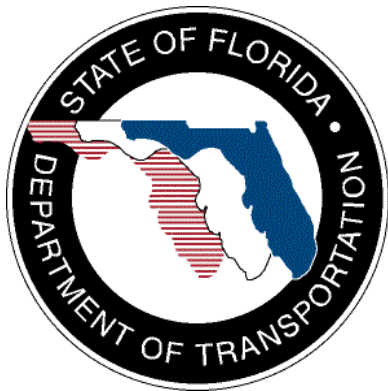


SunGuide™:

Implementation Plan for City of Tallahassee

SunGuide-IP-TLH-1.0.0



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List of Acronyms

C2C.....	Center-to-Center
CCTV	Closed Circuit Television
ConOps	Concept of Operations
CSE.....	Computer Sizing Estimates
CTLH.....	City of Tallahassee
DMS	Dynamic Message Sign
EH.....	Executive Handler
EM.....	Event Management
FDOT.....	Florida Department of Transportation
GUI.....	Graphical User Interface
IIS	Internet Information Server
IP	Implementation Plan
ITS	Intelligent Transportation Systems
IV&V	Independent Verification and Validation
MCP.....	Manual Control Panel
NTCIP	National Transportation Communications for ITS Protocol
RMS.....	Ramp Metering Subsystem
RPG	Response Plan Generator
RS	Reporting Subsystem
RTMC.....	Regional Traffic Management Center
RWIS	Roadway Weather Information System
SATP	Software Acceptance Test Plan
SDD	Software Design Document
SICP.....	Software Integration Case Procedures
SIP	Software Integration Plan
SRS.....	Software Requirements Specification
SUM	Software User's Manual
SwRI.....	Southwest Research Institute
TCP/IP	Transmission Control Protocol/Internet Protocol
TLH	Tallahassee
TMC	Transportation Management Center
TSS	Transportation Sensor Subsystem
TvT	Travel Time
VDD	Version Description Document
VPN.....	Virtual Private Network

REVISION HISTORY

Revision	Date	Changes
1.0.0-Draft	March 31, 2008	Initial Release
1.0.1-Draft	July 26, 2008	Updated based on FDOT CO comments.
1.0.0	October 8, 2008	Updated on CTLH and TERL comments.

1. Scope

1.1 Document Identification

This document serves as the Implementation Plan (IP) for the SunGuide™ software specific to City of Tallahassee (CTLH).

1.2 Project 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 was based on ITS software available from the state of Texas. In addition to the reuse of software (along with customization of this software), a number of new software modules are being developed. The following figure provides a graphical view of the software.

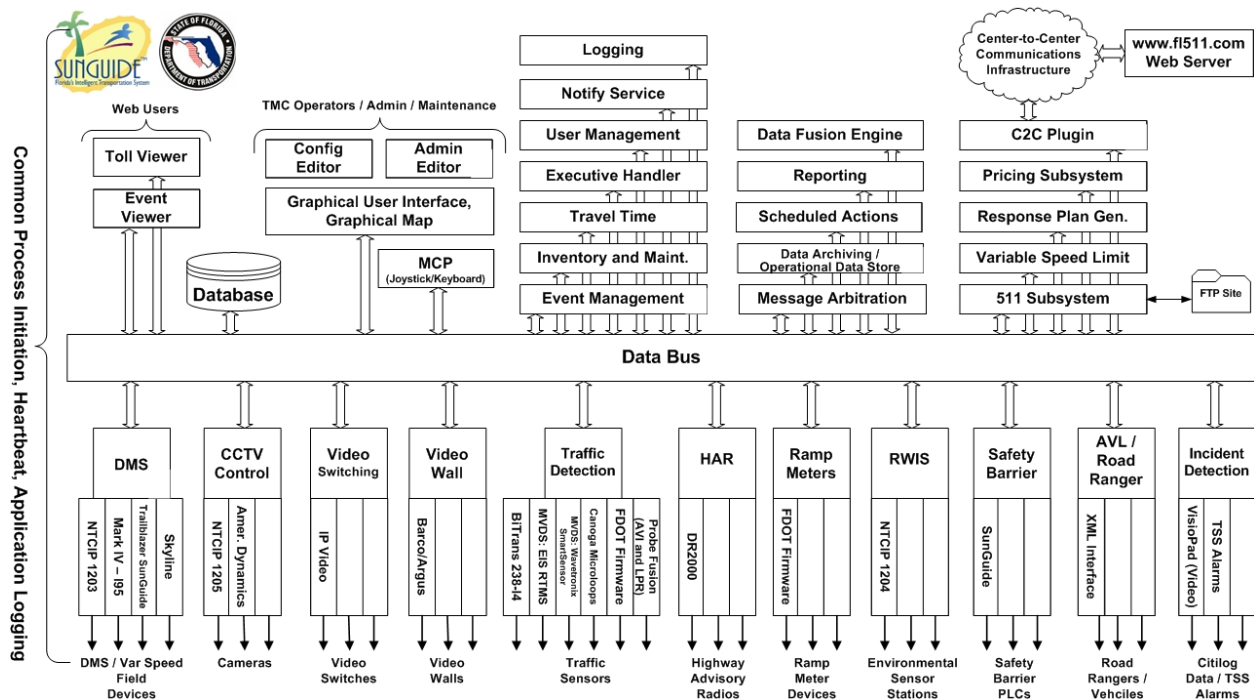


Figure 1.1 - High-Level Architectural Concept

The SunGuide development effort began in October 2003, two major releases have been developed and this document is addressing the third major release of the software. After the development, the software will be deployed to a number of Districts and Expressway Authorities throughout Florida and support activities will be performed.

