5.25	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.	US006F	FHPCAD	4.2
FEAT35.5.3	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	US001R	FHPCAD	4.2
FEAT35.5.4	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.	US001S	FHPCAD	4.2
FEAT35.5.5	User Type attribute	SunGuide users shall have a User Type attribute associated to their user record.	US002	FHPCAD	4.2

FEAT35.5.5.1	User Type attribute "belonging to" a human	The User Type attribute shall allow a user record to be identified as "belonging to" a human.	US002H	FHPCAD	4.2
FEAT35.5.5.2	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	US002S	FHPCAD	4.2
FEAT35.5.8	Maintain list of users	The GUI Preference Manager shall maintain a list of all defined users.	US003	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
FEAT4	Inventory Management System (IMS)			IMS	2
FEAT4.1	System			IMS	2
FEAT4.1.1	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).	S022	IMS	2
FEAT4.1.10	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.	IM005	IMS	2
FEAT4.1.11	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.	IM006	IMS	2
FEAT4.1.2	Index by equipment type	The inventory/maintenance software database shall index by equipment type for the purpose of reporting and updating the inventory.	IM002	IMS	2
FEAT4.1.3	Vendor name referenced by equipment type ID.	The vendor name shall be referenced by the equipment type identification.	IM001D	IMS	2

FEAT4.1.4	Reports provided by type ID	Reports shall be provided by type identification for all equipment according to equipment status.	IM001R	IMS	2
FEAT4.1.5	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.	IM002D	IMS	2
FEAT4.1.6	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.	IM003D	IMS	2
FEAT4.1.7	Equipment status categories	The equipment status shall be:· In inventory;· Installed; or· In repair/test.	IM005D	IMS	2
FEAT4.1.8	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.	IM004	IMS	2
FEAT4.1.9	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.	IM006D	IMS	2
FEAT4.2	GUI			GUI	1
FEAT4.2.1	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.	IM001	GUI	2

FEAT4.2.2	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.	IM003	GUI	2
FEAT4.2.3	Print reports GUI	All printed reports of the inventory software shall be selected via a GUI menu.	IM002R	GUI	2
FEAT4.2.4	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.	IM004D	GUI	2
FEAT4.2.5	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.	ID001W	GUI	2
FEAT4.2.6	Repair status display	The repair status of a specific piece of equipment shall be displayed to the operator.	IM007	GUI	2
FEAT47	Connected Vehicles (CVS)	The software shall implement "Connected Vehicle" functionality.		CVS	5.1
FEAT47.1	Configure RSEs	The software shall provide the capability to configure roadside equipment (RSE).	CV001	CVS	5.1
FEAT47.10	Archive CV Data	The software shall archive "Connected Vehicle" data	CV009	CVS	5.1
FEAT47.11	CV in the GUI	The software's Graphical User Interface (GUI) shall support the ability to display "Connected Vehicle" data	CV010	CVS	5.1
FEAT47.12	Traveler Advisory Messages	The software shall provide operators the ability to generate and manage Traveler Advisory Messages (TAM)	CV011	CVS	5.1
FEAT47.13	User may Configure RSEs	The software shall provide the user the ability to configure RSEs	CV012	CVS	5.1
FEAT47.14	Review RSE Configuration Errors	The software shall provide a method to review possible errors of configuration of Connected Vehicle TSS integration	CV015	CVS	5.1

FEAT47.15	Add TAM to Response Plan	The software shall provide the ability to add a TAM to a response plan	CV013	CVS	5.1
FEAT47.16	CV in C2C	The software shall broadcast "Connected Vehicle" data via Center-to-Center (C2C)	CV014	CVS	5.1
FEAT47.17	Connected Vehicle SDN Connectivity	The software shall support the ability to communicate with a Service Delivery Node (SDN).	CV015	CVS	5.1
FEAT47.3	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.	CV002	CVS	5.1
FEAT47.4	RSEs as Detectors	The software shall provide the ability to configure TSS detectors to use RSE probe data as the data source.	CV003	CVS	5.1
FEAT47.5	Zone Id to TSS Link	The software shall provide the ability to associate an RSE Zone Id to a TSS link	CV004	CVS	5.1
FEAT47.6	CV in Response Plans	The software shall provide the ability to configure "Connected Vehicle" messages used by response plans	CV005	CVS	5.1
FEAT47.7	Receive CV data	The software shall be capable of receiving "Connected Vehicle" data	CV006	CVS	5.1
FEAT47.8	Traveler Information	The software shall transmit generated traveler information	CV007	CVS	5.1
FEAT47.9	Presentation Region Offset	The SunGuide configuration file will include a parameter specifying a presentation region offset used when automatically generating a presentation region	CV008	CVS	5.1
FEAT5	Incident Management (IM)			IM	1
FEAT5.1	General			IM	1

FEAT5.1.1	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.	TM002	EM	1
FEAT5.1.2	Incident type	The incident management function shall support operator entry of the incident type such as HAZMAT spills.	TM003W	EM	1
FEAT5.1.3	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.	A009	EM	1
FEAT5.1.4	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.	TM001	EM	1
FEAT5.1.5	Limit to one phase messages	The system shall have a configuration setting that specifies only one phase messages will be generated.	DM008D	EM	3
FEAT5.1.6	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.	DM009D	EM	2
FEAT5.2	Detect			IM	1
FEAT5.2.1	Incident detection	The SunGuide software shall provide software for incident detection along the limited-access facilities.	A001	EM	1

FEAT5.2.2	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.	ID001	IM	1
FEAT5.2.3	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.	ID002	IM	1
FEAT5.2.4	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.	ID003	IM	1
FEAT5.2.5	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).	ID004	IM	1
FEAT5.2.6	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.	ID002W	IM	1

FEAT5.3	Manage			IM	1
FEAT5.3.1	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.	TM001R	EM	1
FEAT5.3.10	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.	TM005	IM	1
FEAT5.3.11	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.	TM004	EM	1
FEAT5.3.12	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.	TM001I	EM	1
FEAT5.3.13	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.	TM004R	IM	1
FEAT5.3.14	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.	TM006	EM	1

FEAT5.3.15	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.	TM007	EM	1
FEAT5.3.16	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.	TM008	EM	1
FEAT5.3.17	Catalog of FDOT resources	Included in the catalog shall be the resource, location, cost of service, and availability of related equipment and resources.	TM011R	EM	1
FEAT5.3.18	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).	A006	EM	1
FEAT5.3.19	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.	ID005	IM	1
FEAT5.3.2	Messaging	The incident management software will provide the ability to redirect incident information to standard message services (such as FAX, email, pagers).	TM002R	EM	1
FEAT5.3.20	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	A010	EM	2

FEAT5.3.21	Management and dispatch of RR Service Patrols	The SunGuide software shall provide software for the management, dispatch, and coordination of Road Rangers Service Patrols.	A012	RR	3
FEAT5.3.22	Coordination of freeway incident management team	The SunGuide software shall provide software for coordination with a freeway incident management team involving major stakeholders.	A015	EM	2
FEAT5.3.23	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.	A022	EM	1
FEAT5.3.24	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.	A023	EM	2
FEAT5.3.25	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).	TM010R1	EM	1
FEAT5.3.26	Milepost entry	An incident record shall contain a text field for entry of milepost location information.	TM014R	EM	3
FEAT5.3.27	Roadway association	Incidents shall always be associated with a roadway defined in the SunGuide network.	TM015R	EM	1
FEAT5.3.28	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.	TM005R1	EM	1

FEAT5.3.29	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.	TM012	EM	1
FEAT5.3.3	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.	TM003R	IM	1
FEAT5.3.30	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.	DM011M	RPG	1
FEAT5.3.31	Cancel response plan	When an incident is closed, the response plan associated with the incident shall be cancelled.	TM014	EM	1
FEAT5.3.32	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.	TM016R	EM	1
FEAT5.3.33	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.	DM016M	IM	2.1
FEAT5.3.34	Fonts in response plan messages	The incident management function shall use each DMS' font characteristics to determine response plan messages.	TM001P	RPG	2.1
FEAT5.3.35	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).	DM005M6	RPG	2.1

FEAT5.3.4	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.	TM005R	EM	1
FEAT5.3.5	Recommend a set of HAR messages	The incident management response function shall recommend a set of HAR messages to be activated.	TM006R	IM	2
FEAT5.3.6	Recommend alternate routes	The incident management response function shall recommend alternate routes in response to incidents that are blocking roadways.	TM007R	EM	1
FEAT5.3.7	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.	TM008R	EM	1
FEAT5.3.8	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.	TM009R	EM	2
FEAT5.3.9	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.	TM010R	EM	1
FEAT5.4	Incident ownership			IM	1
FEAT5.4.1	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.	IM008	EM	1
FEAT5.4.2	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.	IM007O	EM	1
FEAT5.4.3	Log ownership changes	All ownership changes need to be logged to the IM database.	IM007O1	EM	1

FEAT5.4.4	Only owner can modify incident	Only the "owning" operator shall be able to make changes to an incident.	IM001O	IM	1
FEAT5.4.5	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.	IM003O	EM	1
FEAT5.4.7	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.	TM002B	EM	3
FEAT53	INRIX	SunGuide shall support the use of INRIX traffic data.	TD007	GUI	5.1
FEAT53.1	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.	TD007I	GUI	5.1
FEAT53.1.1	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.	TD007I1	INRIX	5.0.4
FEAT53.1.2	County List	The INRIX C2C Publisher component shall only publish data from links within a configurable list of counties.	TD007I2	INRIX	5.0.4
FEAT53.1.3	Traffic Condition Data	The INRIX C2C Publisher component shall publish C2C Traffic Condition data.	TD007I3	INRIX	5.0.4
FEAT53.1.4	Speed Data	The INRIX C2C Publisher component shall publish C2C Speed data.	TD007I4	INRIX	5.0.4
FEAT53.1.5	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.	TD007I5	INRIX	5.0.4
FEAT53.1.6	NAVTEQ Source Data	The INRIX C2C Publisher component shall publish link midpoints based on known map information in a NAVTEQ map source.	TD007I6	INRIX	5.0.4
FEAT53.1.7	Comm Failures	The INRIX C2C Publisher component shall notify SunGuide of INRIX data source communication failures.	TD007I7	INRIX	5.0.4

FEAT53.2	INRIX GUI	The SunGuide Operator Map shall support the display of C2C Traffic Condition data.	TD007O	INRIX	5.0.4
FEAT53.2.1	Display Traffic Condition Data	The SunGuide Operator Map shall display C2C Traffic Condition data using on-map link diagrams.	TD007O1	INRIX	5.0.4
FEAT53.2.2	Selected Networks	The SunGuide Operator Map shall only display C2C Traffic Condition data from networks selected by the operator.	TD007O2	INRIX	5.0.4
FEAT53.3	INRIX Access	SunGuide shall support limiting access of INRIX traffic data to authorized users.	TD007O3	INRIX	5.0.4
FEAT53.3.1	CSV Writing	The SunGuide Data Archive component shall block the writing of restricted data to the TSS CSV files.	TD007O4	INRIX	5.0.4
FEAT53.3.2	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.	TD007O5	INRIX	5.0.4
FEAT53.3.3	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.	TD007O6	INRIX	5.0.4
FEAT57	SPARR	SunGuide shall support a Road Ranger Application on a smart phone.		SPARR	5.0.5
FEAT59	Data Archive RITIS		DAR001	DAR	5.1.1
FEAT59.1	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)	DAR002	DAR	5.1.1

		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			
FEAT59.2	Event Archive Data	26.ModifyOrganizationResp	DAR003	DAR	5.1.1
FEAT59.3	Configurable Time Interval	The software shall compress the archive on a configurable time interval.	DAR004	DAR	5.1.1
FEAT59.4	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	DAR005	DAR	5.1.1
FEAT59.5	FTP Disconnection	In the event the FTP is unavailable, the software shall write the archive files to the local file system.	DAR006	DAR	5.1.1

FEAT59.5.1	FTP reconnection	When the FTP becomes available, the local archive files that were not uploaded, will be sent to the FTP site.	DAR006A	DAR	5.1.1
FEAT59.5.2	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	DAR006B	DAR	5.1.1
FEAT6	Data Distribution (DD)			DD	1
FEAT6.1	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.	S010	DD	1
FEAT6.2	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.	DD001	DD	1
FEAT6.3	Data selection	The user shall be capable of selecting the data to be displayed by the data distribution function.	DD002	DD	1
FEAT62	Installer	The release package shall include an installer and an installer manager to configure application servers to execute the SunGuide software.	INS-1		6.1
FEAT62.1	Other software packages	The installer shall install software packages which are required for execution of the selected components.	INS-1A	INSTALLER	6.1
FEAT62.2	Disallow web site component without web server	The installer shall disallow installation of web site components on servers which do not have a compatible web server installed.	INS-1B	INSTALLER	6.1
FEAT62.3	Verify valid configuration file	The installer shall verify the configuration file is valid prior to performing an installation of the software.	INS-1C	INSTALLER	6.1
FEAT62.4	Deployment enviroment description file	The installer manager shall use a deployment environment description file that describes the target environment in which to deploy the software.	INS-1D	INSTALLER	6.1

FEAT62.4.1	Deployment file	The deployment environment description file shall contain installation templates and server information.	INS-1D1	INSTALLER	6.1
FEAT62.4.1.1	Deployment file contents	Installation templates shall describe the target machine architecture, modules to install, and configuration information.	INS-1D1A	INSTALLER	6.1
FEAT62.4.1.2	Template and user credentials	Server information shall specify an installation template and optionally user credentials for use during installation.	INS-1D1B	INSTALLER	6.1
FEAT62.4.2	Load Deployment Description File	The installer manager shall load information about the deployment environment from a user specified deployment environment description file.	INS-1D2	INSTALLER	6.1
FEAT62.5	Command line execution	The installer manager shall allow command line execution of the SunGuide installer without using a standard installation GUI.	INS-1E	INSTALLER	6.1
FEAT62.5.1	Read Deployment Configuration File	The command line installation tool shall read installation parameters from a system deployment configuration file.	INS-1E1	INSTALLER	6.1
FEAT62.5.2	No Human Interaction	The command line installation tool shall run the SunGuide installer without requiring human intervention when launched with parameters specifying an installation template and a system deployment environment configuration file.	INS-1E2	INSTALLER	6.1
FEAT62.5.3	Remote Installation	The command line installation tool shall deploy the software to a target application server which is remote to the computer the tool runs on.	INS-1E3	INSTALLER	6.1
FEAT62.5.3.1	Remote Installation via command line	The command line installation tool shall allow a remote application server to be specified as a command line option.	INS-1E3A	INSTALLER	6.1
FEAT62.5.3.2	Remote installation via GUI	The installer manager shall deploy the software to a set of selected target application servers which are remote to the computer the GUI runs on.	INS-1E3B	INSTALLER	6.1

FEAT62.6	GUI Installation Tool	The installer manager shall provide a GUI tool to assist users with the installation of the SunGuide software.	INS-1F	INSTALLER	6.1
FEAT62.6.1	Installation templates	The installer manager shall allow a user to configure the installation templates.	INS-1F1	INSTALLER	6.1
FEAT62.6.2	Write deployment configuration file	The installer manager shall provide the ability to write the installation configuration into a system deployment configuration file.	INS-1F2	INSTALLER	6.1
FEAT62.6.3	Target Application Servers	The installer manager shall allow the user to manage a list of possible target application servers.	INS-1F3	INSTALLER	6.1
FEAT62.6.4	Deployment Servers entry	The installer manager shall allow the user to manually enter one or more hostnames or IP addresses on which to deploy the software.	INS-1F4	INSTALLER	6.1
FEAT62.7	GUI Config file verification Tool	The software shall provide a GUI tool that allows users to modify the SunGuide configuration file.	INS-1G	INSTALLER	6.1
FEAT62.7.1	Validate the Config File	The SunGuide configuration editor will validate the SunGuide configuration file.	INS-1G1	INSTALLER	6.1
FEAT62.7.1.1	Correcting the configuration	If the user specified configuration file is not valid, the installer shall allow the user to correct the file using the configuration file editor tool.	INS-1G1A	INSTALLER	6.1
FEAT62.7.2	Present valid options for configuration	The SunGuide configuration editor shall present to the user valid options for missing or invalid configuration values.	INS-1G2	INSTALLER	6.1
FEAT62.7.3	Default Values	The SunGuide configuration editor shall suggest default values for missing or invalid configuration values when presenting the options to the user if appropriate default values exist.	INS-1G3	INSTALLER	6.1
FEAT62.8	Centrally maintained reports	The installer shall deploy a set of centrally maintained reports.	INS-1H	INSTALLER	6.1
FEAT62.8.1	Execute Centrally Centrally Maintained reports	The software shall allow the user to execute reports from the set of centrally maintained reports provided by the installer.	INS-1H1	INSTALLER	6.1

FEAT62.8.2	Execute Deployment Specific Reports	The software shall allow the user to execute reports from the set of deployment specific reports that are configured by the system administrator post installation.	INS-1H2	INSTALLER	6.1
FEAT62.9	Configuration data hosting	The configuration and operational data that is dynamic or deployment specific shall all be contained in the SunGuide database or capable of being hosted on the deployment's application network shared folder	INS-1J	INSTALLER	6.1
FEAT63	Toolset	The release package shall include custom (non-OTS) tools necessary to maintain a SunGuide Software deployment.	TOOLS000	TOOLSET	6.1
FEAT63.1	Log Messages	The software shall log message within the application with an option for a user to save to log for later review.	TOOLS001	TOOLSET	6.1
FEAT63.2	Database Management Tool	The software shall include a database management tool.	TOOLS002	TOOLSET	6.1
FEAT63.2.1	Perform backups	The database management tool shall perform backups of a database.	TOOLS002A	TOOLSET	6.1
FEAT63.2.1.1	Oracle Database Backup	The database management tool shall provide a method of performing a backup of an Oracle database.	TOOLS002A1	TOOLSET	6.1
FEAT63.2.1.2	SQL database backups	The database management tool shall provide a method of performing a backup on a SQL database.	TOOLS002A2	TOOLSET	6.1
FEAT63.2.1.3	Command line options	The database management tool shall allow a backup for Oracle or SQL to be performed via the command line using the same options available to the user via the GUI Interface.	TOOLS002A3	TOOLSET	6.1
FEAT63.2.2	Restore Backups	The database management tool shall perform a restore of a database.	TOOLS002B	TOOLSET	6.1
FEAT63.2.2.1	Restore Oracle database	The database management tool shall provide a method of performing a restore of an Oracle database.	TOOLS002B1	TOOLSET	6.1
FEAT63.2.2.2	Restore SQL Database	The database management tool shall provide a method of performing a restore on a SQL database.	TOOLS002B2	TOOLSET	6.1