1.3 Related Documents

A number of documents are available on the project web site that describe the SunGuide software. Many of these documents were used to produce this document. The “Reading Room” of the project web site should be reviewed:

<http://sunguide.datasys.swri.edu>

1.4 Contacts

The following are contact persons for the SunGuide software project:

- Elizabeth Birriel, ITS Central Office, elizabeth.birriel@dot.state.fl.us, 850-410-5606
- Trey Tillander, FDOT SunGuide Project Manager, trey.tillander@dot.state.fl.us, 850-410-5617
- David Chang, ITS Specialist, David.Chang@dot.state.fl.us, 850-410-5622
- Steve Dellenback, SwRI Project Manager, sdellenback@swri.org, 210-522-3914
- Robert Heller, SwRI Software Project Manager, rheller@swri.org, 210-522-3824

The following are contacts for other organizations that are expected to be involved with this deployment:

- City of Tallahassee, Traffic Engineering Division
 - Wayne Bryan, Signal System Engineer, wayne.bryan@talgov.com, 850-891-2080
 - Olu Sawyer, City Traffic Engineer, olu.sawyerr@talgov.com, 850-891-8261
 - Gabe Menendez, Director of Public Works Department, gabe.menendez@talgov.com, 850-891-8197
- Florida Department of Transportation, District 3 ITS
 - Chad Williams, ITS Engineer, chad.williams@dot.state.fl.us
 - Mark Nallick, District 3 ITS LAN Administrator, mark.nallick@dot.state.fl.us

2. Deployment Details

The following documents should be available to City of Tallahassee staff as they prepare for a SunGuide deployment (the most recent versions are available on the project web site):

- Computer Sizing Estimates (CSE)
- Software Requirements Specification (SRS)
- Software Design Document (SDD)
- Version Description Document (VDD)
- Software User's Manual (SUM)
- Software Integration Plan (SIP)
- Software Acceptance Test Plan (SATP)
- Software Integration Case Procedures (SICP)
- Administrator Training Slides
- Operator Training Slides
- Installation Notes

2.1 Subsystems To Be Installed

The following Release 4.1 SunGuide subsystems will be installed for the initial deployment at the City of Tallahassee:

- Administrative Editor (AE)
- Center-to-Center (C2C)
- Data Bus (DB)
- Data Archive (DA)
- Executive Handler (EH)
- Graphical User Interface/Map (GUI)
- Closed Circuit Television (CCTV)
- Video Switching (VS)
- Dynamic Message Sign (DMS)
- Event Management (EM)
- Reporting Subsystem (RS)
- Response Plan Generator (RPG)
- Status Logger (SL)
- Transportation Sensor Subsystem (TSS)
- Travel Time (TvT)

As additional hardware is installed at CTLH, additional subsystems will be added to the base deployment.

2.2 City of Tallahassee: Before Software Installation

The following sections describe the activities that the City of Tallahassee staff needs to perform prior to the SunGuide software deployment. To assist in installation planning, the SunGuide *Computer Sizing Estimate (CSE)* document should be referenced. This document can be found at the project web site: <http://sunguide.datasys.swri.edu>. The document is loaded in the "Various