FEAT63.2.2.3	Command line options	The database management tool shall allow a restore for Oracle or SQL to be performed via the command line using the same options available to the user via the GUI Interface.	TOOLS002B3	TOOLSET	6.1
FEAT63.3	Backup Tool	The software shall include a deployment configuration backup tool.	TOOLS003	TOOLSET	6.1
FEAT63.3.1	Backup File List	A deployment configuration file shall contain a list of files on which the configuration backup tool shall perform a backup.	TOOLS003A	TOOLSET	6.1
FEAT63.3.2	Zip Files	The configuration backup tool shall create a zip file containing the files defined in the deployment configuration file and store the output in a user defined directory.	TOOLS003B	TOOLSET	6.1
FEAT63.3.3	Command Line Option	The configuration backup tool shall allow a backup of the file specified in a deployment configuration file to be performed via the command line using the same options available to the user via the GUI Interface.	TOOLS003C	TOOLSET	6.1
FEAT63.4	Restore Tool	The software shall include a deployment configuration restore tool.	TOOLS004	TOOLSET	6.1
FEAT63.4.1	Restore Configuration Files	The configuration restore tool shall restore the files in a zip file created using the configuration backup tool to their original location on the file system.	TOOLS004A	TOOLSET	6.1
FEAT63.5	Migration Tool	The software shall include a tool to migrate operational data between two databases.	TOOLS005	TOOLSET	6.1
FEAT63.5.1	Database Connection Information	The migration tool shall allow a user to input connection information for a source database and connection information for a target database.	TOOLS005A	TOOLSET	6.1
FEAT63.5.1.1	Supported Databases	The migration tool shall support both Oracle 11G and SQL Server 2012 and above.	TOOLS005A1	TOOLSET	6.1

FEAT63.5.2	Migrated Data Types	The migration tool shall support the migration of the following data types; AVLRR Vehicle History, CCTV Lock History, CVS Archive, Device Status Archive, Event Data, Process State Archive Data, TSS Archive Data, Travel Time Archive Data, and Video Switching Source Blockage History.	TOOLS005B	TOOLSET	6.1
FEAT63.5.2.1	Migrating a range of data	For each data type, the user may select between migrating all data in the database and migrating data between a specific date range.	TOOLS005B1	TOOLSET	6.1
FEAT63.6	Bulk Modification Tool	The software shall include a tool to import, update, delete, and export multiple devices in the same time.	TOOLS006	TOOLSET	6.1
FEAT63.6.1	Bulk Insertion Data Types	The import/update/delete tool shall provide a spreadsheet that will allow the user to input the necessary information to configure the following device types; Cameras, DMS Fonts, DMS Signs, HARs, RWIS, Safety Barriers, TSS Detectors, TSS Links, and TSS Lanes.	TOOLS006A	TOOLSET	6.1
FEAT63.6.2	Version Selection	The import/update/delete tool shall allow the user to select the version of SunGuide in which to import, the current SunGuide configuration file for that installation, and the import spreadsheet.	TOOLS006B	TOOLSET	6.1
FEAT63.6.3	Selectable Data Types	The import/update/delete tool shall allow the user to select data types to import into their SunGuide installation.	TOOLS006C	TOOLSET	6.1
FEAT63.6.4	Export File Location	The export tool shall allow a user to select a file location and choose a name of the Excel file that will be generated for the export.	TOOLS006D	TOOLSET	6.1
FEAT63.6.5	Exportable Types	The export tool shall allow the user to export the following data types to an Excel file; Cameras, DMS Fonts, DMS Signs, HARs, RWIS, Safety Barriers, TSS Detectors, TSS Links, and TSS Lanes.	TOOLS006E	TOOLSET	6.1
FEAT64	Nokia	SunGuide shall support the use of Nokia traffic data.	NOK007	NOKIA	6.1

FEAT64.1	Interface Specification	SunGuide shall provide an interface to Nokia traffic data source that provides data that conforms to the Navteq Realtime Flow Feed Specification Version 2.1.0 September 20th, 2012.	NOK007I	NOKIA	6.1
FEAT64.1.1	Publish Nokia Data	An Nokia C2C Publisher component shall publish Nokia traffic data to the C2C infrastructure, thus making it available to SunGuide and FL-ATIS.	NOK007I1	NOKIA	6.1
FEAT64.1.1.1	Mark as Non-distribution	When publishing TSS traffic condition data records, the Nokia C2C Publisher component shall mark such data records as not for redistribution to third parties.	NOK007I1A	NOKIA	6.1
FEAT64.1.1.2	Network and Center Id	The Nokia C2C Publisher component shall include as the network or center ID of each record a configurable value specified in the SunGuide configuration file.	NOK007I1B	NOKIA	6.1
FEAT64.1.1.3	Confidence Value	If the confidence value received from the Nokia data source for a C2C link is below a minimum confidence level specified in the SunGuide configuration file, the Nokia C2C Publisher will not publish a update for that C2C link.	NOK007I1C	NOKIA	6.1
FEAT64.1.1.4	Configurable Level	The Nokia C2C Publisher component shall retrieve data from the Nokia traffic data source at a configurable interval determined in the SunGuide configuration file.	NOK007I1D	NOKIA	6.1
FEAT64.1.2	County List	The Nokia C2C Publisher component shall only publish data from links within a configurable list of counties.	NOK007I2	NOKIA	6.1
FEAT64.1.2.1	Retrieve County List	The Nokia C2C Publisher component shall retrieve the list of counties from which to publish data from the SunGuide configuration file.	NOK007I2A	NOKIA	6.1
FEAT64.1.2.2	Publish Configured Counties	The Nokia C2C Publisher component shall publish link data for each link provided by the Nokia traffic data source which is identified as belonging to a county included in the list of counties from which to publish data.	NOK007I2B	NOKIA	6.1

FEAT64.1.3	Traffic Condition Data	The Nokia C2C Publisher component shall publish C2C Traffic Condition data.	NOK007I3	NOKIA	6.1
FEAT64.1.3.1	Publish Most Recent Mean Speed	While the connection to the Nokia traffic data source is established, the Nokia C2C Publisher component shall publish the most recently provided averaged speed data from the Nokia traffic data source for each published link.	NOK007I3A	NOKIA	6.1
FEAT64.1.4	Speed Data	The Nokia C2C Publisher component shall publish C2C Speed data.	NOK007I4	NOKIA	6.1
FEAT64.1.4.1	Periodic Publish of Data	While the connection to the Nokia traffic data source is established, the Nokia C2C Publisher component shall periodically publish the averaged speed data from the Nokia traffic data source for each published link.	NOK007I4A	NOKIA	6.1
FEAT64.1.5	Link and Node Data	The Nokia C2C Publisher component shall publish C2C Link and Node data relevant to the Traffic Condition and Speed links being published.	NOK007I5	NOKIA	6.1
FEAT64.1.5.1	Publish C2C Nodes	The Nokia C2C Publisher component shall publish a list of C2C Nodes containing the start and end locations of each Nokia link being published.	NOK007I5A	NOKIA	6.1
FEAT64.1.5.2	Unique Node Ids	The Nokia C2C Publisher component shall assign each published node an identifier unique to that instance of the Publisher.	NOK007I5B	NOKIA	6.1
FEAT64.1.5.3	Publish Lat Lon Data	The Nokia C2C Publisher component shall publish the latitude and longitude from the Nokia traffic data source for each published node.	NOK007I5C	NOKIA	6.1
FEAT64.1.5.4	Link Identifier	The Nokia C2C Publisher component shall assign each published link a unique identifier based on the Nokia link identifier, roadway, direction, county, or other identifying information.	NOK007I5D	NOKIA	6.1
FEAT64.1.5.5	Required Link Data	The Nokia C2C Publisher component shall publish the most recently provided roadway name, direction, county, distance, start node, and end node from the Nokia traffic data source for each published link.	NOK007I5E	NOKIA	6.1

FEAT64.1.5.6	Midpoint Data	The Nokia C2C Publisher component shall publish link midpoints for each published link where midpoints could be determined.	NOK007I5F	NOKIA	6.1
FEAT64.1.6	NAVTEQ Source Data	The Nokia C2C Publisher component shall publish link midpoints based on known map information in a NAVTEQ map source.	NOK007I6	NOKIA	6.1
FEAT64.1.6.1	Matching TMC Ids	The Nokia 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.	NOK007I6A	NOKIA	6.1
FEAT64.1.6.2	Minimum Midpoint Spacing	The Nokia C2C Publisher component shall read a minimum midpoint spacing parameter from the SunGuide configuration file.	NOK007I6B	NOKIA	6.1
FEAT64.1.6.3	Publish All Midpoints	When publishing midpoints for a published link, the Nokia C2C Publisher shall publish each midpoint defined by the SunGuide map source for the link, unless that midpoint violates the spacing requirements of NOK007I6D and NOK007I6E.	NOK007I6C	NOKIA	6.1
FEAT64.1.6.4	Sequential Midpoint evaluation	When determining which midpoints may be published, the Nokia C2C Publisher shall sequentially evaluate each midpoint, beginning with the midpoint nearest the start node of the link.	NOK007I6D	NOKIA	6.1
FEAT64.1.6.5	Midpoint Exclusion Criteria	When determining which midpoints may be published, the Nokia 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.	NOK007I6E	NOKIA	6.1
FEAT64.1.7	Comm Failures	The Nokia C2C Publisher component shall notify SunGuide of Nokia data source communication failures.	NOK007I7	NOKIA	6.1
FEAT64.1.7.1	Databus Connection	The Nokia C2C Publisher component shall connect to Databus as other SunGuide providers do.	NOK007I7A	NOKIA	6.1

FEAT64.1.7.2	Nokia Permissions	The Nokia C2C Publisher shall allow a client with appropriate permissions to subscribe to communication alert notifications.	NOK007I7B	NOKIA	6.1
FEAT64.1.7.3	Disconnection Alert	If the connection to the Nokia data source is determined to be lost, the Nokia C2C Publisher shall send an alert message to all subscribed clients indicating a loss of communication to the Nokia data source.	NOK007I7C	NOKIA	6.1
FEAT64.1.7.4	Alert Frequency	While the connection to the Nokia data source is lost, the Nokia 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.	NOK007I7D	NOKIA	6.1
FEAT65	System Administration Application (SAA)			SAA	6.1
FEAT65.1	Protocol	SAA shall communicate with clients via Transmission Control Protocol/Internet Protocol (TCP/IP)	SAA-SYS-1	SAA	6.1
FEAT65.2	Logging	SAA shall use Status Logger to log activity messages.	SAA-SYS-2	SAA	6.1
FEAT65.3	Process Control	SAA shall interface with Executive Handler to provide process control and monitoring.	SAA-SYS-3	SAA	6.1
FEAT65.4	Service	SAA shall run as a windows service.	SAA-SYS-4	SAA	6.1
FEAT65.5	Manage User Information	SAA shall manage user information.	SAA-UC-1	SAA	6.1
FEAT65.5.1	Add Users	SAA shall allow an authorized user to add users to the system.	SAA-UC-1.1	SAA	6.1
FEAT65.5.10	Retrieve All Users	SAA shall allow a list of all users in the system to be retrieved.	SAA-UC -1.11	SAA	6.1
FEAT65.5.11	Retrieve User Groups	SAA shall allow a list of all user groups in the system to be retrieved.	SAA-UC -1.12	SAA	6.1
FEAT65.5.12	User Types	SAA shall associate a user type (normal, system, remote) with each user.	SAA-UC -1.13	SAA	6.1
FEAT65.5.13	Optional Email	The email field for users shall be optional.	SAA-UC -1.14	SAA	6.1

FEAT65.5.14	Bulk Equipment Permissions	SAA shall allow equipment permissions for multiple users to be sent as one operation.	SAA-UC -1.15	SAA	6.1
FEAT65.5.15	First Name Field	The first name field for users shall be optional.	SAA-UC -1.16	SAA	6.1
FEAT65.5.16	Last Name Field	The last name field for users shall be optional.	SAA-UC -1.17	SAA	6.1
FEAT65.5.17	Description Field	The description field for users shall be optional.	SAA-UC -1.18	SAA	6.1
FEAT65.5.2	Modify Users	SAA shall allow an authorized user to modify users in the system.	SAA-UC-1.2	SAA	6.1
FEAT65.5.3	Delete Users	SAA shall allow an authorized user to delete a user from the system.	SAA-UC-1.3	SAA	6.1
FEAT65.5.4	Retrieve Users	SAA shall allow a user to be retrieved.	SAA-UC-1.4	SAA	6.1
FEAT65.5.5	Change Password	A user shall be able to change his/her own password.	SAA-UC-1.5	SAA	6.1
FEAT65.5.5.1	Password Expiration Notification	Upon login, SAA shall notify users of whether or not a password change is required.	SAA-UC-1.5.1	SAA	6.1
FEAT65.5.6	Admin Password Reset	SAA shall allow an authorized user to reset another user's password.	SAA-UC-1.6	SAA	6.1
FEAT65.5.7	Store User Credentials	SAA shall store user credentials.	SAA-UC-1.7	SAA	6.1
FEAT65.5.7.1	User Permission Storage	SAA shall be able to store an application or subsystem's true/false permissions for a user.	SAA-UC-1.7.1	SAA	6.1
FEAT65.5.7.2	Equipment Permissions	SAA shall be able to store a subsystem's equipment permissions for a user.	SAA-UC-1.7.2	SAA	6.1
FEAT65.5.7.3	Metadata Information	SAA shall be able to store subsystem or application's metadata information for a user.	SAA-UC-1.7.3	SAA	6.1
FEAT65.5.7.4	IDB Schema	SAA shall use the IDB user schema to store and retrieve user credentials.	SAA-UC-1.7.4	SAA	6.1
FEAT65.5.7.5	Combined group and user permissions	SAA shall provide a mode of operation where a user's group and individual permissions are combined to obtain permissions.	SAA-UC-1.7.6	SAA	6.1
FEAT65.5.7.6	Group Membership permissions	SAA shall provide a mode of operation where only a user's group membership is used to obtain permissions.	SAA-UC-1.7.7	SAA	6.1
FEAT65.5.7.7	Authorized User Changes	SAA shall allow authorized users to subscribe to changes in user credentials.	SAA-UC-1.7.8	SAA	6.1
FEAT65.5.8	Manage User Groups	SAA shall be able to manage user groups	SAA-UC -1.9	SAA	6.1

FEAT65.5.8.1	List of Group Permissions	User groups shall contain a list of the permissions for users in the group	SAA-UC -1.9.1	SAA	6.1
FEAT65.5.8.2	Unlimited Group Membership	Users shall be allowed to be members of any number of groups.	SAA-UC -1.9.2	SAA	6.1
FEAT65.5.8.3	Add Users	SAA shall allow a user group to be added.	SAA-UC -1.9.3	SAA	6.1
FEAT65.5.8.4	Modify Users	SAA shall allow a user group to be modified.	SAA-UC -1.9.4	SAA	6.1
FEAT65.5.8.5	Delete Users	SAA shall allow a user group to be deleted.	SAA-UC -1.9.5	SAA	6.1
FEAT65.5.8.6	Retrieve Users	SAA shall allow a user group to be retrieved.	SAA-UC -1.9.6	SAA	6.1
FEAT65.5.8.7	Retrieve Group Users	SAA shall allow a list of users to be retrieved for a group.	SAA-UC -1.9.7	SAA	6.1
FEAT65.5.9	Retrieve Permissions	SAA shall allow the list of permissions for a process to be retrieved.	SAA-UC -1.10	SAA	6.1
FEAT65.6	See Users Logged In	SAA shall allow a user to view all users currently logged into the system.	SAA-UC-3	SAA	6.1
FEAT65.7	Allow config data to be retrieved	SAA shall allow SAA configuration data to be retrieved.	SAA-AC-1	SAA	6.1
FEAT65.8	Permission Model	An authorized user shall be able to configure the permission model used to determine user permissions.	SAA-AC-4	SAA	6.1
FEAT65.9	Password Expiration	An authorized user shall be able to configure the duration for expiring passwords.	SAA-AC-5	SAA	6.1
FEAT66	Beacon Management Subsystem (BMS)			BMS	6.1
FEAT66.1	Web Relay Protocol	The software shall support the web relay device protocol to control beacons descripted by the X-301-Manual located here: http://www.controlbyweb.com/x301/X-301_Manual-v1.4.pdf.	BMS001	BMS	6.1
FEAT66.2	Manage Devices	The software shall allow a user to add, modify, and delete beacons.	BMS002	BMS	6.1
FEAT66.2.1	Configuration Information	Configuration information for a beacon shall include display name, IP address, port, latitude/longitude, roadway, direction, and description.	BMS002A	BMS	6.1

FEAT66.3	Static Sign Message	The software shall allow the operator to associate beacons to a static sign message	BMS003	BMS	6.1
FEAT66.3.1	Map to Event Type	The software shall allow the operator to associate beacons to an operational purpose that can be mapped to an event type. The only currently supported type will be Visibility.	BMS003A	BMS	6.1
FEAT66.4	Activation Request	The software shall allow a user to create a beacon activation request.	BMS004	BMS	6.1
FEAT66.5	Termination Request	The software shall allow a user to terminate a beacon activation request.	BMS005	BMS	6.1
FEAT66.6	Terminate All Activation Requests	The software shall allow a user to terminate all beacon activation requests for a beacon.	BMS006	BMS	6.1
FEAT66.7	Multiple Beacon Activations	The beacon shall activate when there are one or more activation requests for the beacon.	BMS007	BMS	6.1
FEAT66.8	Beacon Deactivation Condition	The beacon shall deactivate when there are zero activation requests for the beacon.	BMS008	BMS	6.1
FEAT7	Graphical User Interface - General (GUI)			GUI	1
FEAT7.1	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.	TM003	GUI	1
FEAT7.10	HAR			GUI	2
FEAT7.10.1	Manual HAR message permission	The system shall have a permission field (per user) for typing a manual message for a HAR.	DM013M	GUI	2
FEAT7.11	EM/PM			GUI	2
FEAT7.11.1	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.	TM003B	GUI	2
FEAT7.12	SAS			GUI	2
FEAT7.12.1	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.	TV001G	GUI	2.2.2

FEAT7.12.2	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.	TV001G1	GUI	2.2.2
FEAT7.12.3	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).	TV001G2	GUI	2.2.2
FEAT7.12.4	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.	TV005C	GUI	2.2.2
FEAT7.12.5	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.	TV007C3	GUI	2.2.2
FEAT7.12.6	View Schedule Items	When reviewing a schedule in the Scheduled Actions Subsystem and the user right clicks a schedule, the software will present a context menu option to view a list of all Schedule Items currently in the schedule	TV024	GUI	6.2
FEAT7.12.6.1	Options for Scheduled Items	For each Schedule Item presented in the list, the user shall have the option to edit the item, delete the item, enable the item, and disable the Schedule Item	TV024A	GUI	6.2
FEAT7.13	AVL			GUI	3
FEAT7.13.1	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.	EM018G1	GUI	3
FEAT7.13.10	Viewing vehicle status	The operator shall be able to view the vehicle status via the SunGuide GUI Map.	AV001T	GUI	3
FEAT7.13.11	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.	AV003T	GUI	3

FEAT7.13.12	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.	AV006	GUI	3
FEAT7.13.13	Refreshing vehicle display	The SunGuide display of vehicles shall be refreshed whenever a new position report is available for display.	AV008V	GUI	3
FEAT7.13.14	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.	AV008V1	GUI	3
FEAT7.13.15	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.	AV008V2	GUI	3
FEAT7.13.16	Turn off display option	The operator shall be able to turn off the display of vehicle position information on the SunGuide map.	AV007	GUI	3
FEAT7.13.17	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).	AV012V	GUI	3
FEAT7.13.2	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".	EM010	GUI	3
FEAT7.13.3	Use SVG icon	The vehicle icon symbol for each vehicle shall be an SVG icon.	AV002V	GUI	3
FEAT7.13.4	Icon color	Vehicle icon color shall be configurable.	AV005V	GUI	3
FEAT7.13.5	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.	AV006V	GUI	3

FEAT7.13.6	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.	AV010V	GUI	3
FEAT7.13.7	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".	AV011V	GUI	3
FEAT7.13.8	Floating window display	The "Detailed Vehicle Status" window shall be a floating window similar to other SunGuide Status windows.	AV011V1	GUI	3
FEAT7.13.9	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.	AV011V3	GUI	3
FEAT7.14	EM			EM	3
FEAT7.14.1	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.	AV007L4	GUI	3
FEAT7.14.10	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.	DF004G2	GUI	4
FEAT7.14.11	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.	DF004G3	GUI	4
FEAT7.14.12	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.	DF005G	GUI	4
FEAT7.14.13	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.	DF006G	GUI	4

FEAT7.14.14	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.	DF007G	GUI	4
FEAT7.14.16	Same ownership rules for traveler information	Ownership rules shall apply to events created by the operator for the traveler information function.	DF010G	GUI	4
FEAT7.14.16.1	Event creator identified in event information	The operator who created an event shall be identified in the event information available through the SunGuide GUI.	DF010G1	GUI	4
FEAT7.14.17	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.	DF010G2	GUI	4
FEAT7.14.19	Only event owner can edit/delete event	Only the owner of an event can edit or delete the event.	DF010G4	GUI	4
FEAT7.14.2	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.	EM010G2	GUI	3
FEAT7.14.20	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.	DF009G	GUI	4
FEAT7.14.20.1	Event severity values	Event severity shall be one of the following values: Severe, Moderate, Minor, or Unknown.	DF009G1	GUI	4
FEAT7.14.21	Events to be marked for selective dissemination	The GUI component shall allow an operator to mark events for selective dissemination to the public.	DF021G	GUI	4

FEAT7.14.23	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.	EM029	GUI	5
FEAT7.14.24	“Distance” Template Tag	SunGuide shall allow a user to include a DISTANCE tag as part of a DMS response plan template	EM030	GUI	5
FEAT7.14.25	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	EM031	GUI	5
FEAT7.14.26	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.	EM032	GUI	5
FEAT7.14.27	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	EM033	GUI	5

FEAT7.14.27.1	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.	EM033A	GUI	5
FEAT7.14.27.2	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.	EM033B	GUI	5
FEAT7.14.27.3	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.	EM033C	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	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.	EM040	GUI	6
FEAT7.14.3	Save filter/sort	The operator shall have the option to save the filter/sort as a default associated with the operator login and ID.	EM010G3	GUI	3
FEAT7.14.30	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	EM041	GUI	6
FEAT7.14.31	Nearest CCTV Camera	When an event location is selected, the Nearest CCTV Camera will be set to the geographically closest camera to the event.	EM042	GUI	6

FEAT7.14.31.1	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.	EM042A	GUI	6
FEAT7.14.32	Event Creation with AVL Contacts	When an event is being created and an agency is selected that is a configured as a Road Ranger or SIRV agency, the following actions will be available with the first action choice initially selected as the default: · Notify and Arrive - the software shall create an event, set the notified and on-scene timestamps for the agency, and Dispatch and Arrive the Road Ranger/SIRV contact to the event. · Notify - the software shall create an event, set the notified timestamp for the agency and dispatch the selected Road Ranger/SIRV contact. · No additional action - the software shall create an event with no additional actions	EM043	GUI	6.2
FEAT7.14.32.1	Dispatchable Contacts	When an event is being created and an agency is selected that is a configured as a Road Ranger or SIRV agency, the list of selectable contacts shall only contain contacts that can be dispatched	EM043A	GUI	6.2
FEAT7.14.32.1.1	Contact Ordering	The list of contacts shall be sorted by status in the following group order: · Status categorized as "Default Patrolling " · Status categorized as "In Service" and not classified as "Busy" · Status classified as "Busy" and status categorized as "Not Assisting" · Status categorized as "Assisting"	EM043A1	GUI	6.2
FEAT7.14.32.1.1.1	Sort By Name	Within a group, the contacts will be sorted by name	EM043A1A	GUI	6.2
FEAT7.14.32.1.1.2	Separator	The software shall separate groups with a header or background color	EM043A1B	GUI	6.2
FEAT7.14.4	Responder audit			GUI	3

FEAT7.14.4.1	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.	EM020G	GUI	3
FEAT7.14.4.2	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.	EM020G2	GUI	3
FEAT7.14.4.3	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.	EM020G6	GUI	3
FEAT7.14.4.4	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.	EM020G7	GUI	3
FEAT7.14.4.5	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.	EM020G9	GUI	3
FEAT7.14.4.6	Display event information	The GUI shall display the event location, event number, and blockage history for an event.	EM020G10	GUI	3
FEAT7.14.4.7	Event chronology summary/report	The GUI shall provide an event chronology summary window with the ability to generate a report.	EM020G11	GUI	3
FEAT7.14.4.8	Enter free-text data	A comments field shall be provided for the operator to enter free-text data.	EM021G	GUI	3
FEAT7.14.5	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.	EM004U	GUI	3
FEAT7.14.5.1	Operator Owned Events	When viewing the event list, events that are owned by the user shall be highlighted in a different color than other events	EM04UA	GUI	6.2

FEAT7.14.6	Filtering events	The operator shall be able to filter events by month, location, type, blockage, or responding agency involved.	EM004U1	GUI	3
FEAT7.14.7	Alert for potential conflicts	The GUI shall alert the operator to potential conflicts when an alert is selected to be processed.	DF020G	GUI	4
FEAT7.14.9	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.	DF004G1	GUI	4
FEAT7.14.9.1	Persist User Selection	When a user has selected an event location and changes the direction filter, the software shall select the closest event location to the previously selected event location having the same county and roadway filters	DF004G1A	GUI	6.2
FEAT7.15	511			GUI	3
FEAT7.15.1	Record incident link reports	SunGuide operator interface shall support the recording of Incident Link Reports by SunGuide operators.	DF204R1	GUI	3
FEAT7.15.2	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.	DF207G	GUI	3
FEAT7.15.3	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.	ID203G3	GUI	3
FEAT7.15.4	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.	ID203G6	GUI	3

FEAT7.15.5	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.	DF029G	GUI	4
FEAT7.15.6	Support two sound files and banner messages	The SunGuide floodgate GUI shall support two sound files and two banner messages for each floodgate message.	DF028G	GUI	4
FEAT7.15.7	Populate Event Selection Lists with Open Events	When re-publishing an event to the FLATIS system, the list of events to select from shall only contain events which are currently active.	SE004	GUI	6.1
FEAT7.16	RPG			GUI	3
FEAT7.16.1	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.	TM005R9	GUI	3
FEAT7.17	VSL			GUI	3
FEAT7.17.1	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.	DM006V	GUI	3
FEAT7.17.2	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.	DM009V	GUI	4.2
FEAT7.18	TVT			GUI	4
FEAT7.18.1	Display travel times	Travel times shall be displayed on the SunGuide Graphical User Interface.	TM001G	GUI	4
FEAT7.18.2	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.	TM005G1	GUI	4
FEAT7.18.3	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.	TM003G1	GUI	4

FEAT7.18.4	TVT segments displayed in tabular format	The SunGuide GUI shall enable viewing of current travel times for different segments in a tabular format.	TM005G	GUI	4
FEAT7.18.5	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.	TM006G	GUI	4
FEAT7.18.6	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.	TM013T2	GUI	4
FEAT7.18.7	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.	TM001G2	GUI	4
FEAT7.19	DFS			GUI	4
FEAT7.19.1	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.	DF005	GUI	4.2
FEAT7.19.10	Support system configuration and administration	The Graphical User Interface component shall support the configuration and administration of the system.	DF015G	GUI	4
FEAT7.19.14	Alert when wind gusts exceed threshold	The GUI shall alert the operator when the DTN weather data feed indicates a weather alert has occurred.	DF011G1	GUI	4
FEAT7.19.15	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.	DF011G2	GUI	4
FEAT7.19.16	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.	DF013G	GUI	4

FEAT7.19.17	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.	DF016G	GUI	4
FEAT7.19.18	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.	DF016G1	GUI	4
FEAT7.19.19	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.	DF011G	GUI	4.2
FEAT7.19.2	DFS controlled/managed via SunGuide GUI	The Data Fusion subsystem shall be controlled and managed through the SunGuide graphical user interface.	DF019	GUI	4
FEAT7.19.21	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.	DF018G	GUI	4
FEAT7.19.22	Provide travel times and delays for travel time links	SunGuide shall provide travel times for Travel Time links	DF019G1	GUI	4.2
FEAT7.19.23	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.	DF022G	GUI	4
FEAT7.19.24	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.	DF023G	GUI	4
FEAT7.19.24.1	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.	DF023G1	GUI	4

FEAT7.19.26	Floodgate sound files and banner messages	The SunGuide floodgate GUI shall support two sound files and two banner messages for each floodgate message.	DF028G	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	ATIS Severity	The software shall allow an operator to set the ATIS Severity.	DF040	GUI	4.3
FEAT7.19.28.10	ATIS Severity Sent to ATIS	The software shall make the ATIS Severity level available to external clients via Center-to-Center.	DF043	GUI	4.3
FEAT7.19.28.11	ATIS Severity Default	The software shall default the ATIS Severity level to Minor for all new events.	DF044	GUI	4.3
FEAT7.19.28.12	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.	DF045	GUI	4.3
FEAT7.19.28.13	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;	DF045S	GUI	4.3
FEAT7.19.28.2	ATIS Severity Values	The software shall allow an operator to set the ATIS Severity to Unknown, Minor, Intermediate, or Major.	DF040S	GUI	4.3
FEAT7.19.28.3	ATIS Severity Suggestion	The software shall suggest a new ATIS Severity level when an operator has changed the lane blockage for the event.	DF040E	GUI	4.3
FEAT7.19.28.4	ATIS Severity Calculation	The software shall suggest an ATIS Severity level by calculating the total percentage of all travel lanes and off ramps blocked.	DF040E1	GUI	4.3
FEAT7.19.28.5	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.	DF040E2	GUI	4.3

FEAT7.19.28.6	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.	DF040E3	GUI	4.3
FEAT7.19.28.7	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.	DF040E4	GUI	4.3
FEAT7.19.28.8	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.	DF041	GUI	4.3
FEAT7.19.28.9	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.	DF042	GUI	4.3
FEAT7.19.4	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.	DF027	GUI	4
FEAT7.19.5	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.	DF031	GUI	4
FEAT7.19.5.1	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.	DF031A	GUI	4.3
FEAT7.19.5.10	Floodgate Multi-Set	SunGuide shall allow a opeator to set an identical message to multiple Floodgates with a single operation.	DF031E	GUI	4.3
FEAT7.19.5.11	Multi-Set Display	SunGuide shall indicate to an operator which Floodgates share identical messages	DF031E1	GUI	4.3
FEAT7.19.5.12	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	DF031E2	GUI	4.3
FEAT7.19.5.13	View Floodgate Text	SunGuide shall allow an operator to view the text of a Floodgate message or web banner as part of an overview.	DF031E3	GUI	4.3

FEAT7.19.5.14	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.	DF031E4	GUI	4.3
FEAT7.19.5.15	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.	DF031E5	GUI	4.3
FEAT7.19.5.16	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.	DF031E6	GUI	4.3
FEAT7.19.5.17	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.	DF031E7	GUI	4.3
FEAT7.19.5.2	Create unique name for message	SunGuide shall provide the ability for an operator to create a unique name for the message.	DF031A1	GUI	4.3
FEAT7.19.5.3	Activate message	SunGuide shall provide the ability for an operator to select a previously created and stored floodgate message and "activate" that message.	DF031B	GUI	4.3
FEAT7.19.5.4	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.	DF031B1	GUI	4.3
FEAT7.19.5.5	Sort options for floodgage messages	SunGuide shall provide teh ability for an operator to organized stored floodgate messages	DF031B2	GUI	4.3
FEAT7.19.5.6	Delete options for floodgate messages	SunGuide shall provide the ability for an operator to delete previously stored floodgate messages	DF031C	GUI	4.3
FEAT7.19.5.7	Organize Messages	SunGuide shall provide the ability for an operator to manage an organization folder structure for storing floodgates	DF031D	GUI	4.3
FEAT7.19.5.8	Manage Organization	SunGuide shall allow an operator to create, rename, move, and delete folders.	DF031D1	GUI	4.3

FEAT7.19.5.9	Manage Messages - Delete	SunGuide shall allow an opeator to move a previously stored floodgate message from one folder to another.	DF031D2	GUI	4.3
FEAT7.19.7	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.	DF001G1	GUI	4
FEAT7.19.8	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	DF025G	GUI	4.2
FEAT7.19.9	Select data to archive	The Graphical user interface shall allow a system administrator to indicate what data is to be archived.	DF012G	GUI	4
FEAT7.2	Map based			GUI	1
FEAT7.2.1	GIS software interface	The SunGuide system shall provide a GIS interface that displays shape files.	S014	GUI	1
FEAT7.2.10	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.	WS001Z	GUI	3
FEAT7.2.11	Conditions map	The FIHS Conditions map shall be similar to the statewide map provided on the statewide FIHS Web site.	WS002M	GUI	3
FEAT7.2.12	Largest scale selectable	The largest scale selectable shall include a statewide view that includes the entire FIHS incident/event data.	WS002Z	GUI	3
FEAT7.2.2	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.	GS001	GUI	1
FEAT7.2.3	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.	GS002	GUI	2

FEAT7.2.4	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.	GS003	GUI	1
FEAT7.2.5	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.	GS004	GUI	1
FEAT7.2.7	Color selection dialog	All color choices shall be made using a standard color selection dialog similar to what is provided by Microsoft Windows.	GS009C1	GUI	2
FEAT7.2.8	Map views	SunGuide shall provide two map views, one called the FIHS Conditions Map and the other called the Central Florida Conditions Map.	WS015	GUI	3
FEAT7.2.9	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.	WS001M	GUI	3
FEAT7.20	PS			GUI	3.1
FEAT7.21	Operator Map			GUI	5
FEAT7.21.1	Tile-based map	The Operator Map shall display map tiles created by the SunGuide Map Tile Generation application that represent the state of Florida.	MA001	GUI	5
FEAT7.21.10	Highlight potential incidents	The Operator Map shall support highlighting potential detected incidents by using flashing icons or flashing icon backgrounds or flashing links	MA010	GUI	5
FEAT7.21.11	Support map views	The Operator Map shall allow an operator to switch to systemwide map views previously stored by an operator with sufficient permissions.	MA011	GUI	5
FEAT7.21.12	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.	MA012	GUI	5
FEAT7.21.13	Select base map tile sets	The Operator Map shall allow a user to select from a configurable list of pre-generated map tile sets.	MA013	GUI	5

FEAT7.21.14	Display shields on map	The Operator Map shall display shields on the map.	MA015	GUI	5
FEAT7.21.14.1	Display shields on map at lat/long	The Operator Map shall display shields at the latitude and longitude specified when the shield is created.	MA015A	GUI	5
FEAT7.21.14.2	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.	MA015B	GUI	5
FEAT7.21.15	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.	MA014	GUI	5
FEAT7.21.15.1	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.	MA014A	GUI	5
FEAT7.21.15.2	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.	MA014B	GUI	5
FEAT7.21.15.3	Map performance available for input	The Operator Map shall be available for operator input within 10 seconds of the operator providing valid user credentials.	MA014C	GUI	5
FEAT7.21.15.4	Map performance pan	The Operator Map with no ITS equipment displayed shall allow for pan operations to be completed in less than one second.	MA014D	GUI	5
FEAT7.21.15.5	Map performance zoom	The Operator Map with no ITS equipment displayed shall allow for zoom operations to be completed in less than two seconds.	MA014E	GUI	5

FEAT7.21.15.6	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.	MA014F	GUI	5
FEAT7.21.15.7	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.	MA014G	GUI	5
FEAT7.21.2	Multiple zoom levels supported	The Operator Map shall provide multiple zoom levels with the level of detail increasing as the zoom increases.	MA002	GUI	5
FEAT7.21.2.1	Rubber-band zoom	The operator map shall provide a rubber-band zoom capability.	MA002A	GUI	5
FEAT7.21.2.2	Select zoom level displayed	The operator map shall have a control that allows zoom level to be selected.	MA002B	GUI	5
FEAT7.21.2.3	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	MA002C	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
FEAT7.21.23	Login and Subsystem Dialog	The software shall embed the user login and the list of currently connected subsystems into the operator map.	SE008	GUI	6.1
FEAT7.21.24	Subsystem Stand Alone	The software shall allow the list of currently connected subsystems to be launched as a stand-alone dialog.	SE009	GUI	6.1
FEAT7.21.25	Logion Dialog Functionality	The login to subsystems control will include the ability to login to the system, logout of the system, login to specific subsystems, log out of specific subsystems, display login status to each subsystem, display subsystem availability status, and save default behavior to login to specific subsystems for the current user.	SE010	GUI	6.1