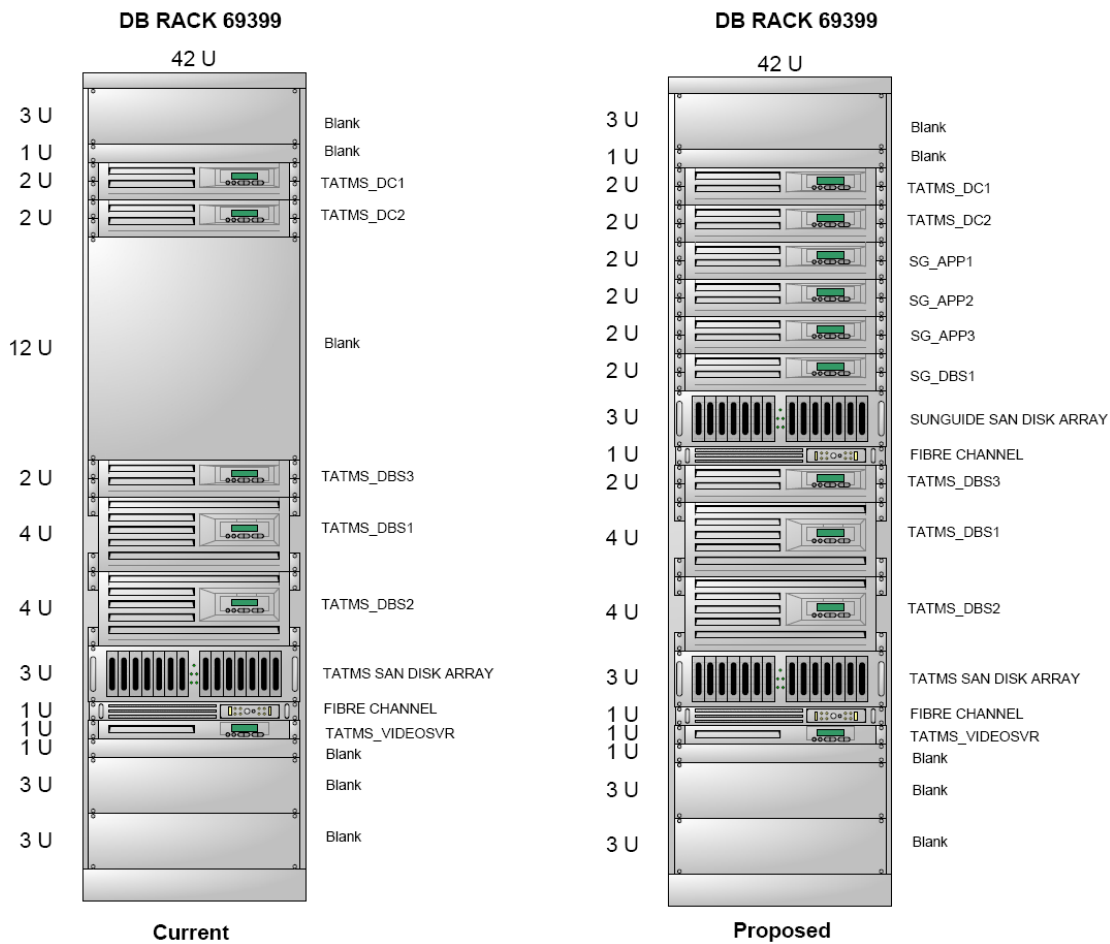
Documents” section of the “Reading Room”. Note that if funding allows workstation performance can be enhanced if the fastest possible workstations can be procured.

2.2.1 Servers

The following servers will be provided to operate the SunGuide software; the servers will be configured to operate in a clustered environment:

- Three SunGuide application Servers
- Two data servers
- Two domain controllers

The remainder of this section discusses the SwRI recommended installation of the SunGuide software on those servers. All servers will be running Windows 2003, Enterprise Edition. The following diagram depicts how the servers will be installed in the racks in the computer room:



The contents of the following table are based on information furnished to SwRI by representatives of the City of Tallahassee and provide current and 3 year projected device counts in the Tallahassee area.

Implementation Plan

SunGuide Device Types	Current Count	Future Count (3 yrs)
Maximum simultaneous users	3	3
DMS TCP/IP connected signs	1	3
DMS Dialup Connected Signs	2	0
CCTV Users Simultaneously Controlling Cameras	0	0
American Dynamics MCPs	0	0
CCTV Users Simultaneously Switching Video	0	0
Video Wall Barco/Argus Controllers	0	0
TSS EIS Detectors	1	1
TSS Wavetronix Detectors	1	1
TSS 3M Microloop Detectors	0	0
TSS Bitrans Detectors	0	0
TSS License Plate Reader Devices	16	16
Simultaneous Active Events	0	0
Ramps Metered	0	0
RWIS TCP/IP Stations	0	0
Highway Advisory Radio (one controller for multiple HARs)	0	0
Data Archive Deployment	1	1
Safety Barrier Safety Barrier Stations	0	0

The following table is extracted from the SunGuide *Computer Sizing Estimates* document and is used to quantify the number of SunGuide application servers required based on the subsystems to be installed.

SunGuide Subsystem	Number of Servers Required	CTLH Deployment
Status Logger	0.1	0.1
Data Bus		
Base system up to 500 ITS devices	0.5	0.5
Over 500 devices	0.5	0
User Interface		
For every 10 users simultaneously logged in	0.5	0.5
DMS (includes MAS)		
Base subsystem	0.5	1
For every 100 TCP/IP connected signs	0.5	0.5
For every 50 dialup signs (assumes 5 modems)	0.5	0
CCTV Control (includes Manual Control Panel [MCP])		