FEAT7.21.3	Pan in multiple directions	The Operator Map shall provide the ability to pan the map in multiple directions.	MA003	GUI	5
FEAT7.21.4	Display default view	On logging in, the Operator Map shall display the default map view of the operator, if one was defined.	MA004	GUI	5
FEAT7.21.5	Display TSS Links	The Operator Map shall display the TSS links managed in the SunGuide Link Editor.	MA005	GUI	5
FEAT7.21.5.1	Links displayed with lane level detail	The TSS links shall be drawn with lane level detail.	MA005A	GUI	5
FEAT7.21.5.2	Links color coded	The TSS lanes shall be color coded to indicate their current status.	MA005B	GUI	5
FEAT7.21.6	Icons displayed	The Operator Map shall display icons for SunGuide devices at the latitude and longitude recorded for the devices.	MA006	GUI	5
FEAT7.21.6.1	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.	MA006A	GUI	5
FEAT7.21.6.1.1	Locked CCTV icons	The Operator Map shall display an icon overlay on CCTV icons when they are locked by a user.	MA006A1	GUI	5
FEAT7.21.6.1.2	VisioPaD CCTV icons	The Operator Map shall display an icon overlay on CCTV icons when they are being used for VisioPaD event detection.	MA006A2	GUI	5
FEAT7.21.6.10	Display AVL status icons	The Operator Map shall display AVL vehicle icons with their current status color coded for the vehicles currently active.	MA006J	GUI	5
FEAT7.21.6.11	Display SAS overlay icons	The Operator Map shall display an overlay icon on devices which have scheduled activities through the SAS.	MA006K	GUI	5
FEAT7.21.6.12	Selection of icons	The Operator Map shall allow device icons to be selected.	MA006L	GUI	5
FEAT7.21.6.12.1	Display CCTV Status GUI	The CCTV status GUI shall be displayed when a CCTV device is selected.	MA006L1	GUI	5
FEAT7.21.6.12.10	Display TSS Detector Status GUI	The TSS detector status GUI shall be displayed when a detector is selected.	MA006L10	GUI	5

FEAT7.21.6.12.11	Display Link Speed Status GUI	The Link Speed GUI shall be displayed when a TSS lane is selected.	MA006L11	GUI	5
FEAT7.21.6.12.12	Select icon types in map view	An operator shall be able to select which icon typs are visible in their map view	MA007C9B	GUI	5
FEAT7.21.6.12.12.1	Customize icon	Each operator shall be able to customize which icons appear for their login credentials	MA007C9B1	GUI	5
FEAT7.21.6.12.14	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	MA007CF	GUI	5
FEAT7.21.6.12.15	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	MA007CG	GUI	5
FEAT7.21.6.12.16	Customize appearance of icons	An operator shall be able to customize the appearance of icons.	MA007C9C	GUI	5
FEAT7.21.6.12.16.1	Customize icon colors	Each operator shall be able to customize icon colors for their login credentials.	MA007C9C1	GUI	5
FEAT7.21.6.12.2	Display DMS Status GUI	The DMS status GUI shall be displayed when a DMS device is selected.	MA006L2	GUI	5
FEAT7.21.6.12.3	Display Event Details Status GUI	The Event Details GUI shall be displayed when an event icon is selected.	MA006L3	GUI	5
FEAT7.21.6.12.4	Display HAR Status GUI	The HAR status GUI shall be displayed when a HAR device is selected.	MA006L4	GUI	5
FEAT7.21.6.12.5	Display C2C Status GUI	The C2C status GUI shall be displayed when a C2C device is selected.	MA006L5	GUI	5
FEAT7.21.6.12.6	Display AVL/RR Status GUI	The AVL/RR status GUI shall be displayed when a RR device is selected.	MA006L6	GUI	5
FEAT7.21.6.12.7	Display RWIS Status GUI	The RWIS status GUI shall be displayed when a RWIS device is selected.	MA006L7	GUI	5
FEAT7.21.6.12.8	Display Safety Barrier Status GUI	The Safety Barrier status GUI shall be displayed when a SB device is selected.	MA006L8	GUI	5
FEAT7.21.6.12.9	Display VSL Status GUI	The VSL status GUI shall be displayed when a VSL device is selected.	MA006L9	GUI	5

FEAT7.21.6.2	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.)	MA006B	GUI	5
FEAT7.21.6.3	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.	MA006C	GUI	5
FEAT7.21.6.4	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.	MA006D	GUI	5
FEAT7.21.6.5	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.	MA006E	GUI	5
FEAT7.21.6.6	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.	MA006F	GUI	5
FEAT7.21.6.7	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.	MA006G	GUI	5
FEAT7.21.6.8	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.	MA006H	GUI	5
FEAT7.21.6.8.1	Display Event overlay icons	The Operator Map shall display an icon overlay on Event icons which are published via FL511 ATIS.	MA006H1	GUI	5
FEAT7.21.6.8.2	Do not show Closed Event Icon	The Operator Map shall not show icons for events that have been closed.	MA006H2	GUI	5
FEAT7.21.6.9	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.	MA006I	GUI	5

FEAT7.21.7	Map Menu	The Operator Map shall have a menu that changes context based on where the mouse right clicks.	MA007	GUI	5
FEAT7.21.7.1	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.	MA007A	GUI	5
FEAT7.21.7.10	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.	MA007G	GUI	5
FEAT7.21.7.10.1	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).	MA007G1	GUI	5
FEAT7.21.7.11	Event context menu	The Operator Map shall display an Event context menu when the mouse right clicks over an Event.	MA007H	GUI	5
FEAT7.21.7.11.1	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.	MA007H1	GUI	5
FEAT7.21.7.12	HAR context menu	The Operator Map shall display a HAR context menu when the mouse right clicks over a HAR.	MA007I	GUI	5
FEAT7.21.7.12.1	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.	MA007I1	GUI	5
FEAT7.21.7.13	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.	MA007J	GUI	5
FEAT7.21.7.13.1	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.	MA007J1	GUI	5

FEAT7.21.7.14	Ramp Meter context menu	The Operator Map shall display a Ramp Meter context menu when the mouse right clicks over a Ramp Meter device.	MA007K	GUI	5
FEAT7.21.7.14.1	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.	MA007K1	GUI	5
FEAT7.21.7.15	RWIS context menu	The Operator Map shall display an RWIS context menu when the mouse right clicks over an RWIS device.	MA007L	GUI	5
FEAT7.21.7.15.1	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.	MA007L1	GUI	5
FEAT7.21.7.16	Safety Barrier context menu	The Operator Map shall display a Safety Barrier context menu when the mouse right clicks over a Safety Barrier device.	MA007M	GUI	5
FEAT7.21.7.16.1	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.	MA007M1	GUI	5
FEAT7.21.7.17	TSS Link context menu	The Operator Map shall display TSS link context menu when the mouse right clicks over a TSS link.	MA007N	GUI	5
FEAT7.21.7.17.1	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.	MA007N1	GUI	5
FEAT7.21.7.18	TSS Detector context menu	The Operator Map shall display TSS detector context menu when the mouse right clicks over a TSS detector.	MA007O	GUI	5
FEAT7.21.7.18.1	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.	MA007O1	GUI	5

FEAT7.21.7.2	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.	MA007B	GUI	5
FEAT7.21.7.3	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.	MA007C	GUI	5
FEAT7.21.7.3.1	Camera submenu	The Operator Map main menu shall provide a "Cameras" submenu.	MA007C1	GUI	5
FEAT7.21.7.3.1.1	Camera submenu blocking	The Cameras submenu shall provide a "Camera Blocking..." option to launch the combined cameras tabular display.	MA007C1A	GUI	5
FEAT7.21.7.3.1.2	Camera submenu control	The Cameras submenu shall provide a "Camera Control..." option to launch the CCTV control dialog.	MA007C1B	GUI	5
FEAT7.21.7.3.1.3	Camera submenu scheduler	The Cameras submenu shall provide a "Scheduler" submenu.	MA007C1C	GUI	5
FEAT7.21.7.3.1.3.1	Camera submenu SAS launch	The Scheduler submenu shall provide a "Schedules..." option to launch the SAS schedules dialog.	MA007C1C1	GUI	5
FEAT7.21.7.3.1.3.2	Camera submenu SAS scheduler	The Scheduler submenu shall provide a "Schedules..." option to launch the SAS schedules dialog.	MA007C1C2	GUI	5
FEAT7.21.7.3.1.3.3	Camera submenu SAS sequences	The Scheduler submenu shall provide a "Sequences..." option to launch the SAS sequences dialog.	MA007C1C3	GUI	5
FEAT7.21.7.3.1.4	Camera submenu USB joystick	The Cameras submenu shall provide a "USB Joystick Configuration..." option to launch the joystick configuration dialog.	MA007C1D	GUI	5
FEAT7.21.7.3.10	Ramp metering submenu	The Operator Map main menu shall provide a "Ramp Metering" submenu.	MA007C10	GUI	5

FEAT7.21.7.3.10.1	Ramp metering submenu alarms	The Ramp Metering submenu shall provide an "Alarms..." option to launch the RM RMC alarms dialog.	MA007C10A	GUI	5
FEAT7.21.7.3.10.2	Ramp metering submenu control	The Ramp Metering submenu shall provide a "Control..." option to launch the RM RMC control dialog.	MA007C10B	GUI	5
FEAT7.21.7.3.10.3	Ramp metering submenu reset	The Ramp Metering submenu shall provide a "Reset Ramp Meters..." option to launch the RM RMC reset dialog.	MA007C10C	GUI	5
FEAT7.21.7.3.10.4	Ramp metering submenu status	The Ramp Metering submenu shall provide a "Status Overview..." option to launch the RM RMC status dialog.	MA007C10D	GUI	5
FEAT7.21.7.3.11	Launch reports display	The Operator Map main menu shall provide a "Reports..." option to launch the Reports tabular display.	MA007C11	GUI	5
FEAT7.21.7.3.12	Responders submenu	The Operator Map main menu shall provide a "Responders" submenu.	MA007C12	GUI	5
FEAT7.21.7.3.12.1	Responders submenu status	The Responders submenu shall provide a "Responder Status..." option to launch the AVL/RR vehicle status tabular display.	MA007C12A	GUI	5
FEAT7.21.7.3.12.2	Responders submenu vehicle location replay	The Responders submenu shall provide a "Vehicle Location Replay..." option to launch the AVL/RR historical track dialog.	MA007C12B	GUI	5
FEAT7.21.7.3.13	Launch RWIS status	The Operator Map main menu shall provide a "Roadside Weather Systems..." option to launch the RWIS station status dialog.	MA007C13	GUI	5
FEAT7.21.7.3.14	Launch Safety Barrier status	The Operator Map main menu shall provide a "Safety Barriers..." option to launch the SB station status dialog.	MA007C14	GUI	5
FEAT7.21.7.3.15	System submenu	The Operator Map main menu shall provide a "System" submenu.	MA007C15	GUI	5
FEAT7.21.7.3.15.1	System submenu logout submenu	The System submenu shall provide a "Logout" submenu.	MA007C15A	GUI	5

FEAT7.21.7.3.15.1.1	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.	MA007C15A1	GUI	5
FEAT7.21.7.3.15.2	System submenu change password	The System submenu shall provide a "Change Password..." option to launch the operator map password dialog.	MA007C15B	GUI	5
FEAT7.21.7.3.15.3	System submenu log level	The System submenu shall provide a "Log Level" submenu.	MA007C15C	GUI	5
FEAT7.21.7.3.15.3.1	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.	MA007C15C1	GUI	5
FEAT7.21.7.3.15.3.2	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.	MA007C15C2	GUI	5
FEAT7.21.7.3.15.4	System submenu map views	The System submenu shall provide a "Map Views..." option to launch the operator map systemwide predefined map view definition dialog.	MA007C15D	GUI	5
FEAT7.21.7.3.15.5	System submenu system alerts	The System submenu shall provide a "System Alerts..." option to launch the operator map system alerts dialog.	MA007C15E	GUI	5
FEAT7.21.7.3.15.6	System submenu system messages	The System submenu shall provide a "System Messages..." option to launch the operator map system messages dialog.	MA007C15F	GUI	5
FEAT7.21.7.3.15.7	System submenu system settings	The System submenu shall provide a "System Settings..." option to launch the operator map general UI system settings dialog.	MA007C15G	GUI	5
FEAT7.21.7.3.16	Traffic detection submenu	The Operator Map main menu shall provide a "Traffic Detection" submenu.	MA007C16	GUI	5
FEAT7.21.7.3.16.1	Traffic detection submenu detector status	The Traffic Detection submenu shall provide a "Detector Status..." option to launch the TSS detector status dialog.	MA007C16A	GUI	5

FEAT7.21.7.3.16.2	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.	MA007C16B	GUI	5
FEAT7.21.7.3.16.2.1	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.	MA007C16B1	GUI	5
FEAT7.21.7.3.17	Launch travel times GUI	The Operator Map main menu shall provide a "Travel Times..." menu option to launch the Travel Times tabular display.	MA007C17	GUI	5
FEAT7.21.7.3.18	Video switching submenu	The Operator Map main menu shall provide a "Video Switching" submenu.	MA007C18	GUI	5
FEAT7.21.7.3.18.1	Video switching submenu control	The Video Switching submenu shall provide a "Switching Control..." option to launch the VS switching control dialog.	MA007C18A	GUI	5
FEAT7.21.7.3.18.2	Video switching submenu tours	The Video Switching submenu shall provide a "Video Tours..." option to launch the VS video tours dialog.	MA007C18B	GUI	5
FEAT7.21.7.3.18.3	Video switching submenu video wall	The Video Switching submenu shall provide a "Video Wall Control..." option to launch the VWS video wall dialog.	MA007C18C	GUI	5
FEAT7.21.7.3.18.4	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.	MA007C18D	GUI	5
FEAT7.21.7.3.19	VSL submenu	The Operator Map main menu shall provide a "VSL Segment Status..." option to launch the VSL segment status tabular display.	MA007C19	GUI	5
FEAT7.21.7.3.2	C2C submenu	The Operator Map main menu shall provide a "Center-to-Center" submenu.	MA007C2	GUI	5
FEAT7.21.7.3.2.1	C2C submenu camera	The Operator Map main menu shall provide a "Center-to-Center" submenu.`	MA007C2A	GUI	5
FEAT7.21.7.3.2.2	C2C submenu DMS	The Center-to-Center submenu shall provide a "DMS Status..." option to launch the C2C DMS dialog.	MA007C2B	GUI	5

FEAT7.21.7.3.2.3	C2C submenu Event	The Center-to-Center submenu shall provide a "Event List..." option to launch the C2C event dialog.	MA007C2C	GUI	5
FEAT7.21.7.3.2.4	C2C submenu Floodgate	The Center-to-Center submenu shall provide a "Floodgate Messages..." option to launch the C2C floodgate tabular display.	MA007C2D	GUI	5
FEAT7.21.7.3.2.5	C2C submenu HAR	The Center-to-Center submenu shall provide a "HAR Status..." option to launch the C2C HAR dialog.	MA007C2E	GUI	5
FEAT7.21.7.3.2.6	C2C submenu RWIS	The Center-to-Center submenu shall provide a "RWIS Status..." option to launch the C2C RWIS dialog.	MA007C2F	GUI	5
FEAT7.21.7.3.2.7	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.	MA007C2G	GUI	5
FEAT7.21.7.3.2.7.1	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.	MA007C2G1	GUI	5
FEAT7.21.7.3.3	DMS submenu	The Operator Map main menu shall provide a "DMS" submenu.	MA007C3	GUI	5
FEAT7.21.7.3.3.1	DMS submenu sequences	The DMS submenu shall provide an "Active Sequences..." option to launch the DMS active sequences dialog.	MA007C3A	GUI	5
FEAT7.21.7.3.3.10	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.	MA007C3J	GUI	5
FEAT7.21.7.3.3.10.1	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.	MA007C3J1	GUI	5

FEAT7.21.7.3.3.11	DMS submenu VSL status	The DMS submenu shall provide a "Variable Speed Limit DMS Status..." option to launch the DMS status dialog for VSLs.	MA007C3K	GUI	5
FEAT7.21.7.3.3.2	DMS submenu device groups	The DMS submenu shall provide a "Device Groups..." option to launch the DMS group dialog.	MA007C3B	GUI	5
FEAT7.21.7.3.3.3	DMS submenu status GUI	The DMS submenu shall provide a "Device Status..." option to launch the full DMS status dialog.	MA007C3C	GUI	5
FEAT7.21.7.3.3.4	DMS submenu MAS queue	The DMS submenu shall provide a "Message Queue Manager..." option to launch the MAS queue manager dialog.	MA007C3D	GUI	5
FEAT7.21.7.3.3.5	DMS submenu messages library	The DMS submenu shall provide a "Message Libraries..." option to launch the DMS message libraries dialog.	MA007C3E	GUI	5
FEAT7.21.7.3.3.6	DMS submenu sequence library	The DMS submenu shall provide a "Sequence Libraries..." option to launch the DMS sequence libraries dialog.	MA007C3F	GUI	5
FEAT7.21.7.3.3.7	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.	MA007C3G	GUI	5
FEAT7.21.7.3.3.8	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.	MA007C3H	GUI	5
FEAT7.21.7.3.3.9	DMS submenu trailblazer status	The DMS submenu shall provide a "Trailblazer DMS Status..." option to launch the DMS status dialog for trailblazers.	MA007C3I	GUI	5
FEAT7.21.7.3.4	Event submenu	The Operator Map main menu shall provide an "Event Management" submenu.	MA007C4	GUI	5
FEAT7.21.7.3.4.1	Event submenu add event	The Event Management submenu shall provide an "Add New Event..." option to launch the EM add new event interface.	MA007C4A	GUI	5
FEAT7.21.7.3.4.2	Event submenu list events	The Event Management submenu shall provide an "Event List..." option to launch the EM event list tabular display.	MA007C4B	GUI	5

FEAT7.21.7.3.4.3	Event submenu predefined plans	The Event Management submenu shall provide a "Predefined Response Plans..." option to launch the RPG (EM) predefined plan manager dialog.	MA007C4C	GUI	5
FEAT7.21.7.3.4.4	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.	MA007C4D	GUI	5
FEAT7.21.7.3.4.5	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.	MA007C4E	GUI	5
FEAT7.21.7.3.4.6	Event submenu abandoned vehicles	The display of the disabled vehicles icon shall be an option that can be toggled in the icon configuration menu.	MA007C4F	GUI	5
FEAT7.21.7.3.4.7	Event submenu disabled vehicles	The display of the disabled vehicles icon shall be an option that can be toggled in the icon configuration menu.	MA007C4G	GUI	5
FEAT7.21.7.3.5	Launch express Lanes submenu	The Operator Map main menu shall provide an "Express Lanes" submenu	MA007C5	GUI	5
FEAT7.21.7.3.5.1	Launch Express Lanes dialog	The Express Lanes submenu shall provide and "Express Lanes... " option to launch the Express Lanes dialog.	MA007C5A	GUI	5
FEAT7.21.7.3.5.2	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.	MA007C5B	GUI	5
FEAT7.21.7.3.5.3	Launch Offline Toll Rates Synchronization dialog	The Express Lanes submenu shall provide an "Offline Synchronization..." option to launch the Offline Toll Rate Synchronization dialog.	MA007C5C	GUI	5
FEAT7.21.7.3.6	HAR submenu	The Operator Map main menu shall provide a "HAR" submenu.	MA007C6	GUI	5
FEAT7.21.7.3.6.1	HAR submenu status	The HAR submenu shall provide a "HAR Status..." option to launch the HAR device status dialog.	MA007C6A	GUI	5
FEAT7.21.7.3.6.2	HAR submenu MAS	The HAR submenu shall provide a "Message Queue Manager..." option to launch the MAS queue manager dialog.	MA007C6B	GUI	5

FEAT7.21.7.3.7	Incident detection submenu	The Operator Map main menu shall provide an "Incident Detection" submenu.	MA007C7	GUI	5
FEAT7.21.7.3.7.1	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.	MA007C7A	GUI	5
FEAT7.21.7.3.7.1.1	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.	MA007C7A1	GUI	5
FEAT7.21.7.3.7.2	Incident detection submenu VisioPaD control	The Incident Detection submenu shall provide a "VisioPaD Camera Detection Status..." option to launch the combined cameras tabular display.	MA007C7B	GUI	5
FEAT7.21.7.3.8	IMS submenu	The Operator Map main menu shall provide an "Inventory and Maintenance" submenu.	MA007C8	GUI	5
FEAT7.21.7.3.8.1	IMS submenu Inventory GUI	The Inventory and Maintenance submenu shall provide an "Inventory" option to launch the IMS inventory management dialog.	MA007C8A	GUI	5
FEAT7.21.7.3.8.2	IMS submenu vendor GUI	The Inventory and Maintenance submenu shall provide a "Vendor" option to launch the IMS vendor management dialog.	MA007C8B	GUI	5
FEAT7.21.7.3.9	Preferences submenu	The Operator Map main menu shall provide a "Preferences" submenu.	MA007C9	GUI	5
FEAT7.21.7.3.9.1	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.	MA007C9A	GUI	5
FEAT7.21.7.3.9.4	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.	MA007C9D	GUI	5
FEAT7.21.7.3.9.5	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.	MA007C9E	GUI	5

FEAT7.21.7.3.9.6	Preferences submenu subsystem selection	The Preferences submenu shall provide a "Subsystems..." option to launch the operator map subsystem status/selection dialog.	MA007C9F	GUI	5
FEAT7.21.7.7	AVL/RR context menu	The Operator Map shall display an AVL/RR context menu when the mouse right clicks over an AVL/RR vehicle.	MA007D	GUI	5
FEAT7.21.7.7.1	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.	MA007D1	GUI	5
FEAT7.21.7.8	CCTV context menu	The Operator Map shall display a camera context menu when the mouse right clicks over a camera.	MA007E	GUI	5
FEAT7.21.7.8.1	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.	MA007E1	GUI	5
FEAT7.21.7.9	C2C context menu	The Operator Map shall display a C2C context menu when the mouse right clicks over a C2C device.	MA007F	GUI	5
FEAT7.21.7.9.1	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).	MA007F1	GUI	5
FEAT7.21.8	Map hover status	The Operator Map shall display a concise summary of object information when an object is hovered over with the mouse.	MA008	GUI	5
FEAT7.21.8.1	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)	MA008A	GUI	5

FEAT7.21.8.10	Map hover status TSS	When a TSS detector is hovered over, the Operator Map shall display the detector's ID and status.	MA008J	GUI	5
FEAT7.21.8.11	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.	MA008K	GUI	5
FEAT7.21.8.2	Map hover status C2C	When a C2C device is hovered over, the Operator Map shall display the device's ID, center, and operational status.	MA008B	GUI	5
FEAT7.21.8.3	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.	MA008C	GUI	5
FEAT7.21.8.4	Map hover status DMS	When a DMS is hovered over, the Operator Map shall display the DMS's ID and status.	MA008D	GUI	5
FEAT7.21.8.5	Map hover status event	When an event is hovered over, the Operator Map shall display the event's ID, type, status, and location.	MA008E	GUI	5
FEAT7.21.8.6	Map hover status HAR	When a HAR is hovered over, the Operator Map shall display the HAR's ID and status.	MA008F	GUI	5
FEAT7.21.8.7	Map hover status Ramp Meter	When a ramp meter is hovered over, the Operator Map shall display the ramp meter's ID and status.	MA008G	GUI	5
FEAT7.21.8.8	Map hover status RWIS	When an RWIS is hovered over, the Operator Map shall display the RWIS's ID and status.	MA008H	GUI	5
FEAT7.21.8.9	Map hover status Safety Barrier	When an SB is hovered over, the Operator Map shall display the SB's ID and status.	MA008I	GUI	5
FEAT7.21.9	Display components of response plan	The operator map shall support visually displaying devices included in an Event Management Response Plan.	MA009	GUI	5
FEAT7.22	Map tile generation	The Map Tile Generation tool shall use ESRI Shape File formats for the map data used to render the tiles.	MA020	GUI	5
FEAT7.22.1	Map tile generation images	The Map Tile Generation tool shall produce graphical images of the Shape File data.	MA021	GUI	5
FEAT7.22.2	Map tile generation map tiles	The Map Tile Generation tool shall create map tiles for display in the SunGuide Operator Map.	MA022	GUI	5

FEAT7.22.2.1	Map tile generation zoom layers	The map tiles shall be generated with multiple resolutions to support additional detail as the map zoom is increased.	MA022A	GUI	5
FEAT7.22.2.2	Map tile generation road colors	The Map Tile Generation tool shall allow road colors to be specified.	MA022B	GUI	5
FEAT7.22.2.3	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.	MA022C	GUI	5
FEAT7.23	Link Editor	The Link Editor map displayed shall be the same map as the Operator Map.	MA030	GUI	5
FEAT7.23.1	Link Editor mode of operation	The Link Editor shall be managed as a semi-independent mode of the Operator Map.	MA030A	GUI	5
FEAT7.23.2	Link Editor TSS link management	The Link Editor shall allow an operator with appropriate permissions to manage the display of TSS links.	MA031	GUI	5
FEAT7.23.3	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.	MA032A	GUI	5
FEAT7.23.4	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	MA031A	GUI	5
FEAT7.24	Device Sequence Editor	The Device Sequencing Editor map displayed shall be the same map as the Operator Map.	MA040	GUI	5
FEAT7.24.1	Device Sequence Editor mode of operation	The Device Sequencing Editor shall be managed as a semi-independent mode of the Operator Map.	MA040A	GUI	5
FEAT7.24.2	Device Sequence Editor display DMS	The Device Sequencing Editor shall display DMS devices configured in the system and received via Center-to-Center.	MA041	GUI	5
FEAT7.24.3	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.	MA042	GUI	5

FEAT7.24.4	Device Sequence Editor modify nodes	The Device Sequencing Editor shall allow an operator with appropriate permissions to move traversal nodes.	MA043	GUI	5
FEAT7.24.5	Device Sequence Editor delete nodes	The Device Sequencing Editor shall allow an operator with appropriate permissions to delete traversal nodes.	MA044	GUI	5
FEAT7.24.6	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.	MA045	GUI	5
FEAT7.24.7	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.	MA045A	GUI	5
FEAT7.24.8	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.	MA045B	GUI	5
FEAT7.24.9	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.	MA045C	GUI	5
FEAT7.25	Geofence Editor	The Geofence Editor map displayed shall be the same map as the Operator Map.	MA050	GUI	5
FEAT7.25.1	Geofence Editor operation	The Geofence Editor shall be managed as a semi-independent mode of the Operator Map.	MA050A	GUI	5
FEAT7.25.2	Geofence Editor manage geofences	The Geofence Editor shall allow an operator with appropriate permissions to manage geofences.	MA051	GUI	5
FEAT7.25.3	Geofence Editor manage geofences create	The Geofence Editor shall allow geofences to be created using a visual drawing tool	MA051A	GUI	5
FEAT7.25.4	Geofence Editor manage geofences modify	The Geofence Editor shall allow geofences to be modified.	MA051B	GUI	5

FEAT7.25.5	Geofence Editor manage geofences delete	The Geofence Editor shall allow geofences to be deleted.	MA051C	GUI	5
FEAT7.26	Shield Editor	The Shield Editor map displayed shall be the same map as the Operator Map.	MA060	GUI	5
FEAT7.26.1	Shield Editor operation	The Shield Editor shall be managed as a semi-independent mode of the Operator Map.	MA060A	GUI	5
FEAT7.26.2	Shield Editor manage shields	The Shield Editor shall allow an operator with appropriate permissions to manage shields.	MA061	GUI	5
FEAT7.26.3	Shield Editor manage shields create	The Shield Editor shall allow shields to be created using a predefined set of shields.	MA061A	GUI	5
FEAT7.26.4	Shield Editor manage shields modify	The Shield Editor shall allow shields to be modified.	MA061B	GUI	5
FEAT7.26.5	Shield Editor manage shields delete	The Shield Editor shall allow shields to be deleted.	MA061C	GUI	5
FEAT7.26.6	Shields place on map	The Shield Editor shall allow shields to be placed on the Operator Map.	MA062	GUI	5
FEAT7.26.6.1	Drag and Drop shields	The Shield Editor shall allows shields to be dropped and dragged on to the Operator Map.	MA062A	GUI	5
FEAT7.26.6.2	Display lat/long of shield.	The Shield Editor shall provide a dialog that displays the Latitude/Longitude of a selected shield.	MA062B	GUI	5
FEAT7.26.6.3	Enter lat/long of shield.	The Shield Editor Latitude/Longitude dialog shall allow the operator to enter the Latitude/Longitude for a selected shield	MA062B1	GUI	5
FEAT7.27	Video on Desktop	The software shall provide Video on Desktop capabilities	VOD001	GUI	6
FEAT7.27.1	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	VOD002	GUI	6

FEAT7.27.10	Move Viewers	The Window will allow users to drag and drop Viewers into different positions and into different Windows	VOD010	GUI	6
FEAT7.27.11	Maintain Viewer aspect ratio	The Viewer will maintain the aspect ratio of the video source	VOD011	GUI	6
FEAT7.27.12	Viewer source label	The top portion within the Viewer will contain a one-line label indicating the video source name or tour name	VOD012	GUI	6
FEAT7.27.13	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	VOD013	GUI	6
FEAT7.27.14	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	VOD014	GUI	6
FEAT7.27.15	Edit tour	The Viewer tour list's name, viewer sources, and dwell time will be changeable from the Viewer tour list	VOD015	GUI	6
FEAT7.27.16	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	VOD016	GUI	6
FEAT7.27.17	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	VOD017	GUI	6
FEAT7.27.18	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	VOD018	GUI	6
FEAT7.27.19	Window layout data	The Window layout data shall include the Viewers and their positions, their video sources, and their saved or unsaved tours	VOD019	GUI	6

FEAT7.27.2	Drag and drop video sources	The software shall provide drag and drop operation of CCTV icons onto the Video on Desktop	VOD003	GUI	6
FEAT7.27.20	Recall Window layout information	The Window shall allow the user to recall the Window preset information from the menu	VOD020	GUI	6
FEAT7.27.21	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	VOD021	GUI	6
FEAT7.27.22	Resize Window	The Window shall be resizable by the user	VOD022	GUI	6
FEAT7.27.23	Maximize Window as full screen	The Window shall enter a full screen mode when maximized	VOD023	GUI	6
FEAT7.27.24	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	VOD024	GUI	6
FEAT7.27.25	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	VOD025	GUI	6
FEAT7.27.26	Hide Viewer PTZ controls	The Viewer shall hide PTZ controls when the mouse pointer is not positioned over the Viewer.	VOD026	GUI	6
FEAT7.27.27	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.	VOD027	GUI	6
FEAT7.27.28	Nudge controls	The Viewer PTZ controls shall include nudge buttons that command the camera to nudge in the selected direction	VOD028	GUI	6
FEAT7.27.29	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	VOD029	GUI	6
FEAT7.27.3	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	VOD004	GUI	6

FEAT7.27.30	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.	VOD030	GUI	6
FEAT7.27.31	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	VOD031	GUI	6
FEAT7.27.32	Viewer zoom controls	The Viewer's PTZ controls shall include zoom controls.	VOD032	GUI	6
FEAT7.27.33	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	VOD033	GUI	6
FEAT7.27.34	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	VOD034	GUI	6
FEAT7.27.35	Launch CCTV details	The Viewer's command controls shall include a method of launching the CCTV detail status dialog	VOD035	GUI	6
FEAT7.27.36	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	VOD036	GUI	6
FEAT7.27.37	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	VOD037	GUI	6
FEAT7.27.38	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.	VOD038	GUI	6
FEAT7.27.39	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.	VOD039	GUI	6
FEAT7.27.4	Auto-arrange Viewers	When a Viewer is added to, removed from, or moved within the Window, the Window will automatically arrange Viewers	VOD005	GUI	6

FEAT7.27.43	Video on Desktop for Remote Centers	The Video on Desktop shall allow streaming of video streams from C2C remote centers.	SE011	GUI	6.1
FEAT7.27.44	Local and Remote URL Configuration	The software shall allow each video stream to be configured with a local and a remote URL.	SE012	GUI	6.1
FEAT7.27.5	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	VOD006	GUI	6
FEAT7.27.6	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	VOD006	GUI	6
FEAT7.27.7	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.	VOD007	GUI	6
FEAT7.27.8	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	VOD008	GUI	6
FEAT7.27.9	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	VOD009	GUI	6
FEAT7.28	IDS			GUI	6.1
FEAT7.28.1	RWIS Alerts			GUI	6.1

FEAT7.28.1.1	DMS Message Length Warnings	The software shall indicate to the operator when presenting the operator with alert handling options if there were signs that were removed from the response plan due to message length exceeding sign capacity.	RWISUI001	GUI	6.1
FEAT7.28.1.2	Event Hyperlink	If an event was automatically created based on an RWIS alarm, the user shall have the option of opening the event from the alert dialog.	RWISUI002	GUI	6.1
FEAT7.28.1.3	Automatic Event Alert Options	If an event was automatically created based on an RWIS alarm, the software shall present the operator with the following options in order for the alert to be removed from the alert box: 1. Acknowledge the alarm and take ownership; 2. Dismiss as already detected, associate to an existing event, and terminate the new response plan and close the automatically created event; 3. Dismiss as false alarm and terminate the new response plan and close the automatically created event.	RWISUI003	GUI	6.1
FEAT7.28.1.4	No Automatic Event Alert Options	If no event was automatically created based on an RWIS alarm, the software shall present the operator with the following options in order for the alert to be removed from the alert box: 1. create new event and associate the alert to the event, 2. Dismiss as already detected, associate to an existing event; 3. Dismiss as false alarm.	RWISUI004	GUI	6.1
FEAT7.28.2	WWD Devices			GUI	6.1
FEAT7.28.2.1	WWD Alerts on Map	The software shall present wrong way driving detection devices to the operator in the GUI	WWD-005	GUI	6.1
FEAT7.28.2.2	WWD Device Icon	The software shall display a wrong way driving detection device icon on the operator map	WWD-005A	GUI	6.1
FEAT7.28.2.2.1	Icon Coloring for Status	The icon for a wrong way driving detection device shall be colored to indicate operational status	WWD-005A1	GUI	6.1
FEAT7.28.2.3	WWD Device List	The software shall display a list of all wrong way driving detection devices	WWD-005B	GUI	6.1

FEAT7.28.2.3.1	Device Operational Status Display	The list of wrong way driving detection devices shall contain the operational status for each device	WWD-005B1	GUI	6.1
FEAT7.28.3	WWD Alerts			GUI	6.1
FEAT7.28.3.1	Present WWD Alerts	When an alert is received from a wrong way detection device, the software shall present a wrong way driving detection alert to the operator.	WWD-007B	GUI	6.1
FEAT7.28.3.1.1	Icon Shows Unresolved Alerts	The wrong way driving device icon shall indicate if there is an unresolved alert pending for the device and allow the user access the alert handling dialog.	WWD-007B1	GUI	6.1
FEAT7.28.3.1.2	Alert List	When an alert is received from a wrong way detection device, a wrong way driving alert shall be added to the alert list.	WWD-007B2	GUI	6.1
FEAT7.28.3.1.3	WWD Alert Popup	When an alert is received from a wrong way detection device, a dialog shall be presented to all users capabable of receiving alerts.	WWD-007B3	GUI	6.1
FEAT7.28.3.1.4	Alert Handling Options	The wrong way driving detection alert shall present alert handling dialog with options for the user to handle the alert	WWD-007B4	GUI	6.1
FEAT7.28.3.1.4.1	New Event	The user will be presented an option to create a new event	WWD-007B4A	GUI	6.1
FEAT7.28.3.1.4.1.1	Create Event	The system will create a wrong way driving detection event when the user invokes the option to create a new event	WWD-007B4A1	GUI	6.1
FEAT7.28.3.1.4.1.2	Set Location Based on Device	The system will automatically set the location of the event to the Event Management location nearest to the the wrong way driving detection device on the same roadway and direction as the detected alarm	WWD-007B4A2	GUI	6.1
FEAT7.28.3.1.4.1.3	Event Owner	The software will automatically set the event owner to the user handling the alert	WWD-007B4A3	GUI	6.1
FEAT7.28.3.1.4.1.4	WWD Details in Chronology	The system will automatically populate the event chronology with details of the wrong way driving detection alert	WWD-007B4A4	GUI	6.1
FEAT7.28.3.1.4.2	Dismiss as Unable to Confirm	The user will be presented an option to dismiss the alert as unable to confirm	WWD-007B4B	GUI	6.1

FEAT7.28.4	Find on Map	When an alert is created, the alert shall have a Find on Map button that will center the Operator Map to the location provided in the alert	GUI001	GUI	6.2
FEAT7.29	RWIS			GUI	6.1
FEAT7.29.1	Status List	The software shall display a list of RWIS devices with their status.	RWISUI006	GUI	6.1
FEAT7.29.2	RWIS Icons	The software shall display RWIS devices on the operator map.	RWISUI005	GUI	6.1
FEAT7.29.2.1	Icons with Alerts	The software shall indicate on the RWIS icon if the RWIS device is in an alarm state.	RWISUI005A	GUI	6.1
FEAT7.3	General			GUI	1
FEAT7.3.1	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.	WS010	GUI	1
FEAT7.3.10	Event icons	Event icons and/or color coded roadways shown on the SVG GUI SunGuide maps shall be color-coded and clickable.	WS002M2	GUI	3
FEAT7.3.11	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.	S039	GUI	3
FEAT7.3.12	Distribute raw/stored data	SunGuide shall be able to distribute raw and stored data to registered end-users.	DF104	GUI	3
FEAT7.3.14	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.	DF019G	GUI	4
FEAT7.3.2	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.	WS009	GUI	1
FEAT7.3.3	Configurable colors for icons	The colors associated with device status icons shall be configurable.	GS009C	GUI	2