	Number of Servers Required	CTLH Deployment
SunGuide Subsystem		
Base subsystem	0.25	0
For every 10 users simultaneously controlling cameras	0.25	0
Video Switching		
Base subsystem	0.5	0
For every 10 users simultaneously switching video	0.1	0
Video Wall		
Base subsystem	0.25	0
For each Barco/Argus Controller	0.1	0
TSS		
Base subsystem	0.25	0.25
For every 300 detectors	0.5	0.5
Event Management		
Base subsystem for up to 20 concurrent incidents	0.25	0.25
For each 20 concurrent incidents over the base amount	0.25	0
Ramp Metering		
Base subsystem	0.5	0
For every 20 ramps	0.25	0
Roadway Weather Information System (RWIS)		
Base subsystem	0.25	0
For every 50 TCP/IP connected sensors	0.25	0
Highway Advisory Radio (HAR)		
Base subsystem	0.25	0
For every 50 HARs	0.1	0
Archive		
Base subsystem	0.5	0.5
Safety Barrier		
Base Subsystem	0.1	0
For every 50 Barriers	0.1	0
Travel Time (TvT)		
Base Subsystem	0.5	0.5
Web Servers (should be protected with a firewall)		
General Web server	1	0
Center-to-Center interface server	0.5	0
Emergency Evacuation	0.5	0
Maintenance Management Systems	0.5	0
Total SunGuide Application Servers Needed		4.6

The above analysis suggests that 4.6 servers would be needed to support the SunGuide installation as has been discussed with FDOT. The sizing estimates in the *Computer Sizing Estimates* were based on best engineering judgment. After several installations it is clear that the estimates were conservative; Southwest Research Institute® (SwRI®) believes that given the

number of devices and based on the number of subsystems being initially deployed in the City of Tallahassee that three servers be dedicated to running SunGuide software with one being dedicated to the database is more than sufficient.

The following software needs to be installed on the servers before the software installation team arrives on-site:

- Microsoft Standard Enterprise 2003 with all current updates from Microsoft

The software installation team assumes that the City of Tallahassee will have licenses and installation media available for the following products:

- Microsoft Enterprise Server 2003
- Oracle 10g, version 10.1.0.2.0

The following software needs to be installed on the servers before the software installation team arrives on-site:

- Microsoft Windows 2003 Server Enterprise with all current updates from Microsoft should be installed on all servers.
- The domain controller should be properly configured.
- Servers clusters configured and operational

The following software will be installed and configured on the servers in the following configuration:

- CTLH Domain Controller (SwRI will not configure the domain controller)
- Database Server
 - Oracle 10g, version 10.1.0.2.0
 - CTLHSG database

All of the remaining servers will be configured as SunGuide application servers. The following SunGuide software will be installed on all the application servers.

- All Application Servers
 - SL Viewer
 - EH Viewer and Service
 - Oracle 10g Client, version 10.1.0.2.0
 - SL Service
 - Notify Manager
 - Map Generator
 - Administrative Editor
 - Event Management
 - Reporting Subsystem
 - Operator Map
 - HAR
 - Data Bus
 - MAS
 - DMS
 - C2C Plugin (to communicate to other SunGuide deployments)
 - Data Archive
 - TSS

The application servers will then be configured to use Microsoft Clustering to implement the desired redundancy as well as load balancing. If any server goes down, Microsoft Clustering will redistribute the SunGuide application processes across the remaining servers in the cluster according to a predefined configuration.

During the installation activities, a VPN (Virtual Private Network) connection should will be configured that will allow SwRI staff to access the CLTH computers from remote locations. This will facilitate any troubleshooting (the VPN can only be provided with CTLH approval).

2.2.2 Workstations

The following software must be installed on each workstation that will access the SunGuide software:

- Microsoft Windows XP, Service Pack 3
- Microsoft Internet Explorer 7.0
- Adobe SVG Viewer 3.03 (can be downloaded at no charge from the Adobe website)

2.2.3 Device Protocol Compliance

For the devices being deployed, the City of Tallahassee needs to verify that the protocol used by the devices to be controlled by the SunGuide software is compliant to the following protocols:

Subsystem	Protocol Reference
CCTV Control	NTCIP 1205 v01.08 Amendment 1 v01.08 (August 2004)
Video Switching	MPEG-2 devices: IP Video (VBrick 4200/5200, Teleste IDP301/IDE301, Coretec VCX2400D/VCX2400E, iMpath i1000)
DMS	NTCIP 1203, FDOT MIB (Sep 2001)
Traffic Detection (LPR)	Inex Zamir

In addition to verifying the protocols are compliant, the City of Tallahassee staff needs to verify the TCP/IP connectivity to the field devices prior to the on-site installation activities being performed. This can most simply be accomplished by using “ping” to verify that the device is accessible from the server room using the network that the SunGuide servers will be utilizing.

2.2.4 Network Infrastructure

The following sections described the network infrastructure that must be in place prior to installation of the SunGuide software.

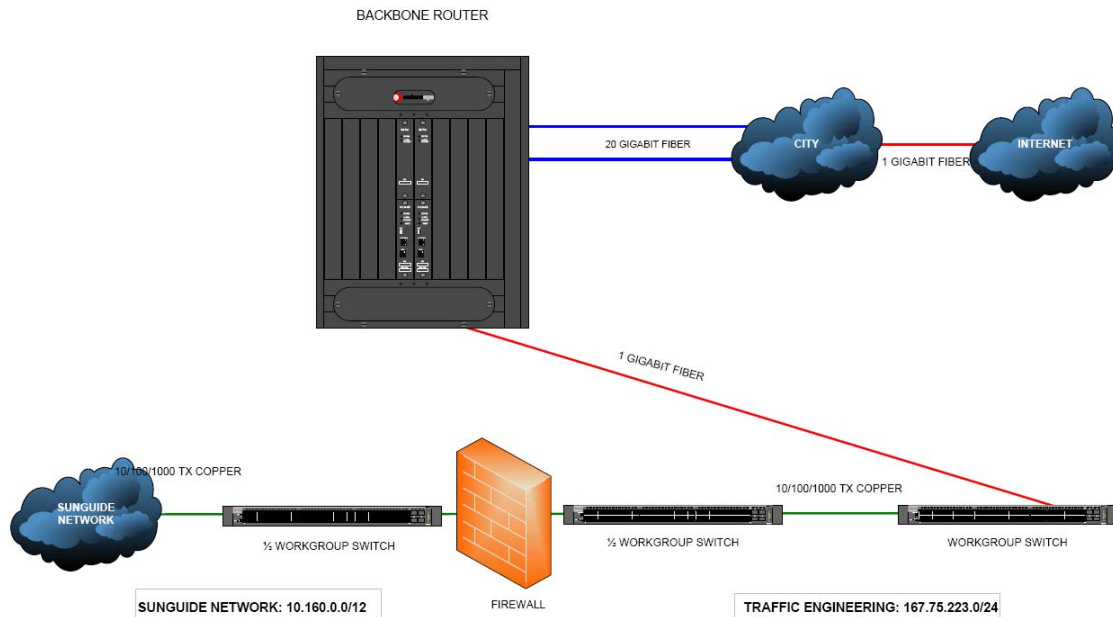
2.2.4.1 Hardware

Due to the client/server nature of the SunGuide software, TCP/IP is used to exchange data between application servers. Due to the web based implementation of the SunGuide user interface, each SunGuide workstation requires TCP/IP access to the SunGuide application servers. The City of Tallahassee needs to verify that TCP/IP connectivity exists between all SunGuide application servers and SunGuide workstations.

Early in the development of requirements for SunGuide, FDOT made the decision that the devices should be connected via TCP/IP to the SunGuide application servers. There are a number

of techniques to connect traditional serial ITS devices so that they can be accessed via TCP/IP, these techniques include the use of a terminal server (a box that has a TCP/IP connection and has multiple serial ports) or a port server (a box that has a TCP/IP connection and a single serial port). The only exception to the use of TCP/IP access is that DMS devices can be accessed via a modem or directly through a serial port if the connection is made through a Windows “COM” port on the SunGuide application server running the DMS device driver.

It is the City of Tallahassee’s responsibility to provide all necessary network hardware and cables to provide the required connectivity. The following network diagram depicts the City of Tallahassee network layout.



2.2.4.2 Software

As the SunGuide software is configured, it will need access to various “standard” servers (e.g. a time server) that may be installed as part of the SunGuide installation or may be available as part of the greater the City of Tallahassee network. The following network services need to be available and the details (e.g., host names, addresses) need to be available during the SunGuide software configuration:

- SMTP Mail Server (optional): The SunGuide notify manager needs to be able to send emails on major system events so SMTP mail server access is required.
- DNS Server (optional): The SunGuide applications utilize TCP/IP to exchange data and the applications can use either IP addresses or host names in their configuration files. Note that the use of DNS is preferred because using explicit IP addresses is less flexible than using hostnames.
- Time Server (optional): It is recommended that all SunGuide computers (workstations and servers) be synchronized to a common time source as it is desirable during diagnostics to have the same time on all SunGuide systems.

2.2.5 Device Worksheets

The following sections describe the information that must be collected about each device that is to be utilized by the SunGuide software.

Notes: When entering latitude/longitude values a full 8 digits of precision must be entered as coordinates are stored in micro degrees which require 8 digits. SunGuide has a 30 character limit for device short names and descriptions are limited to 256 characters.

2.2.5.1 CCTV Worksheet

The following data needs to be collected for each CCTV to be configured:

Camera Name	Unique name of camera
Center Id	Unique name of center where camera resides
Protocol	Specifies the protocol (values: SNMP, SNMP(PMPP)) for camera
Poll Process	Name of driver for camera
Manufacturer	Manufacturer of camera
Location Description	Description of where camera resides
Roadway	Roadway of where camera resides
Direction	Direction of roadway where camera is installed
Latitude	Latitude of where camera resides
Longitude	Longitude of where camera resides
Op Status	Operational status (values: Active, Error, Failed, OutOfService) of camera
Address Type1	Address type (values: pmppAddress, commAddress) for camera, if pmppAddress then camera uses SNMP (PMPP); if commAddress then camera uses SNMP
Address Type2	Specific address type (values: portServerAddress) of Address Type 1
Address	Device address of camera
Port Server IP	IP address for the port server where camera resides
Port Server Port Number	Port number for the port server where camera resides
Community Name	Community name for camera (SNMP)
Attach to Video Device	If selected, additional IP video parameters must be supplied.