FEAT7.3.4	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.	WS008	GUI	1
FEAT7.3.5	Display color legend	The operator workstation display shall be able to display a legend indicating the color chosen for each color-configurable item.	GS010	GUI	2
FEAT7.3.6	Display all driver data	The GUI shall provide a way to display all data available from the device driver for each device.	WS011	GUI	2
FEAT7.3.7	Roadway display	Mousing over any roadway displayed on the SunGuide map shall display the street name.	AV007L3	GUI	3
FEAT7.3.8	Data inclusions	SunGuide data shall include, but are not limited to: incident/event data, traffic sensor data, and weather data.	TD009	GUI	3
FEAT7.3.9	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.	WS002M1	GUI	3
FEAT7.30	BMS			GUI	6.1
FEAT7.30.1	Beacon Status	The software shall display a list of beacons and their status.	RWISUI007	GUI	6.1
FEAT7.30.2	Beacon Icons	The software shall display beacons on the operator map.	RWISUI008	GUI	6.1
FEAT7.30.2.1	Active Beacon Icons	The software shall indicate on the beacon icon if the beacon is in an activated state.	RWISUI008A	GUI	6.1
FEAT7.30.2.2	Beacon Mouse Hover	The software shall display the beacon name, operational status, activation status, and operational purpose on mouse hover.	RWISUI008B	GUI	6.1
FEAT7.31	C2C		GUI002	GUI	6.2
FEAT7.31.1	Icon Visibility	For all elements in the C2C feed, the software user interface shall allow the user to toggle the visibility for each of the elements on the Operator Map	GUI002A	GUI	6.2

FEAT7.31.2	User Preference	Visibility of the C2C elements shall be a user preference and saved each time a user changes the selection of visible elements	GUI002B	GUI	6.2
FEAT7.31.2.1	Load User Preference	When a user logs into the system, the last known selection for the visibility of C2C elements shall be set automatically	GUI002B1	GUI	6.2
FEAT7.31.3	C2C Link Update Time	The software shall have a global setting for the amount of time between updates when a C2C link is considered to have stale data with a default value of 10 minutes	GUI002C	GUI	6.2
FEAT7.31.3.1	Stale Link Color	When a C2C link has not received an update in the amount of time specified, the link shall change color indicating a stale state	GUI002C1	GUI	6.2
FEAT7.4	TSS			GUI	1
FEAT7.4.1	Audible alerts	The GUI shall provide audible notification of congestion alerts for logged-on operators.	ID001A	GUI	1
FEAT7.4.10	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.	WS018	GUI	3
FEAT7.4.11	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.	WS019	GUI	3
FEAT7.4.2	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.	GS009	GUI	1
FEAT7.4.3	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.	GS008	GUI	1

FEAT7.4.4	Flash unacknowledge lane alarms	Lane segments associated with unacknowledged alarms shall flash on the map.	IM008O1	GUI	1
FEAT7.4.5	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.	WS016	GUI	3
FEAT7.4.6	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).	WS017	GUI	3
FEAT7.4.7	Showing link based speeds	SunGuide link based speeds shall be shown as link information, not as point data.	WS003M	GUI	3
FEAT7.4.8	Operator interface displays	The operator interface shall display the most current traffic conditions for monitored roadways.	WS004M	GUI	3
FEAT7.4.9	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).	WS004M1	GUI	3
FEAT7.5	DMS			GUI	1
FEAT7.5.1	Message library sorting	Message library entries shall be sorted in alphanumeric order within a library.	DM006D	GUI	1
FEAT7.5.2	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.	DM007D	GUI	1
FEAT7.5.3	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.	DM003D2	GUI	1

FEAT7.5.4	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.	DM003D3	GUI	1
FEAT7.5.5	Manual DMS message permission	The system shall have a permission field (per user) for typing a manual message for a DMS.	DM012M	GUI	2
FEAT7.5.6	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.	DM005M5	DMS	2.1
FEAT7.5.7	DMS Conflict Dialog	Conflicts arising from posting DMS messages will be handled in a single dialog regardless of the number of conflicts.	DM015	GUI	5
FEAT7.5.7.1	DMS Conflict Approval	The DMS conflict dialog shall contain options to approve multiple messages at the same time.	DM015A	GUI	5
FEAT7.5.7.2	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.	DM015B	GUI	5
FEAT7.5.8	DMS Group Locations	The software shall present DMS groups as selectable items in schedules, predefined plans, response plans, and manual messaging.	SE014	GUI	6.1
FEAT7.6	MAS			GUI	1
FEAT7.6.1	Manual message priority	The system shall allow the operator to specify a priority level when activating a message manually.	DM008M	GUI	1
FEAT7.6.2	Default manual message priority	The default priority level for manual message activation shall be the highest priority level.	DM009M	GUI	1
FEAT7.6.3	Default sequence message priority	The default priority level for messages included in an automatic sequence shall be the lowest priority level.	DM010M	GUI	1

FEAT7.6.4	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.	TM013R	GUI	1
FEAT7.6.5	Edit MAS message permission	The system shall have a permission field (per user) for editing the message in a device queue.	DM014M	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	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	TM009	GUI	1
FEAT7.7.10	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.	IM006O	GUI	1
FEAT7.7.11	Edit IM message permission	The system shall have a permission field (per user) for editing an incident generated message.	TM004A1	GUI	2

FEAT7.7.2	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.	TM001W	GUI	1
FEAT7.7.3	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.	TM001W1	GUI	1
FEAT7.7.4	Relocate incidents	It shall be possible to relocate incident icons using a drag-and-drop methodology.	GS007	GUI	1
FEAT7.7.5	Read-only access of incidents	Operators shall be able open incidents that they do not own with read-only access.	IM002O	GUI	1
FEAT7.7.6	Display of owner	Ownership of each incident shall be displayed in the incident list.	IM004O	GUI	1
FEAT7.7.7	Filter incidents by owner	It shall be possible to filter the incident list by owner.	IM005O	GUI	1
FEAT7.7.8	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.	IM008O	GUI	1
FEAT7.7.9	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.	IM008O1	GUI	1
FEAT7.8	CCTV			GUI	1
FEAT7.8.1	Camera menu activation	The CCTV GUI shall support activating and operating camera menus for NTCIP CCTV devices.	TV003D1	GUI	2
FEAT7.8.2	Configurable joystick buttons	The GUI shall allow user configuration of joystick button functions	TV001D2	GUI	2
FEAT7.8.3	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.	DF021G1	GUI	4
FEAT7.9	SB			GUI	2

FEAT7.9.1	Display SB status	SunGuide software operator shall be able to display the latest status from each safety barrier sensor.	TM017R1	GUI	2
FEAT7.9.2	SB PLC location	SunGuide map shall display the location of the safety barrier PLCs .	GS011	GUI	2
FEAT7.9.3	SB icon flashing	The icon associated with the sensor reporting a breakaway switch activation shall flash until a user acknowledges the alarm.	GS011S	GUI	2
FEAT8	Closed Circuit Television (CCTV)			CCTV	1
FEAT8.1	General			CCTV	1
FEAT8.1.1	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).	A002	CCTV	1
FEAT8.1.10	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.	TV001D3	CCTV	1
FEAT8.1.11	Keyboard control functions	The external Joystick shall control: - CCTV Pan Tilt and Zoom - Video switching - Video wall control - Create and edit camera presets.	TV001D4	CCTV	1
FEAT8.1.12	Automatic locking 2	Operator activation of any camera motion control shall automatically request a lock on the camera.	TV003S2	CCTV	1
FEAT8.1.13	Lock timeout	The automatically-requested camera lock shall automatically time out after a configurable amount of time.	TV003S3	CCTV	1
FEAT8.1.2	Interface with CCTV cameras	The SunGuide software shall interface with CCTV used for traffic surveillance.	S015	CCTV	1
FEAT8.1.4	Lock CCTV	The CCTV function shall incorporate software logic to allow only one workstation at a time to control a particular CCTV unit.	TV003S	CCTV	1

FEAT8.1.5	Camera menu	A selectable menu of cameras shall be provided to the user.	PA001U	CCTV	1
FEAT8.1.6	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, ONVIF	TV003	CCTV	1
FEAT8.1.7	Real-time video display and control	The SunGuide software shall provide software for real-time video display and real-time video control.	A008	CCTV	1
FEAT8.1.8	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	TV006S	CCTV	1
FEAT8.1.9	Automatic locking	A "lock" shall be acquired when a camera is selected if no other user holds a "lock".	TV003S1	CCTV	1
FEAT8.2	Camera types			CCTV	1
FEAT8.2.1	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.	TV001D	CCTV	1
FEAT8.2.10	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.	TV001D6	CCTV	3
FEAT8.2.2	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·ONVIF SunGuide	TV002D	CCTV	1
FEAT8.2.3	IP based controls	The CCTV driver shall also support cameras with IP based controls.	TV017D	CCTV	1

FEAT8.2.4	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.	TV002	CCTV	1
FEAT8.2.5	Device driver types	At a minimum the CCTV function shall provide device drivers for the following camera types:· NTCIP compliant cameras, ONVIF compliant cameras, · Sunguide protocol	TV001	CCTV	1
FEAT8.2.6	NTCIP standard	Whenever possible, the NTCIP protocol standard shall be utilized for camera control and communication.	TV003D	CCTV	1
FEAT8.2.8	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.	TV005D	CCTV	1
FEAT8.2.9	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.	TV001D5	CCTV	3
FEAT8.3	Functionality	Functionality will be provided if the protocol supports the particular function.		CCTV	1
FEAT8.3.1	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.	TV007D	CCTV	1

FEAT8.3.10	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.	TV016D	CCTV	2
FEAT8.3.2	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.	TV008D	CCTV	1
FEAT8.3.3	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.	TV009D	CCTV	1
FEAT8.3.4	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.	TV010D	CCTV	1

FEAT8.3.5	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.	TV011D	CCTV	2
FEAT8.3.6	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.	TV012D	CCTV	2
FEAT8.3.7	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.	TV013D	CCTV	2
FEAT8.3.8	Zone parameters:	The device driver shall contain the following CCTV zone parameters:· Maximum number of zones parameter; and· Zone tables.	TV014D	CCTV	2
FEAT8.3.9	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.	TV015D	CCTV	2
FEAT8.4	Display			CCTV	1
FEAT8.4.1	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	TV001S	CCTV	1

FEAT8.4.2	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.	TV002S	CCTV	1
FEAT8.4.3	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.	TV004S	CCTV	1
FEAT8.4.4	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.	TV005S	CCTV	1
FEAT8.4.5	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).	PA003	CCTV	1
FEAT8.4.6	Video Switching			CCTV	4
FEAT8.4.6.1	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.	TV007S	CCTV	4
FEAT8.4.6.2	Shared displays	The SungGuide Operator Map shall present shared displays to users as specified by the graphical layout stored in the Video Switching subsystem.	TV008S	CCTV	4

FEAT8.4.7	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.	VW001	VW	5.1.1
FEAT8.4.7.1	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.	VW002	VW	5.1.1
FEAT8.4.7.2	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	VW003	VW	5.1.1
FEAT8.4.7.3	Video Wall Controller Connection	The SunGuide software shall connect to one or more video wall controllers at a configured host and port	VW004	VW	5.1.1
FEAT8.4.7.4	Video Wall Controller Management	The SunGuide software shall provide management functions of the video wall controller to approved users	VW005	VW	5.1.1
FEAT8.4.7.4.1	Video Wall Controller Selection	The SunGuide software shall allow the selection of a configured video wall controller to manage	VW005A	VW	5.1.1
FEAT8.4.7.4.2	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	VW005B	VW	5.1.1
FEAT8.4.7.4.2.1	Video Wall Controller Layout Activation	The SunGuide software shall allow the activation of the selected layout on the selected video wall controller	VW005B1	VW	5.1.1
FEAT8.4.7.4.2.2	Video Wall Controller Layout Deactivation	The SunGuide software shall allow the deactivation of the selected layout on the selected video wall controller	VW005B2	VW	5.1.1
FEAT8.4.7.4.3	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	VW005C	VW	5.1.1

FEAT8.4.7.4.3.1	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	VW005C1	VW	5.1.1
FEAT8.4.7.4.3.2	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	VW005C2	VW	5.1.1
FEAT8.4.7.4.4	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	VW005D	VW	5.1.1
FEAT8.4.7.5	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	VW006	VW	5.1.1
FEAT8.4.7.6	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.	VW007	VW	5.1.1
FEAT8.5	ONVIF	The SunGuide software shall provide the capability to control (e.g. pan, tilt, zoom, focus, iris) any ONVIF compliant camera as certified by the ONVIF organization, i.e. an ONVIF Network Video Client.	TV018D	CCTV	6.1
FEAT8.5.1	Functionality	Functionality will be provided through the ONVIF driver for services that are available through ONVIF and implemented by the device	TV019D	CCTV	6.1

FEAT8.5.2	Range Objects	The CCTV range objects shall be implemented in the ONVIF device driver and shall include all of the following information if available: A maximum number of presets parameters; Pan left limit parameters; Pan right limit parameters; Pan home position 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.	TV020D	CCTV	6.1
FEAT8.5.3	Timeout Objects	The ONVIF device driver shall contain the CCTV timeout objects and shall include all of the following information if available: Pan timeout parameter; Tilt timeout parameter; Zoom timeout parameter.	TV021D	CCTV	6.1
FEAT8.5.4	Preset Objects	The ONVIF device driver shall contain CCTV preset objects and shall include all of the following information if available: Go to preset position parameters; Store preset position parameters; Pan position parameters; Tilt position parameters; Lens zoom position parameter.	TV022D	CCTV	6.1
FEAT8.5.5	System feature control objects	The ONVIF device driver shall contain CCTV system feature control objects and shall include all of the following information if available: System lens feature control parameter; System lens feature status parameter; and System lens equipment availability parameter.	TV023D	CCTV	6.1
FEAT9	Dynamic Message Signs (DMS)			DMS	1
FEAT9.1	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).	S019	DMS	1

FEAT9.10	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.	DM005D	DMS	1
FEAT9.11	Fonts			DMS	2.1
FEAT9.11.1	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.	DM005MA	DMS	2.1
FEAT9.11.2	Assign DMS fonts	SunGuide shall require that a font be assigned to each DMS device.	DM005M1	DMS	2.1
FEAT9.11.3	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.	DM005M2	DMS	2.1
FEAT9.11.4	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.	DM005M3	DMS	2.1
FEAT9.11.5	Verify message	DMS shall use each device's font characteristics to determine whether a message can be displayed.	DM005M4	DMS	2.1
FEAT9.12	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.	DM007	DMS	3
FEAT9.13	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.	DM018M	DMS	3

FEAT9.14	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).	TM008A	DMS	3
FEAT9.15	Log posted DMS messages	The log file shall list each newly posted DMS message, the corresponding DMS' involved, and a time/date timestamp.	EX008L	DMS	3
FEAT9.16	Color DMS	The software shall support the use of color DMSs.	DM016	DMS	6
FEAT9.17	Color DMS through C2C	The software shall support the transmission of the color DMS status via Center to Center.	DM017	DMS	6
FEAT9.18	Archival of Color DMS	The software shall support the archival of the transmission of color DMS messages in the database	DM018	DMS	6
FEAT9.19	DMS Groups	When a DMS group is updated, the software shall use the updated group.	SE013	DMS	6.1

FEAT9.2	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 and restart the DMS device driver via operator control.	DM003D	DMS	1
FEAT9.20	Force Blank	The software shall support an option to display and report a DMS's current message as BLANK when the sign enters the Failed op status. This option will be referred to as Report Blank on Failure.	DM024	DMS	6.2
FEAT9.20.1	Global Enable/Disable	The software shall provide a global configuration value to enable or disable the Report Blank on Failure feature	DM024A	DMS	6.2

FEAT9.20.1.1	Report as Blank	For a given sign, if its per-sign configuration is set to Default and the global configuration value is set to enable Report Blank on Failure, when the sign enters the Failed op status, the software shall display and report the sign's current message as blank	DM024A1	DMS	6.2
FEAT9.20.2	Device Level Configuration	For each sign, the software shall provide an configuration value to Enable, Disable, or Default (use the global configuration value) to configure the Report Blank on Failure feature for individual signs	DM024B	DMS	6.2
FEAT9.20.2.1	Device Level Report as Blank	For a given sign, if its per-sign configuration is set to enable Report Blank on Failure, when the sign enters the Failed op status, the software shall display and report the sign's current message as blank	DM024B1	DMS	6.2
FEAT9.21	Force Caps Setting	The software shall provide an optional configuration value that globally disables the ability to toggle the "Force Caps" within the DMS Multi editor	DM025	DMS	6.2
FEAT9.21.1	Disable the Force Caps Option	If the above configuration value is set to true, the software shall disable the ability to toggle the "Force Caps" option within the DMS Multi editor	DM025A	DMS	6.2
FEAT9.3	Sending database messages	The DMS software device driver shall be capable of sending all messages as defined in the DMS message database.	DM001	DMS	1
FEAT9.4	Save messages	The DMS software shall implement a database of standard messages.	DM002	DMS	1
FEAT9.4.1	DMS Priority	When creating a DMS library message, the user shall be able to configure a message priority.	DM002A	DMS	6
FEAT9.5	Acceptable words/messages	The DMS database shall contain a list of acceptable messages and words/or messages that are unacceptable.	DM001D	DMS	1
FEAT9.6	System configuration	The DMS database shall contain DMS internal operating parameters and internal messages.	DM002D	DMS	1

FEAT9.7	Trail blazer signs	The SunGuide system shall provide an interface to the dynamic and blank-out trail blazer signs.	TB001	DMS	2
FEAT9.8	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.	DM003D1	DMS	1
FEAT9.9	DMS driver default page times	Each DMS device driver shall have configurable default page on and off times.	DM004D	DMS	1

Appendix B:

SUB REQUIREMENTS

SUB	Name	Requirement text	Version	SunGuide ID
SUB1	EH - Executive Handler	Requirements for the EH system.	1	
SUB1.1	General		1	
SUB1.1.1	Configurable parameters	The following shall be configurable parameters of the EH process:· Host name· TCP port number	1	
SUB1.1.2	Log level	The system shall allow the logging level to be modified.	1	
SUB1.2	EH process		1	
SUB1.2.1	Control processes	The system shall be able to stop and start processes running on machines reachable on the local network.	1	
SUB1.2.2	Heartbeat	The system shall be capable of receiving a heartbeat from the system processes.	1	
SUB1.3	EH viewer		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.	1	
SUB1.3.2	Process health	The system viewer shall display the health of the various processes in a configurable manner.	1	
SUB2	IMS - Inventory Management System		1	
SUB3	IM - Incident Management		1	
SUB3.1	Associate events	The system shall allow an operator to associate a new incident with another, existing incident.	1	
SUB3.2	Response plans		1	
SUB3.2.1	Recommend response plans	The IM subsystem shall recommend a response plan based on incident location and incident severity.	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).	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.	1	
SUB3.3	Message formats		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).	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.	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).	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.	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.	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.	1

SUB4	DD - Data Distribution		1
SUB4.1	Subsystem requests	The client shall be able to send subsystem requests to the data distribution function and receive subsystem responses.	1
SUB4.2	Route requests to subsystems	The data distribution function shall distribute requests from clients to the appropriate subsystems.	1
SUB4.3	Subscribe	The data distribution function shall enable the client to subscribe to status update notifications.	1
SUB4.4	ICD	The data distribution function shall provide a published Interface Control Document for client connections.	1
SUB4.5	Provider template	The data distribution function shall require subsystem ICDs to conform to a provider template.	1
SUB4.6	Status request	The client shall be able to request status information from all provider subsystems currently in the system.	1
SUB5	GUI - Graphical User Interface (General)		1
SUB5.1	General		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.	1
SUB5.1.2	Reports	The system shall provide authorized users a method of selecting and customizing data reports.	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).	1
SUB5.1.4	Configuration Editor		1
SUB5.1.4.1	Editing configurable items	The system shall allow the editing of configurable items in the configuration file.	1
SUB5.1.5	Administrative editor		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.	1
SUB5.1.5.2	Reporting subsystem pages	Administrative Editor Reporting Subsystem Pages shall be added for the configuration of Performance Measures.	1
SUB5.2	Map		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.		1
SUB5.2.2	Map icons	The map shall display icons for roadway devices, incidents, and other resources (e.g., fire hydrants).		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.		1
SUB5.2.4	Device control	The map shall provide a method for sending appropriate commands to any roadway device displayed on the map.		1
SUB5.3	CCTV			2
SUB5.3.1	CCTV icon colors	The colors associated with cctv status icons shall be configurable.		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.		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.		2
SUB5.4	DMS			2
SUB5.4.1	DMS icon colors	The colors associated with dms status icons shall be configurable.		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.		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.		2
SUB5.4.4	Blank a queue	The User Interface shall provide a method allowing the MAS queue of a DMS to be blanked	5.1.1	TM013R1
SUB5.4.5	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.	5.1.1	TM013R2
SUB5.4.6	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.	5.1.1	TM013R3
SUB5.5	HAR			2
SUB5.5.1	HAR icon colors	The colors associated with har status icons shall be configurable.		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.		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.		2

SUB5.6	RWIS		2
SUB5.6.1	RWIS icon colors	The colors associated with rwis status icons shall be configurable.	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.	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.	2
SUB5.7	RMS		2
SUB5.7.1	RMS icon colors	The colors associated with rms status icons shall be configurable.	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.	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.	2
SUB5.8	SB		2
SUB5.8.1	SB icon colors	The colors associated with sb status icons shall be configurable.	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.	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.	2
SUB5.9	TSS		2
SUB5.9.1	TSS icon colors	The colors associated with tss status icons shall be configurable.	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.	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.	2
SUB6	CCTV - Closed Circuit Television	Requirements for the CCTV system.	1
SUB6.1	Resource arbitration		1
SUB6.1.1	Lock camera	The system shall allow a client to request locking of a camera for sole usage.	1
SUB6.1.2	Unlock camera	The system shall allow a client to request unlocking of a camera.	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.	1
SUB6.2	Control camera		1

SUB6.2.1	Camera accessibility	The system shall allow a camera to be placed online (accessible) or offline (inaccessible).	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.	1
SUB6.3	Camera presets		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.	1
SUB6.3.2	Select preset	The system shall allow saved preset position information to be sent to a particular camera.	1
SUB6.4	Video tours		1
SUB6.4.1	Configure video tours	The system shall allow a video tour to be created, modified or deleted.	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.	1
SUB6.5	System		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.	1
SUB7	DMS - Dynamic Message Signs	Requirements for the DMS system.	1
SUB7.1	Control 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.	1
SUB7.1.2	Terminate message	The system shall be able to terminate the message on one or more DMSs.	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".	1
SUB7.1.4	Set brightness	The system shall be able to set the brightness mode of a DMS to "Auto", "Day" or "Night".	1
SUB7.1.5	Control mode	The system shall be able to set the control mode for one or more DMSs.	1
SUB7.1.6	Exercise shutters	The system shall be able to exercise the shutters of a DMS.	1
SUB7.1.7	Reset controller	The system shall be able to reset the controller of one or more DMSs.	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.		1	
SUB7.1.9	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.	5.1.1		DM023
SUB7.2	Query 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.		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.		1	
SUB7.2.3	Fan status	The system shall be able to query a DMS for the status of the fans.		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.		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.		1	
SUB7.3	System			1	
SUB7.3.1	Configure messages	The system shall allow messages to be composed and saved in the database.		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.		1	
SUB7.3.3	System defaults	The system shall maintain system defaults including a default message and poll cycle times.		1	
SUB7.3.4	Automatic polls	The system shall poll DMSs for their current status information on a cyclic basis.		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.		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.		1	

SUB7.3.7	DMS Polling Interval	The DMS subsystem shall poll each device at the interval specified for that device.			DM020
SUB7.3.8	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.			DM020A
SUB7.3.9	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.			DM021
SUB7.3.10	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.	5.1.1		DM022
SUB7.4	Color DMS			6	DMS04
SUB7.4.1	NTCIPv2 Support	The software shall additionally support the NTCIP version 2 protocol		6	DMS041
SUB7.4.2	Color DMS Templates	The software shall have a standard color DMS layout for creating color DMS messages and templates		6	DMS042
SUB7.4.2.1	Standard DMS layout	The standard color DMS layout shall include one graphic and one text message per phase		6	DMS042A
SUB7.4.2.2	Graphic Height	The graphic shall occupy the entire height of the sign		6	DMS042B
SUB7.4.2.3	Graphic Aspect Ratio	The graphic shall maintain its aspect ratio		6	DMS042C
SUB7.4.2.4	Graphic Left Justified	The graphic shall be left justified within the layout		6	DMS042D
SUB7.4.2.5	DMS Text Area	The text area shall be the remaining portion of the layout not occupied by the graphic		6	DMS042E
SUB7.4.2.6	Centered Text	The text message shall be centered within the text area		6	DMS042F
SUB7.4.2.7	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.		6	DMS042G
SUB7.4.2.8	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.		6	DMS042H
SUB7.4.2.8.1	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.		6	DMS042H1

SUB7.4.3	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.	6	DMS043
SUB7.4.3.1	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.	6	DMS043A
SUB7.4.3.2	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	6	DMS043B
SUB7.4.3.3	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.	6	DMS043C
SUB7.4.3.3.1	User Notification	The user will be notified of the list of messages that have the graphic associated to them.	6	DMS043C1
SUB7.4.3.3.3.1	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.	6	DMS043C3A
SUB7.4.3.3.4	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.	6	DMS043C4
SUB7.4.4	Color DMS message template generation	The software shall support color DMS message and color DMS message template generation	6	DMS044
SUB7.4.4.1	Background and Text Color	The software shall allow the user to change the default background and default text color of messages and message templates.	6	DMS044A
SUB7.4.4.1.1	MUTCD Colors	For user defined color schemes, the software shall present the user with options of color that are allowed by the MUTCD.	6	DMS044A1
SUB7.4.4.1.1.1	Text Color Options	Text color options are red, white, yellow, orange, fluorescent yellow-green, fluorescent pink, and amber.	6	DMS044A1A
SUB7.4.4.1.1.2	Background Color Options	Background color options are black, blue, green	6	DMS044A1B
SUB7.4.4.1.2	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.	6	DMS044A2

SUB7.4.4.1.3	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.	6	DMS044A3
SUB7.4.4.1.4	Using graphics in templates	The software shall generate color DMS messages from templates for events using graphics available in the graphic library	6	DMS044A4
SUB7.4.4.1.4.1	Using Event Type Graphic	If the event type graphic is available, it shall be used	6	DMS044A4A
SUB7.4.4.1.4.2	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	6	DMS044A4B
SUB7.4.4.1.5	Travel time template shield graphic	The software shall allow the user to select the appropriate shield graphic for a device's travel time template.	6	DMS044A5
SUB7.4.5	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.	6	DMS045
SUB8	TSS - Transportation Sensor System	Requirements for the TSS system.	1	
SUB8.1	Raw data	The system traffic flow information output shall include raw data.	1	
SUB8.1.1	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.		TD020
SUB8.1.2	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.		TD021
SUB8.1.3	Archiving Lane Status	SunGuide shall support archive speed, volume, and occupancy by lane for at least 10 lanes of a TSS link.		TD022
SUB8.2	Smoothed data	The system output shall include smoothed traffic flow information.	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.	1	
SUB8.4	Automatic polls	The system shall poll TSSs for their current status information on a cyclic basis.	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.	1
SUB8.6	Traffic Detector Failure Alerts		
SUB8.6.1	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.	5.1 TD016A
SUB8.6.2	Email alert content	Traffic Detector Failure alerts shall contain the detector and the time the detector entered the failed state	5.1 TD016B
SUB8.6.3	Status Logger Alerts	Traffic Detector Failure alerts shall be logged in the Status Logger	5.1 TD016C
SUB8.7	System-wide Traffic Detector Alerts		5.1
SUB8.7.1	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.	5.1 TD017A
SUB8.7.2	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	5.1 TD017B
SUB8.7.3	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	5.1 TD017C
SUB8.7.4	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	5.1 TD017D

SUB8.7.5	System Message	The System-wide Traffic Detector Failure alert shall be presented to users in the System Messages dialog	5.1	TD017E
SUB8.7.6	Status Log Message	System-wide Traffic Detector Failure alerts shall be logged in the Status Logger	5.1	TD017F
SUB8.8	Invalid Detector Data Alerts		5.1	
SUB8.8.1	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.	5.1	TD018A
SUB8.8.2	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	5.1	TD018A1
SUB8.8.3	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	5.1	TD018A2
SUB8.8.4	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	5.1	TD018B
SUB8.8.5	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	5.1	TD018B1
SUB8.8.6	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	5.1	TD018B2
SUB8.8.7	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	5.1	TD018B3
SUB8.8.8	Email Alert Content	Invalid Detector Data alerts shall contain the detector, link, and lane that generated the alert	5.1	TD018C
SUB8.8.9	Status Log Message	Invalid Detector Data alerts shall be logged in the Status Logger	5.1	TD018D
SUB8.9	Alert Generation Delay Threshold		5.1	

SUB8.9.1	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.	5.1	TD019A
SUB8.9.2	Delay Threshold Configuration	A delay threshold for Traffic Detector Failure alerts shall be configurable in the SunGuide Configuration File	5.1	TD019A1
SUB8.9.3	Delay Threshold Configuration	A delay threshold for System-wide Traffic Detector Failure alerts shall be configurable in the SunGuide Configuration File	5.1	TD019A2
SUB8.9.4	Delay Threshold Configuration	A delay threshold for Invalid Detector Data alerts shall be configurable in the SunGuide Configuration File	5.1	TD019A3
SUB8.9.5	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	5.1	TD019B
SUB8.10	Classification Data		5.1	
SUB8.10.1	Classification Data Collection	The software shall support the reporting of up to 8 different vehicle classifications from a single detector.	5.1	TD023
SUB8.10.2	Archive Classification Data	The software shall archive up to 8 different vehicle classifications for a single detector.	5.1	TD024
SUB8.10.3	Rollup Classification Data	The software shall average the classification data on 15 minute, 1 hour, and 24 hour intervals	5.1	TD025
SUB8.10.4	Purge Classification Data	The software shall purge raw classification data from the database at a configurable interval	5.1	TD026
SUB8.11	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.	5.1.1	TM025A
SUB8.12	Speed Anomaly Threshold	SPEED_ANOMALY_TH [MPH]: The software will discard matches that calculate to a speed higher than the SPEED_ANOMALY_TH.	5.1.1	TM025B
SUB8.13	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	5.1.1	TM025C
SUB8.14	Storing matches	The algorithm will independently store the non-discarded matches as filtered matches as well as unfiltered matches.	5.1.1	TM025D

SUB8.14.1	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	5.1.1	TM025D1
SUB8.14.2	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	5.1.1	TM025D2
SUB8.15	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.	5.1.1	TM025E
SUB8.16	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	5.1.1	TM025F
SUB8.17	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.	5.1.1	TM025H
SUB8.17.1	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	5.1.1	TM025H1
SUB8.17.2	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	5.1.1	TM025H2
SUB8.17.3	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	5.1.1	TM025H3
SUB8.17.4	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	5.1.1	TM025H4

SUB8.17.5	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.	5.1.1	TM025H5
SUB8.17.6	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	5.1.1	TM025H6
SUB9	EC - Evacuation Coordination			1
SUB9.1	EG - Evacuation Guidance			1
SUB9.1.1	General			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.		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.		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.		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			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.		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.		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.		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.	1
SUB9.1.2.5	Evacuation shelter input	Information relevant to evacuation shelters shall be entered into the system via manual data entry forms.	1
SUB9.1.2.6	Hazardous conditions input	Information relevant to hazardous conditions shall be entered into the system via manual data entry forms.	1
SUB9.1.2.7	Weather conditions input	Information relevant to weather conditions shall be entered into the system via manual data entry forms.	1
SUB9.1.2.8	Transportation modes input	Information relevant to transportation modes shall be entered into the system via manual data entry forms.	1
SUB9.1.2.9	Evacuation guidance input	Information relevant to evacuation guidance shall be entered into the system via manual data entry forms.	1
SUB9.1.2.10	Lodging availability input	Information relevant to lodging availability shall be entered into the system via manual data entry forms.	1
SUB9.1.3	Displays		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.	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.	1
SUB9.1.3.3	Evacuation destinations display	Alternative evacuation destinations information shall be provided via a static web page accessible through the Internet.	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.	1
SUB9.1.3.5	Shelter display	Evacuation shelters information shall be provided via a static web page accessible through the Internet.	1
SUB9.1.3.6	Weather conditions display	Weather conditions information shall be provided via a static web page accessible through the Internet.	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.	1
SUB9.1.3.8	Evacuation guidance display	Evacuation guidance information shall be provided via a static web page accessible through the Internet.	1
SUB9.1.3.9	Lodging availability display	Lodging availability information shall be provided via a static web page accessible through the Internet.	1

SUB10	RWIS - Road Weather Information System		2
SUB11	C2C - Center to Center	Requirements for the C2C system.	2
SUB11.1	System		2
SUB11.1.1	Network ID	The SunGuide system shall require each connection (i.e., TMC or remote user) to supply a network identifier.	2
SUB11.1.2	Retrieve data	The system shall allow a network to retrieve device status information from another network.	2
SUB11.1.3	Incidents	The system shall allow a network to send incident information to another network.	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.	2
SUB11.1.5	Roadway segments	Roadway segments shall be designated by two nodes and a link as defined in the ICD.	2
SUB11.2	Status		2
SUB11.2.1	DMS	The system shall maintain the most current DMS status information for DMSs in the connected networks.	2
SUB11.2.2	HAR	The system shall maintain the most current HAR status information for HARs in the connected networks.	2
SUB11.2.3	CCTV	The system shall maintain the most current CCTV status information for CCTVs in the connected networks.	2
SUB11.2.5	RWIS	The system shall maintain the most current RWIS status information for RWISs in the connected networks.	2
SUB11.3	Control		2
SUB11.3.1	DMS	The system shall allow a network to send a command request to a DMS in another network.	2
SUB11.3.2	HAR	The system shall allow a network to send a command request to a HAR in another network.	2
SUB11.3.3	CCTV	The system shall allow a network to send a command request to a CCTV in another network.	2
SUB12	DA - Data Archiving		2
SUB12.1	General		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).	2
SUB12.1.2	Missing data	If data is not available, an entry of "n/a" shall be included in the detailed data line.	2
SUB12.1.3	Organization	Each subsystem's data that is archived shall be in a separate data file.	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.	2
SUB12.2	Archive files		2
SUB12.2.1	File duration	Archive files shall contain 24 hours of data (midnight to midnight).	2
SUB12.2.2	File location	The location of the archive files shall be configurable.	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.	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.	2
SUB12.2.5	File detailed contents	Each detail line of the archive file shall contain comma separated fields.	2
SUB12.3	Types of archives		2
SUB12.3.1	System log archives	The status of the SunGuide processes shall be maintained in the SunGuide Status Logger files.	2
SUB12.3.2	Device status archives	The status of SunGuide devices shall be maintained in the SunGuide Status Logger files.	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	2

SUB12.3.4	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	5.1.1	DA03D
SUB12.3.4.1	Rollup - Volume Weighted Speed Average	The rollup average for a TSS link shall weight the speed on each vehicle in the rollup interval equally.	6	DA03D1
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)	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	2	
SUB12.3.6.1	Configurable days of archive data	The SunGuide configuration file shall contain a parameter indicating the number of days raw RWIS data shall be stored in the database.	6.1	RWISDA003
SUB12.3.6.2	Purge old data	The software shall keep a configured number of days worth of raw RWIS data in the database and nightly purge data outside the configured range from the database.	6.1	RWISDA004
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	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	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)	2	
SUB12.3.10	Beacon archives	The software shall archive operational data from the beacon subsystem.	6.1	RWISDA001
SUB13	HAR - Highway Advisory Radio		2	
SUB13.1	System		2	
SUB13.1.1	Automatic polls	The system shall maintain HARs current status information.	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.	2	
SUB13.1.3	HAR Interface	The HAR subsystem shall interface to the Highway Information System DR2000 using the DR2000 Software Interface Module.	2	
SUB13.2	Control HAR		2	
SUB13.2.1	Send message	The system shall allow a text message to be sent to a HAR or multiple HARs.	2	
SUB13.2.2	Terminate message	The system shall allow the message currently being broadcast on a HAR to be terminated.	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".	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.	2	
SUB14	SL - Status Logging		1	
SUB14.1	General		1	
SUB14.1.1	Configurable parameters	The following shall be configurable parameters of the logging process:· Host name· TCP port number· Database directory location · Log rollover interval· File reuse.	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· SLDETAIL: Detail message	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.	1
SUB14.2	Logging process		1
SUB14.2.1	Connect	The logging process shall allow a client to connect and disconnect from a TCP/IP TCP socket.	1
SUB14.2.2	Multiple clients	The logging process shall support multiple simultaneous client connections.	1
SUB14.3	Log viewer		1
SUB14.3.1	View files	The log viewer shall be capable of viewing in a scrollable window any of the logs generated by the logging process.	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.	1
SUB14.3.3	ASCII export	The log viewer shall be capable of exporting a log file to UTF-8, tab-delimited file.	1
SUB14.3.4	Refresh	The log viewer shall support manual and periodic log file display refresh.	1
SUB15	USER - User Management		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.	1
SUB15.2	Modify individual user privileges	The system shall allow individual user privileges to be modified without affecting the default group levels.	1
SUB15.3	Modify default group levels	The system shall allow the default group permissions to be modified.	1
SUB16	WS - Web Server		1
SUB16.1	General		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.	1
SUB16.1.2	HTML content	The web server shall be implemented using HTML.	1
SUB16.1.3	Data source	The source for the data displayed on the Web Server shall be SunGuide Center-to-Center Interface.	1
SUB16.2	Video server		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.	1
SUB16.2.2	Snapshot availability	Video snapshots (still images) shall be published to the SunGuide Data Bus for dissemination.	1
SUB16.3	CCTV control		2
SUB16.3.1	Web CCTV control	The SunGuide CCTV Control GUI shall be used to perform camera operations.	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.	2
SUB16.4	Map		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.	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	2
SUB16.4.3	Map icons	Icons shall be used to locate the following SunGuide Web Data:· Incident data· DMS· RWIS· Video snapshots	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.	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.	2
SUB16.4.6	Types of data		2
SUB16.4.6.1	DMS	DMS data shall be displayed so that the viewer can see what is displayed on the roadway.	2
SUB16.4.6.2	RWIS	Detailed RWIS data shall be displayed when a RWIS detector is selected on the map display.	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).	2
SUB16.4.6.4	Incident data	Detailed incident data shall be displayed when an incident icon is selected on the map display.	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.	2
SUB17	EM - Event Management		3
SUB17.1	General		3
SUB17.1.1	EV access permission	Event Management subsystem permissions will include a permission for Event Viewer access.	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.	3
SUB17.2	Response plans		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.	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.	3
SUB17.3	Email alert messages		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.	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).	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.	3
SUB17.4	Event data entry		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."	3
SUB18	RS - Reporting System		3
SUB18.1	General		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.	3
SUB18.1.2	Data editing permissions	Access to the Reporting GUI data editing page will be restricted to users with data editing permissions.	3
SUB18.2	Reports		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.	3
SUB18.2.2	Chronology reports	The reporting GUI reports page, shall include Event Chronology, and Daily Chronology Reports (combining multiple event chronology reports).	3
SUB18.2.3	Road ranger vehicle status report	The Reporting GUI reports page shall include a Road Ranger Vehicle status report.	3