The following data need to be provided for IP video:

Video Device IP Address	IP address for encoder
Blackout	Determines if camera restricted
Video Device Type	Type (IP video device) of video device for encoder
IP Streaming Driver ID	Unique IP video switch driver name
Card Number	Card number for VBrick encoder
Manufacturer	Manufacturer (values: Coretec, iMpath, Teleste, VBrick) of encoder
Model	Model of encoder
Streaming Type	Streaming type (values: elementary, transport,

	program) for encoder
Secondary Interface	Secondary interface for VBrick encoder which enables users to maximize number of inputs for encoder
Snapshot Requested	Determines if snapshots are generated for encoder

2.2.5.2 DMS Worksheet

The following data needs to be collected for each DMS to be configured:

Sign Name	Unique name of DMS
Center Id	Unique name of center where DMS resides
Protocol	Specifies the protocol (values: SNMP, SNMP(PMPP), MarkIV, SunGuide (for Trailblazers)) for DMS
Connection Type	Specifies how the DMS is connected to the network (values: Direct, Modem, Long Distance Modem)
Poll Process	Name of driver for DMS
Packet Timeout	Amount of time the driver will wait on a response from a DMS before timing out (recommended time is 5 seconds)
Packet Retry Limit	How many times a packet is attempted before it errors out, for most signs the recommended number is 2, for signs prone to errors, this can be increased
Command Retry Limit	How many times a command is attempted before it errors out, a command consists of multiple packets. Recommended number is 1
Op Status	Operational status (values: Active, OutOfService) of DMS
Type	Values: Fiber Optic, LED, Flip-Disk, Shutter
Manufacturer	Values: FDS, IDI, MarkIV, Telespot, Skyline
Number of Lines	Number of displayable lines
Beacons	Whether the sign has beacons, if so, specify the beacon address
Day Brightness Level	The numeric value for brightness setting in the daytime
Night Brightness Level	The numeric value for brightness setting in the nighttime
Location Description	A text field describing the location of the DMS
Roadway	Roadway on which this DMS resides
Direction	The direction of the roadway on which this DMS resides
Latitude	Latitude of where this DMS resides
Longitude	Longitude of where this DMS resides
Number of Columns	Number of characters that can be displayed using a normal font
Beacon Address	The address on which the sign receives activate/deactivate beacon requests
Address Type 1	Address type (values: PMPP, SunGuide, MarkIV) for DMS, if PMPP then DMS protocol should be SNMP (PMPP); if SunGuide or MarkIV, then DMS uses same protocol name

Address Type 2	Specific address type (values: Direct, PortServer, Dialup) of Address Type 1
Address	Device address of DMS
Community Name	Community name for DMS (SNMP)

The following data need to be provided for DMSs connected via a TCP/IP connection:

IP Address	IP address for the port server where DMS resides
Port Number	Port number for the port server where DMS resides

The following data need to be provided for DMSs connected directly via a serial port:

Communications port	Communications port to which the DMS is connected
Baud Rate	This should match the baud rate of the DMS
Data Bits	This should match the data bits the DMS is expecting
Stop Bits	This should match the stop bits the DMS is expecting
Parity	This should match the parity the DMS is expecting

The following data need to be provided for DMSs connected via a modem:

Phone Number	Phone number for the DMS, should include any prefix needed for dialing
Baud Rate	This should match the baud rate of the DMS

2.2.5.3 TSS Worksheet

The following data need to be provided for each Highway (Route) to be in the deployment:

Roadway Description	Textual description of the roadway (route)
Short Name	Short text name that will be seen by the operators
Directions	The directions that the roadway runs (can be multiple directions)
Cross Streets (multiple entries)	Textual descriptions of cross streets (that intersect the roadway); typically a roadway will have multiple cross streets
Lat Lon	Latitude and longitude of the intersection between the roadway and the cross street

The following data needs to be collected for each TSS detector to be configured:

Detector Name	Unique name of detector
Center Id	Unique name of center where detector resides
Driver Name	Name of driver for the detector (e.g., BiTrans, RTMS)

Poll Cycle	Time in seconds between device polls
Type	Type of detector (e.g., Loop, Radar, AVI or LPR)
Protocol	Specifies the protocol (see the protocols supported on the project web site)
Op Status	Operational status (values: Available or Offline)
Location Description	Description of where detector resides
Roadway	Roadway of where detector resides
Direction	Direction of roadway where detector is installed
Latitude	Latitude of where detector resides
Longitude	Longitude of where detector resides
Address	Device address of detector
Port Server IP	IP address for the port server where detector resides
Port Server Port Number	Port number for the port server where detector resides

The following data needs to be collected for each lane that is to be configured:

TSS Link	The name of the links that will be defined in the system; links will have an association to detectors.
TSS Lanes	For each link, the name of each lane associated with the link; for each lane the zone number and description needs to be identified (e.g., which detection zone is associated with a lane).