SUB18.2.4	Vehicle location report	The Reporting GUI reports page shall include a Vehicle Location Report.	3
SUB18.2.5	Camera usage report	The Reporting GUI reports page shall include a Camera Usage Report.	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.	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).	3
SUB18.2.8	DMS message report	The Reporting GUI reports page shall include a DMS Message report.	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.	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).	3
SUB18.2.11	Traffic flow monthly report	The Reporting GUI reports page shall include a Traffic Flow Monthly Report.	3
SUB18.2.12	Central software reliability report	The Reporting GUI reports page shall include a Central Software Reliability Report.	3
SUB18.2.13	ITS device status history report	The Reporting GUI reports page, shall include an ITS Device Status History Report.	3
SUB18.2.14	Traveler information monthly report	The Reporting GUI reports page shall include a Traveler Information Monthly Report.	3
SUB18.2.16	Incident management monthly report	The Reporting GUI reports page shall include an Incident Management Monthly Report.	3
SUB19	MAS - Message Arbitration System		3
SUB19.1	General		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.	3

SUB19.2	Message consistentcy	MAS shall attempt to keep the message reported for a DMS consistent with the top message on the MAS queue	5.1.1	DM007M3
SUB19.3	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.	5.1.1	DM007M4
SUB19.4	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	5.1.1	DM007M5
SUB19.5	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.	5.1.1	DM007M6
SUB19.6	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.	5.1.1	DM007M7
SUB19.7	MAS queues retrieved from database on startup	MAS shall retrieve the current list of queues from the database upon startup	5.1.1	DM007M8
SUB20	EV - Event Viewer		3	
SUB20.1	General		3	
SUB20.1.1	Accessible via web server	Event Viewer shall be accessible through the web server component of the SunGuide website.	3	
SUB20.1.2	Terminate session with logout button	A user can terminate their session with the logout button.	3	
SUB20.2	Configuration		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.	3	
SUB21	511		3	
SUB21.1	General		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.	3	

SUB21.1.2	Recorded messages available after approval	A specially recorded message shall be considered available after it has been approved.	3
SUB21.2	Reports		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.	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.	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.	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.	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.	3
SUB21.2.7	One incident report per segment	At most one (1) Incident Link Report shall be associated with a 511 reporting segment.	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.	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.	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.	3
SUB21.3	Travel times		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.	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.	3	
SUB21.4	Scenarios		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."	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).	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.	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."	3	
SUB22	AVL - Automatic Vehicle Location		3	
SUB22.1	General		3	
SUB23	CVS - Connected Vehicle System		5.1	
SUB23.2	Configuration		5.1	
SUB23.2.1	Name RSEs	The software shall provide the capability to specify the name of an RSE.	5.1	CV001A
SUB23.2.2	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	5.1	CV001B

SUB23.2.3	Location	The software shall provide the capability to specify the physical location of an RSE using latitude, longitude, roadway, direction, and description	5.1	CV001C
SUB23.2.4	Specify Detection Zones	The software shall provide the capability to specify one or more detection zones for each RSE	5.1	CV001D
SUB23.2.5	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.	5.1	CV001D1
SUB23.2.6	RSE Database Storage	Configuration information for an RSE shall be stored in the SunGuide database.	5.1	CV001E
SUB23.2.7	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.	5.1	CV004A
SUB23.2.8	RSE Default Message Template	The software shall provide the capability to specify a default message template for an RSE.	5.1	CV005A
SUB23.2.9	Default Template Configuration Amber Alert	The software shall provide the capability to specify a message template for amber alert events	5.1	CV005B
SUB23.3	Data Acquisition		5.1	
SUB23.3.1	Support Standards	The software shall be capable of receiving messages from "Connected Vehicle" based on SAE J2735 2009-11 and J2735 VIIPOC standards.	5.1	CV006A
SUB23.3.2	Receiving BSM	The software shall be capable of receiving and reporting the "Connected Vehicle" Basic Safety Messages (BSM)	5.1	CV006A
SUB23.3.3	BSM Data	The software shall retrieve latitude, longitude, elevation, speed, and heading from the reported BSM, as available	5.1	CV006A1A
SUB23.3.4	Receiving PVDM	The software shall be capable of receiving and reporting aggregated Probe Vehicle Data message (PVDM)	5.1	CV006A2
SUB23.3.5	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	5.1	CV006A2A
SUB23.3.6	Sending TAMs	The software shall provide the ability to send TAMs to RSE devices connected to SunGuide.	5.1	CV007A
SUB23.3.7	TAM Formatting Standards	The message formats of the TAMs shall be based on SAE J2735 2009-11 and J2735 VIIPOC standards.	5.1	CV007B
SUB23.4	GUI		5.1	

SUB23.4.1	RSE Icon	The software's GUI shall display an icon representing RSEs on the Operator Map.	5.1	CV010A
SUB23.4.2	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.	5.1	CV010A1
SUB23.4.3	RSE Icon displays Operational Status	The software shall modify the display of RSE icons in response to operational status changes.	5.1	CV010A2
SUB23.4.4	RSE Icon navigate to Status Dialog	When an operator clicks on an RSE icon, a dialog will be shown containing RSE data.	5.1	CV010A3
SUB23.4.5	RSE Status Content	The software's GUI shall display "Connected Vehicle" data derived from the data reported in the BSM and PVDM.	5.1	CV010A4
SUB23.4.6	RSE Detection Zone Status Content	The "Connected Vehicle" data displayed on the GUI shall include each detection zone configured for the RSE	5.1	CV010B
SUB23.4.7	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.	5.1	CV010C
SUB23.4.8	TAM Creation	The software shall provide operators the ability to manually construct a TAM.	5.1	CV011A
SUB23.4.9	TAM Data Fields	The software shall allow the user to specify the start time, end time, priority, presentation regions, text of message, and RSEs	5.1	CV011A1
SUB23.4.10	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	5.1	CV011A1A
SUB23.4.11	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.	5.1	CV011B
SUB23.4.11.1	Hyper-linked Event Ids	Event Ids (if available) will be hyperlinked to the existing event.	5.1	CV011B1
SUB23.4.11.2	Show Presentation Regions	When a presentation region is selected, the defined polygon for that region will be shown on the Operator Map.	5.1	CV011B2
SUB23.4.13	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	5.1	CV011C
SUB23.4.14	Delete TAMs	The software shall provide the ability to delete current TAMs	5.1	CV011D

SUB23.4.15	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.	5.1	CV011E
SUB23.4.16	Automatically select RSEs for TAM	The software shall provide the ability to automatically select applicable RSEs based on the currently selected presentation region.	5.1	CV011F
SUB23.4.17	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.	5.1	CV012A
SUB23.4.18	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	5.1	CV012B
SUB23.4.19	RSE to TSS Configuration	When an RSE is configured, the software shall attempt to automatically configure TSS to support incoming probe data.	5.1	CV012C
SUB23.4.20	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	5.1	CV012C1
SUB23.4.21	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	5.1	CV012C2
SUB23.4.22	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	5.1	CV013A
SUB23.4.23	Automatically selected RSEs Response Plan TAMs	The software shall automatically specify which RSEs should receive an automatically generated TAM	5.1	CV013B
SUB23.4.24	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	5.1	CV013B1
SUB23.4.25	Add, Modify, or Delete Response Plan TAMs	The software shall provide operators the ability to add, modify, or delete TAMs from a response plan	5.1	CV013C
SUB23.4.26	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.	5.1	CV013D

SUB23.4.27	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	5.1	CV015A
SUB23.4.28	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	5.1	CV015B
SUB23.4.29	Configuration Inspection (Detectors)	The software shall allow a user to view a list of CVS detection zones for which no TSS lane is defined	5.1	CV015C
SUB23.4.30	Configuration Inspection (Detectors)	The software shall allow a user to view a list of TSS lanes for which no CVS detection zone is defined	5.1	CV015D
SUB23.4.31	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	5.1	CV015E
SUB23.5	Archive		5.1	
SUB23.5.1	Archive BSM Data	The software shall archive BSM data.	5.1	CV009A
SUB23.5.2	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	5.1	CV009A1
SUB23.5.3	Archive PVDM Data	The software shall archive PVDM data.	5.1	CV009B
SUB23.5.4	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	5.1	CV009B1
SUB23.5.5	Archive TAM Data	The software shall archive TAM data.	5.1	CV009C
SUB23.5.6	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	5.1	CV009C1
SUB23.5.7	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	5.1	CV009C2
SUB23.5.8	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.	5.1	CV009C3

SUB23.5.9	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	5.1	CV009C4
SUB23.5.10	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.	5.1	CV009D
SUB23.6	C2C		5.1	
SUB23.6.1	Publish PVDM Data	The software shall be capable of broadcasting PVDMs via C2C	5.1	CV014A
SUB23.6.2	Published PVDM Format	The C2C PVDM shall contain the data in the SAE J2735 2009-11 and J2735 VIIPOC standards, as available	5.1	CV014A1
SUB23.6.3	Publish TAM Data	The software shall be capable of broadcasting TAM messages	5.1	CV014B
SUB23.6.4	Published TAM Format	The C2C TAM shall contain the data in the SAE J2735 2009-11 and J2735 VIIPOC standards, as available	5.1	CV014B1
SUB23.7	SDN		5.1	
SUB23.7.1	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.	5.1	CV015A
SUB23.7.2	SDN Configuration Data	The software will support configurable parameters for both host and port to configure the SDN connection.	5.1	CV015A
SUB23.7.3	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	5.1	CV015A
SUB26	INRIX			
SUB26.1	Interface			
SUB26.1.1	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.	5.0.4	TD007I101
SUB26.1.2	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.	5.0.4	TD007I102
SUB26.1.3	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.	5.0.4	TD007I103

SUB26.1.4	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.	5.0.4	TD007I104
SUB26.1.5	Retrieve County List	The INRIX C2C Publisher component shall retrieve the list of counties from which to publish data from the SunGuide configuration file.	5.0.4	TD007I201
SUB26.1.6	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.	5.0.4	TD007I202
SUB26.1.7	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.	5.0.4	TD007I301
SUB26.1.8	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.	5.0.4	TD007I401
SUB26.1.9	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.	5.0.4	TD007I501
SUB26.1.10	Unique Node Ids	The INRIX C2C Publisher component shall assign each published node an identifier unique to that instance of the Publisher.	5.0.4	TD007I502
SUB26.1.11	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.	5.0.4	TD007I503
SUB26.1.12	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.	5.0.4	TD007I504
SUB26.1.13	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.	5.0.4	TD007I505
SUB26.1.14	Midpoint Data	The INRIX C2C Publisher component shall publish link midpoints for each published link where midpoints could be determined.	5.0.4	TD007I506

SUB26.1.15	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.	5.0.4	TD007I601
SUB26.1.16	Minimum Midpoint Spacing	The INRIX C2C Publisher component shall read a minimum midpoint spacing parameter from the SunGuide configuration file.	5.0.4	TD007I602
SUB26.1.17	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.	5.0.4	TD007I603
SUB26.1.18	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.	5.0.4	TD007I604
SUB26.1.19	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.	5.0.4	TD007I605
SUB26.1.20	Databus Connection	The INRIX C2C Publisher component shall connect to Databus as other SunGuide providers do.	5.0.4	TD007I701
SUB26.1.21	INRIX Permissions	The INRIX C2C Publisher shall allow a client with appropriate permissions to subscribe to communication alert notifications.	5.0.4	TD007I702
SUB26.1.22	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.	5.0.4	TD007I703
SUB26.1.23	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.	5.0.4	TD007I704
SUB26.1.24	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.	5.0.4	TD007I705
SUB26.2	GUI			
SUB26.2.1	C2C Links on Map	The map shall display a C2C link in the same manner as it displays local TSS links.	5.0.4	TD007O101

SUB26.2.2	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.	5.0.4	TD007O102
SUB26.2.3	Number of Lanes	The map shall display all lanes of a single C2C link in the same color.	5.0.4	TD007O103
SUB26.2.4	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.	5.0.4	TD007O104
SUB26.2.5	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.	5.0.4	TD007O105
SUB26.2.6	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.	5.0.4	TD007O106
SUB26.2.7	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.	5.0.4	TD007O107
SUB26.2.8	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.	5.0.4	TD007O108
SUB26.2.9	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.	5.0.4	TD007O109
SUB26.2.10	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.	5.0.4	TD007O1010
SUB26.2.11	Display Link Status	When an operator left clicks on a C2C link, the SunGuide Operator Map shall display the C2C Traffic Conditions dialog.	5.0.4	TD007O1014
SUB26.2.12	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".	5.0.4	TD007O1012

SUB26.2.13	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.	5.0.4	TD007O1013
SUB26.2.14	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.	5.0.4	TD007O1014
SUB26.2.15	Select Networks Dialog	If the operator selects C2C | Select Networks... from the context menu, the map shall display the C2C Network Selection dialog.	5.0.4	TD007O201
SUB26.2.16	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.	5.0.4	TD007O202
SUB26.2.17	Save Operator Preferences	When opened, the C2C Network Selection dialog shall present the operator's last saved display preferences as the currently selected options.	5.0.4	TD007O203
SUB26.2.18	Show Certain Networks	The C2C Network Selection dialog shall allow an operator to select whether data from a center should be displayed or hidden.	5.0.4	TD007O204
SUB26.2.19	Persist Operator Selection	The C2C Network Selection dialog shall allow an operator to save network data display preferences for use on subsequent sessions.	5.0.4	TD007O2015
SUB26.2.20	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.	5.0.4	TD007O2016
SUB26.2.21	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 unspecified centers should be displayed, from centers for which the operator has not specified a preference.	5.0.4	TD007O207
SUB26.2.22	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.	5.0.4	TD007O208
SUB26.3	Access			

SUB26.3.1	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.	5.0.4	TD007A101
SUB26.3.2	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.	5.0.4	TD007A201
SUB26.3.3	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.	5.0.4	TD007A301
SUB26.3.4	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.	5.0.4	TD007A302
SUB27	SPARR		5.0.5	
SUB27.1	SPARR (Phone)		5.0.5	
SUB27.1.1	Authentication	The SPARR shall require a Road Ranger to authenticate to the system using credentials defined by the AVL/RR subsystem.	5.0.5	SPARR001
SUB27.1.2	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	5.0.5	SPARR002
SUB27.1.3	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	5.0.5	SPARR003
SUB27.1.4	Location Updates	The SPARR shall provide location updates to the Traffic Management Center at a configurable interval	5.0.5	SPARR004
SUB27.1.5	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	5.0.5	SPARR005
SUB27.1.6	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.	5.0.5	SPARR006

SUB27.1.7	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	5.0.5	SPARR007
SUB27.1.8	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.	5.0.5	SPARR008
SUB27.1.9	Calling to TMC	The SPARR shall support phone calls to the Traffic Management Center using the cellular network	5.0.5	SPARR009
SUB27.1.10	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	5.0.5	SPARR010
SUB27.1.11	Add Activity	The SPARR shall allow a Road Ranger to add activities (services rendered) to an event	5.0.5	SPARR011
SUB27.1.12	Involved Vehicles	The SPARR shall allow a Road Ranger to add involved vehicles to an event	5.0.5	SPARR012
SUB27.1.13	Dispatch Status	The SPARR shall allow a Road Ranger to modify their dispatch status	5.0.5	SPARR013
SUB27.1.14	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	5.0.5	SPARR014
SUB27.1.15	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	5.0.5	SPARR015
SUB27.1.16	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.	5.0.5	SPARR016
SUB27.1.17	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.	5.0.5	SPARR017
SUB27.1.18	Driver Communication	The SPARR shall communicate with SunGuide through the SPARR Driver	5.0.5	SPARR018
SUB27.1.19	Send Current Time	When the SPARR sends a message to the SPARR Driver, the SPARR shall include the current time of the device	5.0.5	SPARR019

SUB27.1.20	Reconnect Behavior	While the SPARR is not connected to the SPARR Driver, the SPARR shall periodically attempt to reconnect to the SPARR Driver	5.0.5	SPARR020
SUB27.1.21	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	5.0.5	SPARR021
SUB27.2	SPARR Driver		5.0.5	
SUB27.2.1	Subsystem Connection	The SPARR Driver shall only require a single connection to the SunGuide AVL Subsystem	5.0.5	SPARR022
SUB27.2.2	Connection with Phones	The SPARR Driver shall support connections with multiple smart phones running the SPARR	5.0.5	SPARR023
SUB27.2.3	Data Pass Through	The SPARR Driver shall pass data between the SPARR to the SunGuide AVL Subsystem	5.0.5	SPARR024
SUB27.2.4	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	5.0.5	SPARR025
SUB27.2.5	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	5.0.5	SPARR026
SUB27.2.6	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	5.0.5	SPARR027
SUB27.2.7	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	5.0.5	SPARR028
SUB27.2.8	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	5.0.5	SPARR029
SUB27.2.9	Close an Event	SunGuide shall allow a SPARR client to close an open event	5.1.1	SPARR030
SUB27.2.9.1	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.	5.1.1	SPARR030A

SUB27.2.10	Bulk Update	The driver will support a web service method for sending multiple position updates as a single request.	6	SPARR031