The following data needs to be collected for each link that will have an alarm threshold to be configured:

TSS Link	The name of the links that will be defined in the system.
Threshold Value(s)	What the speed and occupancy values should be for each threshold (this includes a start and end time) value to be defined.

2.3 SwRI: Software Installation

The following sections describe the activities that SwRI staff will perform to install the SunGuide software. City of Tallahassee staff should be available to monitor and observe the software installation process.

2.3.1 Server Preparation

The following software needs to be installed on the servers before the software installation team arrives on-site:

- One server be configured as the Oracle server:
 - Oracle 10g server, version 10.1.0.2.0

- Three servers will be configured as application servers:
 - Oracle 10g Client, version 10.1.0.2.0
 - IIS (Microsoft installation disk)
 - ASP.NET (this installed as part of Microsoft IIS)

2.3.2 Workstation Preparation

The following software needs to be installed on the workstations before the software installation team arrives on-site:

- Adobe SVG Viewer (must be acquired from Adobe.com)
- Roadgeek font (this is provided on the SunGuide install CD)

2.3.3 Software Installation

In order to install the SunGuide application software, the following steps will be performed by the software installation team:

- In a common directory with a share point accessible to the SunGuide application servers the following files will be installed: .
 - Install master configuration file which is named config.xml and edit the contents to match the City of Tallahassee network configuration.
 - Install XML schemas used by the SunGuide applications.
- Execute the database creation scripts to prepare the database for installation of the SunGuide applications.
- Using the installation instructions in the SunGuide *Version Description Document* (VDD) and installation notes install the SunGuide applications. Any patches released subsequent to the release of the full installation CD need to be installed (in order) after the installation CD is executed.

Two SunGuide system administration applications do not execute in a browser environment. These applications should be installed on workstations that may be used to diagnose the health and status of the system; details of the application are contained in the SUM. SwRI will install the following applications on workstations as directed by the City of Tallahassee:

- Executive Handler viewer: provides an overview of currently operating SunGuide applications.
- Status Logger viewer: provides the ability to review the SunGuide application log files.

2.3.4 Software Configuration

After the SunGuide software is installed, various configuration activities need to occur; the software installation team will perform the following configurations:

- Install and configure Status Logger on a single SunGuide application server (the SunGuide applications will log to this one instance of Status Logger).
- Install and configure Executive Handler server on all SunGuide application servers
- Modify the IIS to restrict access to the SunGuide Admin utility to users specified by the City of Tallahassee.

The SunGuide GUI is designed to load GUI components for the SunGuide applications. The loading (and overall performance) of the GUI can be improved if the GUI components associated with subsystems not installed is removed. The software installation team will remove the GUI

components for the subsystems that were not installed; this is done because when the GUI is installed it includes the components for ALL SunGuide subsystems, this removal is done so that users do not see menu options for subsystems which are not installed and configured.

2.3.5 C2C Configuration

During the SunGuide software configuration, the Center-to-Center (C2C) interfaces need to be configured so that the City of Tallahassee deployment can exchange information and command requests (assuming operators have the appropriate permissions) with other control centers. To achieve this exchange of data a TCP/IP path must be established between the cooperating centers, this requires agencies to make appropriate modifications to firewall and other network appliances that may restrict this type of data flow. The following SunGuide C2C components need to be installed on the City of Tallahassee servers:

- C2C Plug-in Publisher
- C2C Plug-in Subscriber
- C2C Extractor
- C2C Provider
- C2C Command Receiver

The C2C interface should then be tested to assure that the software is properly configured; this testing will be performed using the C2C Test Suite.

2.4 SwRI / CTLH: Post Software Installation (Configuration)

The following sections describe the activities that the City of Tallahassee staff need to perform after the SunGuide software deployment. SwRI and PBS&J (ITS GC) staff will be available to assist and work with the City of Tallahassee staff to accomplish these activities. SwRI recommends that both the CLTH SunGuide administrator and at least one SunGuide operator be available during this process.

2.4.1 Populate Tables

The following tables need to be populated using the SunGuide Administration tool:

- User Management:
 - Users
 - Groups
 - Workstations
- DMS:
 - Device Tables
 - Approved Words
- TSS:
 - Alarm Thresholds
 - Device Tables
 - Detector Maps
 - Poll Cycles
- Event Management:
 - Activity Types
 - Agencies

- Agencies Contacts
- Comment Types
- Event Status Types
- Event Types
- Injury Types
- Organizations
- Location Configuration
- Mailing Lists
- Mailing Lists Contacts
- Procedural Errors
- Response Plans
- Vehicle Tracking
- Weather Conditions
- Reporting Subsystem:
 - Reports
 - Reporting Groups
- Data Archive: Properties
- Miscellaneous: Centers

The SunGuide *Software User's Manual* (SUM) and Administrator Training slides should be consulted on use of these editors. To aid in future configuration, for any device that does not have an entry at least one entry for every possible device will be added; this will help illustrate how future entries should be structured (naming, option selection, etc.) and also verify that the Admin editor can read and write information to the appropriate tables.

2.4.2 Create Map Links

Each implementation of SunGuide must have a Map Link layer created; this layer is used by the operator map to display instrumented sections of roadway as well as highway shields. This layer is displayed in conjunction with the DynaMap shape file data to provide a complete looking map on the operator workstation. The SUM has a section titled "Map Administration with Link Editor" that explains the use of this software. Additionally, the Map Link Editor should be used to create the shields that should be displayed.

2.4.3 DMS Linking File

A device linking file needs to be created so that DMS devices can be selected for recommended Event response plans. The Software User's Manual describes how to create this file.

2.5 SwRI / CTLH: Testing

Once the configuration is complete and equipment is made available, a series of ad hoc tests will be performed to verify software operation. If the City of Tallahassee wishes, the formal test cases from the SunGuide *Software Integration Case Procedures (SICP)* can be executed but this activity has not been performed in recent SunGuide deployments. Areas that will be tested / exercised include:

- DMS:
 - Devices being polled
 - Control of DMS devices
 - DMS devices showing on map with status information
- TSS Devices:
 - Devices being polled
 - TSS data showing up on map
- Event Management:
 - Event Creation
 - Event Management
 - Response Plan Generation (accessing HAR devices)
- Reporting Subsystem:
 - Generate reports
- Various:
 - Test C2C plugin using XML tester to receive data
 - Verify Data Archive is configured to store TSS data (note that this subsystem will not be used in the short term but will be configured for future use)

2.6 Training

Training will be conducted in the city of Tallahassee control center as the installation is performed; the training will be both a hands-on that occurs during the installation and configuration activities as well as formal class. The following training will be provided to the City of Tallahassee personnel during the installation and configuration:

- Administrator Training - the intent of the System Administration/Deployment training is to prepare personnel to install/configure the SunGuide software and administer the SunGuide system on a daily basis. The following topics will be addressed during the hands-on training:
 - Installation procedures
 - Backup procedures
 - Recovery procedures
 - Modifying hardware configurations
 - Tailoring of the system environment
 - Starting/stopping/restarting the system
 - Troubleshooting:
 - Executive Handler
 - Status Logger
 - Workstation installation
- Operator Training - the intent of the Operator/User Interface course is to prepare personnel to use the SunGuide™ system on a daily basis in a typical operational mode. The course will include the following topics:
 - SunGuide System Administration fundamentals
 - Executive Handler fundamentals

- Status Logger fundamentals
- Graphical User Interface (GUI)/Map fundamentals
- Closed Circuit Television (CCTV) operations
- Dynamic Message Sign (DMS) operations
- Traffic Sensor Subsystem (TSS) fundamentals; including License Plate Reader fundamentals
- Video Switching fundamentals;
- Travel Time fundamentals; including the enhanced Travel Time functionality using LPR and AVI.
- Center-to-Center (C2C) fundamentals

The training format consists of:

- Classroom instruction using PowerPoint presentation (8 hours)
- Hands-on instruction using City's SunGuide System (4 hours)

The operator training will be conducted at the City of Tallahassee TMC during non-operational hours.

2.7 Deployment Schedule

The following schedule is proposed for the deployment. The SunGuide installation is scheduled to occur the week of November 3, 2008. The installation team will need access to hardware devices throughout the implementation process. Note that if activities complete early then if the City of Tallahassee and SwRI agree the timing for the following events may be modified to shorten the overall deployment schedule.

ID	Task Name	Duration	Day -3		Day -1		Day 2		Day 4		Day 6		Day 8		Day 10		Day 12		Day 14		Day 16		Day 18		
			12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
1	Preinstallation Activities (City of TLH Activities)	10 days																							
2	Install Operating Systems	10 days																							
3	Install / Configure Oracle	10 days																							
4	Install / Configure Workstations	10 days																							
5	Server Configuration / Verification	1 day																							
6	Verify server software	1 day																							
7	Verify configuration	1 day																							
8	Verify workstations	1 day																							
9	Site Installation and Checkout	5 days?																							
10	Install SunGuide software	1 day?																							
11	Configure SunGuide	1 day?																							
12	Configure Devices	2 days																							
13	Test Field Connectivity	3 days																							
14	Software Testing	4 days																							
15	Training	0.5 days																							
16	Administrator Class (TBD - likely OJT)	3 hrs																							
17	Operator Training (PBS&J)	4 hrs																							

3. Notes

None.